

Year 2025

as of October 16, 2025

## Peer Reviewed Journals (accepted or in press, with doi)

### Peer Reviewed Journals

S. Lang, L. Hennerici, D. Kramer, D. Avadanii, S. Mück, M. Linz, J. Kita, R. Moos, R. Mönig:

Formation, Growth, and Shrinkage of Voids in Lithium Metal in Contact With an LLZO Electrolyte  
*ACS Applied Materials & Interfaces*, **17**, 56980-56990 (2025), doi: 10.1021/acsami.5c09594

T. Wöhrl, M. König, R. Moos, G. Hagen:

Monitoring of Ammonia in Biomass Combustion Flue Gas Using a Zeolite-Based Capacitive Sensor  
*Sensors*, **25**, 5519 (2025), doi: 10.3390/s25175519

T. Wöhrl, R. Moos, G. Hagen:

Analyzing the cross-sensitivities of a zeolite-based ammonia sensor for SCR systems for application in the flue gas of biogenic waste combustion  
*Sensors and Actuators B: Chemical*, **436**, 137727 (2025), doi: 10.1016/j.snb.2025.137727

J. Günther, D. Wycisk, R. Siva Dev, A. Fill, K.P. Birke, R. Moos, J.P. Schmidt, M. Oldenburger:

Determination of the Solid State Diffusion Coefficient of Li-ion Battery Single-Phase Materials Using Thin Model Electrodes  
*Journal of The Electrochemical Society*, **172**, 030525 (2025), doi: 10.1149/1945-7111/adbfc5

L. Hennerici, P. Ficht, M. Schamel, U. Mansfeld, M. Linz, D. Paulus, J. Kita, M.A. Danzer, R. Moos:

Lithium All-Solid-State Batteries Fabricated at Room Temperature by the Powder Aerosol Deposition Method with Garnet-Type Electrolyte and Graded Composite Cathode  
*Advanced Materials Technologies*, **10**, 2400745 (2025), doi: 10.1002/admt.202400745

C. Steiner, G. Hagen, R. Moos:

Sulfur poisoning of powder aerosol deposited films of  $\text{BaFe}_{0.74}\text{Al}_{0.01}\text{Ta}_{0.25}\text{O}_{3-\delta}$ : A material for resistive temperature independent oxygen sensors  
*Sensors and Actuators B: Chemical*, **425**, 136984 (2025), doi: 10.1016/j.snb.2024.136984

### Doctoral Theses

C. Steiner:

Mikrowellengestützte Analyse der Defektchemie von Cer-Zirkonium-Mischoxiden  
(Microwave-based analysis of the defect chemistry of cerium-zirconium mixed oxides)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 23, Shaker-Verlag, Düren (2025), ISBN 978-3-8440-9771-9

### Invited Talks

*Intl. Symposium on Green Processing for Advanced Ceramics - IGPAC 2025*, 5.10.-9.10.2025, Ise-Shima/Mie, Japan

D. Paulus, D. Schönauer-Kamin, R. Moos: *How to produce ceramics in the millimeter thickness range at room temperature by the Powder Aerosol Deposition Method (ADM)*

*The 20<sup>th</sup> International Meeting on Chemical Sensors, IMCS 20*, Freiburg, Germany, 22<sup>nd</sup> - 26<sup>th</sup> June 2025

G. Hagen: *High-Temperature Gas Sensors for Biomass Applications*

*The 20<sup>th</sup> International Meeting on Chemical Sensors, IMCS 20*, Freiburg, Germany, 22<sup>nd</sup> - 26<sup>th</sup> June 2025

D. Schönauer-Kamin, R. Moos: *Dosimeter-type gas sensors - an overview on dosimeter concepts, materials, and applications*

*The 20<sup>th</sup> International Meeting on Chemical Sensors, IMCS 20*, Freiburg, Germany, 22<sup>nd</sup> - 26<sup>th</sup> June 2025

R. Moos, J. Zosel: *Development of solid electrolyte based mixed potential gas sensors in the past 40 years - a journey accompanied by Ulrich Guth*

### Published Conference Contributions

D. Paulus, D. Schönauer-Kamin, R. Moos:

How to produce ceramics in the millimeter thickness range at room temperature by the Powder Aerosol Deposition Method (ADM)  
*Intl. Symposium on Green Processing for Advanced Ceramics - IGPAC 2025*, 5.10.-9.10.2025, Ise-Shima/Mie, Japan, p. 63-64

J. Schneider, D. Paulus, J. Kita, R. Moos:

Rapid Posttreatment of Powder Aerosol Deposited Functional Ceramics Using LED Radiation

*Intl. Symposium on Green Processing for Advanced Ceramics - IGPAC 2025*, 5.10.-9.10.2025, Ise-Shima/Mie, Japan, p. 143-144

D. Paulus, J. Schneider, D. Schönauer-Kamin, R. Moos:

Revealing a new room temperature deposition mechanism for materials with layered-type crystal structure by a synchrotron study  
*Intl. Symposium on Green Processing for Advanced Ceramics - IGPAC 2025*, 5.10.-9.10.2025, Ise-Shima/Mie, Japan, p. 151-152

R. Moos, L. Hennerici, M. Sozak, D. Paulus, J. Schneider, N. Donker, D. Schönauer-Kamin:

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Producing Solid-State Batteries by the Powder Aerosol Deposition Method: Overview and Recent Progress

*Intl. Symposium on Green Processing for Advanced Ceramics - IGPAC 2025*, 5.10.-9.10.2025, Ise-Shima/Mie, Japan, p. 214-215

T. Xu, M. Griesbach, T. Scholz, A. Köhler, R. Moos:

MAPbBr<sub>3</sub>-MAPbI<sub>3</sub> gradient films prepared at room temperature by Powder Aerosol Deposition (PAD) for controlled ion and electron transport  
*8<sup>th</sup> International Conference on Perovskite Solar Cells and Optoelectronics - PSCO 2025*, 15.9.-18.9.2025, Perugia, Italy

T. Scholz, T. Xu, A. Köhler, R. Moos:

Defect Chemical Engineering in Doped MAPbI<sub>3</sub> Films Prepared from Mechanochemically Synthesized Powders via Powder Aerosol Deposition  
*8<sup>th</sup> International Conference on Perovskite Solar Cells and Optoelectronics - PSCO 2025*, 15.9.-18.9.2025, Perugia, Italy

R. Moos, T. Wöhrl, N. Donker, D. Schönauer-Kamin, G. Hagen:

Ammonia flue gas sensors for SCR applications: A comparison between zeolite-based capacitive sensors and mixed-potential sensors utilizing vanadia-based electrodes

*EuroSensors XXXVII*, September 7-10, 2025, Wroclaw, Poland, p. 124-125, doi: 10.5162/EUROSENSORS2025/T5.1.2

M. Sozak, C. Zhao, R. Moos:

Electrochemical properties of powder aerosol co-deposited NaCrO<sub>2</sub>/C binder-free composite cathodes for sodium-ion batteries  
*SBS6 - International Sodium Battery Symposium*, 3.9.-4.9.2025, Dresden

J. Günther, N. Stumböck, D. Wycisk, M. Oldenburger, R. Moos, J.P. Schmidt:

Determination of the Solid State Diffusion Coefficient Using Thin Model Electrodes - Transfer From NMC622 to NMC811  
*Oxford Battery Modelling Symposium (OBMS 2025)*, 24.7.-25.7.2025, Oxford, United Kingdom, p.40

T. Wöhrl, G. Hagen, D. Schönauer-Kamin, R. Moos:

Ion-exchanged zeolites for capacitive gas sensing

*The 20<sup>th</sup> International Meeting on Chemical Sensors, IMCS 20*, Freiburg, Germany, 22<sup>nd</sup> - 26<sup>th</sup> June 2025, poster presentation

D. Schönauer-Kamin, R. Moos:

Dosimeter-type gas sensors - an overview on dosimeter concepts, materials, and applications

*The 20<sup>th</sup> International Meeting on Chemical Sensors, IMCS 20*, Freiburg, Germany, 22<sup>nd</sup> - 26<sup>th</sup> June 2025, invited oral presentation

R. Moos, J. Zosel:

Development of solid electrolyte based mixed potential gas sensors in the past 40 years - a journey accompanied by Ulrich Guth

*The 20<sup>th</sup> International Meeting on Chemical Sensors, IMCS 20*, Freiburg, Germany, 22<sup>nd</sup> - 26<sup>th</sup> June 2025, invited oral presentation

G. Hagen:

High-Temperature Gas Sensors for Biomass Applications

*The 20<sup>th</sup> International Meeting on Chemical Sensors, IMCS 20*, Freiburg, Germany, 22<sup>nd</sup> - 26<sup>th</sup> June 2025, invited oral presentation

G. Hagen, J. Kita, R. Moos:

On the mechanism of a novel highly selective potentiometric zeolite-based hydrogen sensor for harsh environments

*The 20<sup>th</sup> International Meeting on Chemical Sensors, IMCS 20*, Freiburg, Germany, 22<sup>nd</sup> - 26<sup>th</sup> June 2025, oral presentation

R. Siva Dev, G.K. Mertin, M. Oldenburger, R. Moos, J.P. Schmidt:

Mastering Microstructure: Better Characterisation of Electrode Porosity for Higher Accuracy of Physics-Based Cell Models

*abc europe - advanced automotive battery conference*, 23.-25.6.2025, Mainz, Germany, P055

G. Hagen, R. Moos:

Continuous Estimation of Particle Emissions in Flue Gas of Wood Combustion using Gas Sensor Measurements

*SMSI 2025 Sensor and Measurement Science International*, 06-08 May 2025, Nuremberg, Germany, doi: 10.5162/SMSI2025/C5.2

C. Roth, M. Attia, C.-E. Hartwig, P. Hawe, H. Hoffmann, R. Moos:

CO<sub>2</sub> Electro-Reduction: From Metallic Foams to Gas Diffusion Electrodes

*AMN 11, 11<sup>th</sup> International Conference on Materials and Nanotechnology*, 09-13 February 2025, Christchurch, New Zealand, p. 272

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### Peer Reviewed Journals

- T. Thathsara, C.J. Harrison, D. Schönauer-Kamin, U. Mansfeld, R. Moos, F.M. Malherbe, R.K. Hocking, M. Shafiei:  
Pd Nanoparticles Decorated Hollow TiO<sub>2</sub> Nanospheres for Highly Sensitive and Selective UV-Assisted Hydrogen Gas Sensors  
*ACS Applied Energy Materials*, **7**, 5608-5620 (2024), doi: 10.1021/acsaem.4c01039
- D. Paulus, S. Bresch, R. Moos, D. Schönauer-Kamin:  
Powder aerosol deposited calcium cobaltite as textured P-type thermoelectric material with power factors approaching single crystal values  
*Journal of the European Ceramic Society*, **44**, 116717 (2024), doi: 10.1016/j.jeurceramsoc.2024.116717
- C. Steiner, V. Malashchuk, D. Kubinski, G. Hagen, R. Moos:  
Microwave-Based State Diagnosis of Three-Way Catalysts: Impact Factors and Application Recommendations  
*Sensors*, **24**, 4091 (2024), doi: 10.3390/s24134091
- S. Biberger, M. Spies, K. Schötz, F.-J. Kahle, N. Leupold, R. Moos, H. Grüninger, A. Köhler, F. Panzer:  
Reactive spin coating based on real-time *in situ* feedback for improved control of perovskite thin film fabrication  
*Journal of Materials Chemistry C*, **12**, 6415-6422 (2024), doi: 10.1039/D3TC04361D
- S. Walter, J. Baumgärtner, G. Hagen, D. Schönauer-Kamin, J. Kita, R. Moos:  
Dielectric Properties of Materials Used for Microwave-Based NO<sub>x</sub> Gas Dosimeters  
*Sensors*, **24**, 2951 (2024), doi: 10.3390/s24092951
- S. Walter, P. Schwanzer, G. Hagen, H.-P. Rabl, M. Dietrich, R. Moos:  
Combined Ash and Soot Monitoring for Gasoline Particulate Filters Using a Radio-Frequency-Based Sensor  
*Emission Control Science and Technology*, **10**, 1-9 (2024), doi: 10.1007/s40825-023-00235-y
- S. Bresch, P. Stargardt, R. Moos, B. Mieller:  
Co-Fired Multilayer Thermoelectric Generators Based on Textured Calcium Cobaltite  
*Advanced Electronic Materials*, **10**, 2300636 (2024), doi: 10.1002/aelm.202300636
- M. Linz, F. Bühner, D. Paulus, L. Hennerici, Y. Guo, V. Mereacre, U. Mansfeld, M. Seipenbusch, J. Kita, R. Moos:  
Revealing the Deposition Mechanism of the Powder Aerosol Deposition Method Using Ceramic Oxide Core-Shell Particles  
*Advanced Materials*, **36**, 2308294 (2024), doi: 10.1002/adma.202308294
- N. Donker, D. Schönauer-Kamin, R. Moos:  
Mixed-Potential Ammonia Sensor Based on a Dense Yttria-Stabilized Zirconia Film Manufactured at Room Temperature by Powder Aerosol Deposition  
*Sensors*, **24**, 811 (2024), doi: 10.3390/s24030811

### Doctoral Theses

- R. Werner:  
Die Entwicklung eines Hochtemperatur-Kombimesegeräts zur simultanen Bestimmung der elektrischen Leitfähigkeit, der Hall-Konstante und des Seebeck-Koeffizienten  
(Development of a high-temperature measuring device for the simultaneous determination of electrical conductivity, Hall constant and Seebeck coefficient)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 41, Shaker-Verlag, Düren (2024), ISBN: 978-3-8440-9552-4
- N. Leupold:  
Aerosolbasierte Kaltabscheidung von Halogenidperowskiten: vom Pulver zur Solarzelle  
(Powder aerosol deposition of halide perovskites: from the powder to solar cells)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 22, Shaker-Verlag, Düren (2024), ISBN: 978-3-8440-9480-0
- S. Walter:  
Hochfrequenzgestützte Zustandsdiagnose für die Überwachung von Benzinpartikelfiltern  
(Radio frequency-based state diagnosis of gasoline particulate filters)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 40, Shaker-Verlag, Düren (2024), ISBN: 978-3-8440-9427-5

### Invited Talks

- 59<sup>th</sup> International Conference on Microelectronics, Devices and Materials MIDEEM 2024, 02-04 October 2024, Rimske Toplice, Slovenia  
J. Kita: Latest development in Powder Aerosol Deposition
- Future of Emission Control, 21.-23.07.2024, Karlsruhe, Germany  
G. Hagen, J. Herrmann, T. Wöhrle, B. Streibl, R. Moos: Sensors in Biomass Combustion Exhaust

### Published Conference Contributions

- G. Hagen, J. Kita, R. Moos:  
Neuartiger Wasserstoff-Sensor  
17. Dresdner Sensor-Symposium, 25.-27. November 2024, Dresden, doi: 10.5162/17dss2024/5.3

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T. Wöhr, G. Hagen, R. Moos:

Kapazitive Datenerfassung für einen Ammoniak-Sensor für biogene Reststoff-Feuerungen  
*17. Dresdner Sensor-Symposium*, 25.-27. November 2024, Dresden, doi: 10.5162/17dss2024/P09

S. Lang, D. Avadanii, D. Kramer, L. Hennerici, M. Linz, J. Kita, R. Moos, R. Mönig:

Operando SEM observations of lithium-metal anodes during dissolution and deposition through LLZO  
*Solid-State Batteries VI, an International Bunsen Discussion Meeting*, Nov 13-15, 2024, Frankfurt a. Main, Germany, P204

J. Kita, R. Werner, R. Moos:

In Dickschichttechnik hergestellter Probenräger zur Messung der elektrischen Leitfähigkeit, der Hall-Konstante und des Seebeck-Koeffizienten bis 800 °C  
*IMAPS Herbstkonferenz 2024*, München, 17.10.-18.10.2024

J. Kita:

Latest development in Powder Aerosol Deposition  
*59<sup>th</sup> International Conference on Microelectronics, Devices and Materials MIDEM 2024*, 02-04 October 2024, Rimske Toplice, Slovenia

J. Kita, J. Baumgärtner, R. Moos:

Next steps in the development of a ceramic DSC sensor  
*46<sup>th</sup> International Microelectronics and Packaging IMAPS Poland Conference*, 22-25 September 2024, Gdańsk, Poland

D. Schönauer-Kamin, M. Linz, M. Schmitz, R. Moos:

Are Powder Aerosol-Deposited Films Appropriate for Chemiresistive NO<sub>x</sub> Gas Dosimeters?  
*Eurosenors XXXVI*, September 1-4, 2024, Debrecen, Hungary, p. 108-109, doi: 10.5162/EUROSENSORSXXXVI/OT5.189

T. Wöhr, G. Hagen, R. Moos:

Ammonia Sensor to Effectively Dose the Reducing Agent for NO<sub>x</sub> SCR Systems in Biomass Combustion Systems  
*Eurosenors XXXVI*, September 1-4, 2024, Debrecen, Hungary, p. 130-131, doi: 10.5162/EUROSENSORSXXXVI/OT5.99

R. Moos, L. Hennerici, E. Kita, N. Leupold, M. Linz, D. Paulus, J. Schneider, D. Schönauer-Kamin, M. Sozak, R. Werner, J. Kita:

Novel applications of the powder aerosol deposition method in the field of energy conversion and energy storage  
*14<sup>th</sup> International Conference on Ceramic Materials and Components for Energy and Environmental Systems*, Budapest, Hungary, 18-22 August 2024, p. 46

D. Paulus, D. Schönauer-Kamin, R. Moos:

Microstructural investigations on aerosol-deposited Calcium Cobaltite films revealing the outstanding thermoelectric properties and the deposition mechanism  
*14<sup>th</sup> International Conference on Ceramic Materials and Components for Energy and Environmental Systems*, Budapest, Hungary, 18-22 August 2024, p. 541

M. Sozak, S. Knies, J. Kita, M. Bianchini, R. Moos:

Powder aerosol deposited Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>/C composite cathode films for next generation of energy storage systems  
*14<sup>th</sup> International Conference on Ceramic Materials and Components for Energy and Environmental Systems*, Budapest, Hungary, 18-22 August 2024, p. 544

G. Hagen, J. Herrmann, T. Wöhr, B. Streibl, R. Moos:

Sensors in Biomass Combustion Exhaust  
*Future of Emission Control*, 21.-23.07.2024, Karlsruhe, Germany, Oral presentation, Proceedings P. 14

D. Schönauer-Kamin, R. Stephan, D. Paulus, R. Moos:

Thermoelectric and Morphological Properties of Powder-Aerosol Deposited Textured Calcium Cobaltite Ca<sub>3</sub>Co<sub>4</sub>O<sub>9</sub> Films  
*40<sup>th</sup> International Conference on Thermoelectrics - ICT/ECT2024*, June 30 - July 4, 2024, Cracow, Poland, p. 172

S. Biberger, M. Spies, K. Schötz, F.-J. Kahle, N. Leupold, R. Moos, H. Grüninger, A. Köhler, F. Panzer:

Improved Control of Perovskite Thin Film Fabrication via Reactive Spin coating based on Real-Time In-Situ Feedback from Optical Spectroscopy  
*26. International Conference on Science and Technology of Synthetic Electronic Materials (ICSM 24)*, 23-28 June 2024, Dresden, Germany, S-11-02

G. Hagen, B. Streibl, A. Mittereder, J. Herrmann, A. Müller, I. Hartmann, D. Brüggemann, R. Moos:

On the emissions of wood-log fueled fireplaces: correlation of continuous gas sensor data with particle spectra analysis  
*27<sup>th</sup> ETH Nanoparticles Conference*, Zurich, Switzerland, June 10-14, 2024

T. Wöhr, J. Kita, R. Moos, G. Hagen:

H-ZSM5-Zeolith für Ammoniak-Sensoren bei Reststoff-Feuerungen mit SCR-Abgasnachbehandlungssystemen  
*Sensoren und Messsysteme 2024*, 11.6.-12.6.2024, Nürnberg, A3.3, Proceedings, p. 80-82, doi: 10.5162/sensoren2024/A3.3

J. Herrmann, T. Wöhr, R. Moos, G. Hagen:

Optimierung von Hochtemperatur-Abgassensoren bei der Holzfeuerung: Korrektur der Sensorantwort durch ein internes Heizleistungssignal  
*Sensoren und Messsysteme 2024*, 11.6.-12.6.2024, Nürnberg, A3.4, Proceedings, p. 83-86, doi: 10.5162/sensoren2024/A3.4

J. Baumgärtner, R. Moos, J. Kita:

Miniaturisierter resonanter Wägesensor für die Simultane Thermische Analyse (STA)  
*Sensoren und Messsysteme 2024*, 11.6.-12.6.2024, Nürnberg, C3.3, Proceedings, p. 241-243, doi: 10.5162/sensoren2024/C3.3

## Year 2024

O. Guillon, C. Roitzheim, M. Finsterbusch, F. Tietz, D. Fattakhova-Rohlfing, K. Wätzig, J.P. Beaupain, C. Baumgärtner, J. Schlaier, S. Yanev, N. Zapp, H. Auer, M. Vinnichenko, K. Nikolowski, M. Partsch, M. Kusnezoff, K. J. Kim, H. Gobena, S. Weinmann, J. L. M. Rupp, L. Hennerici, M. Schamel, J. Kita, M. A. Danzer, R. Moos:

Oxide-Based Solid-State Batteries

*Advanced Automotive Battery Conference Europe*, 13-16 May 2024, Strasbourg, France

M. Sozak, L. Hennerici, M. Schamel, M. Linz, S. Knies, J. Kita, M. Bianchini, M.A. Danzer, R. Moos:

Room temperature fabrication of battery components via Powder Aerosol Deposition

*16<sup>th</sup> International Battery Conference*, April 10-11, 2024, Münster, Germany

T. Siegert, F. Haddadi Barzoki, M. Griesbach, C. Greve, R. Moos, E. M. Herzig, A. Köhler, H. Grüninger:

Influence of Particle Size on the Formation of Solid Solutions Between  $\text{MAPbI}_3$  and  $\text{MAPbBr}_3$

*DPG-Frühjahrstagung*, 17.03.-22.03.2024, Berlin, CPP 28.31

S. Biberger, M. Spies, K. Schötz, F.-J. Kahle, N. Leupold, R. Moos, H. Grüninger, A. Köhler, F. Panzer:

Optical In-Situ spectroscopy and reactive spin coating for improved control of perovskite thin film fabrication

*DPG-Frühjahrstagung*, 17.03.-22.03.2024, Berlin, EW 203

## Year 2023

### Peer Reviewed Journals

- C. Greve, P. Ramming, M. Griesbach, N. Leupold, R. Moos, A. Köhler, E. Herzig, F. Panzer, H. Grüninger:  
To Stop or to Shuttle Halides? The Role of an Ionic Liquid in Thermal Halide Mixing of Hybrid Perovskites  
*ACS Energy Letters*, **8**, 5041-5049 (2023), doi: 10.1021/acseenergylett.3c01878
- D. Paulus, J. Kita, R. Moos:  
Relaxation behavior of intrinsic compressive stress in powder aerosol co-deposited films: Rethinking PAD films as nanomaterials  
*Ceramics International*, **49**, 38375-38381 (2023), doi: 10.1016/j.ceramint.2023.09.065
- S. Walter, P. Schwanzler, G. Hagen, H.-P. Rabl, M. Dietrich, R. Moos:  
Soot Monitoring of Gasoline Particulate Filters Using a Radio-Frequency-Based Sensor  
*Sensors*, **23**, 7861 (2023), doi: 10.3390/s23187861
- S. Biberger, N. Leupold, C. Witt, C. Greve, P. Markus, P. Ramming, D. Lukas, K. Schötz, F.-J. Kahle, C. Zhu, G. Papastavrou, A. Köhler, E.M. Herzig, R. Moos, F. Panzer:  
First of Their Kind: Solar Cells with a Dry-Processed Perovskite Absorber Layer via Powder Aerosol Deposition and Hot-Pressing  
*Solar RRL*, **7**, 2300261 (2023), doi: 10.1002/solr.202300261
- S. Walter, G. Hagen, D. Koch, A. Geißelmann, R. Moos:  
On the Suitability of NO<sub>x</sub>-Storage-Catalysts for Hydrogen Internal Combustion Engines and a Radio Frequency-Based NO<sub>x</sub> Loading Monitoring  
*Topics in Catalysis*, **66**, 964-972 (2023), doi: 10.1007/s11244-022-01727-x
- V. Malashchuk, S. Walter, M. Engler, G. Hagen, G. Link, J. Jelonnek, F. Raß, R. Moos:  
Reducing Cold-Start Emissions by Microwave-Based Catalyst Heating: Simulation Studies  
*Topics in Catalysis*, **66**, 1031-1036 (2023), doi: 10.1007/s11244-023-01788-6
- T. Wöhr, J. Kita, R. Moos, G. Hagen:  
Capacitive, Highly Selective Zeolite-Based Ammonia Sensor for Flue Gas Applications  
*Chemosensors*, **11**, 413 (2023), doi: 10.3390/chemosensors11070413
- T. Nazarenius, J. Schneider, L. Hennerici, R. Moos, J. Kita:  
Energy estimation of the post-treatment process for powder aerosol deposited solid electrolyte films  
*Functional Materials Letters*, **16**, 2350014 (2023), doi: 10.1142/S1793604723500145
- T. Wöhr, J. Herrmann, J. Kita, R. Moos, G. Hagen:  
Methods to investigate the temperature distribution of heated ceramic gas sensors for high-temperature applications  
*Journal of Sensors and Sensor Systems*, **12**, 205-214 (2023), doi: 10.5194/jsss-12-205-2023
- M. Sozak, T. Nazarenius, J. Exner, J. Kita, R. Moos:  
Room temperature manufacture of dense NaSICON solid electrolyte films for all-solid-state-sodium batteries  
*Journal of Materials Science*, **58**, 10108-10119 (2023), doi: 10.1007/s10853-023-08642-w
- C. Steiner, T. Wöhr, M. Steiner, J. Kita, A. Müller, H. Eisazadeh, R. Moos, G. Hagen:  
Resistive Multi-Gas Sensor for Simultaneously Measuring the Oxygen Stoichiometry ( $\lambda$ ) and the NO<sub>x</sub> Concentration in Exhausts: Engine Tests under Dynamic Conditions  
*Sensors*, **23**, 5612 (2023), doi: 10.3390/s23125612
- C. Witt, K. Schötz, M. Kuhn, N. Leupold, S. Biberger, P. Ramming, F.-J. Kahle, A. Köhler, R. Moos, E.M. Herzig, F. Panzer:  
Orientation and Grain Size in MAPbI<sub>3</sub> Thin Films: Influence on Phase Transition, Disorder, and Defects  
*The Journal of Physical Chemistry C*, **127**, 10563-10573 (2023), doi: 10.1021/acs.jpcc.2c08968
- S. Müllner, T. Michlik, M. Reichel, T. Held, R. Moos, C. Roth:  
Effect of Water-Soluble CMC/SBR Binder Ratios on Si-rGO Composites Using  $\mu$ m- and nm-Sized Silicon as Anode Materials for Lithium-Ion Batteries  
*Batteries*, **9**, 248 (2023), doi: 10.3390/batteries9050248
- C. Steiner, S. Püls, M. Bektas, A. Müller, G. Hagen, R. Moos:  
Resistive, Temperature-Independent Metal Oxide Gas Sensor for Detecting the Oxygen Stoichiometry (Air-Fuel Ratio) of Lean Engine Exhaust Gases  
*Sensors*, **23**, 3914 (2023), doi: 10.3390/s23083914
- H. Hoffmann, M.C. Paulisch-Rinke, M. Gernhard, Y. Jännsch, J. Timm, C. Brandmeir, S. Lechner, R. Marschall, R. Moos, I. Manke, C. Roth:  
Multi-scale morphology characterization of hierarchically porous silver foam electrodes for electrochemical CO<sub>2</sub> reduction  
*Communications Chemistry*, **6**, 50 (2023), doi: 10.1038/s42004-023-00847-z
- N. Leupold, P. Ramming, I. Bauer, C. Witt, J. Jungklaus, R. Moos, H. Grüninger, F. Panzer:  
How Methylammonium Iodide Reactant Size Affects Morphology and Defect Properties of Mechanochemically Synthesized MAPbI<sub>3</sub> Powder  
*European Journal of Inorganic Chemistry*, **26**, e202200736 (2023), doi: 10.1002/ejic.202200736
- G. Hagen, J. Herrmann, X. Zhang, H. Kohler, I. Hartmann, R. Moos:  
Application of a Robust Thermoelectric Gas Sensor in Firewood Combustion Exhausts  
*Sensors*, **23**, 2930 (2023), doi: 10.3390/s23062930

## Year 2023

C. Steiner, G. Hagen, I. Kogut, H. Fritze, R. Moos:

Analysis of defect mechanisms in nonstoichiometric ceria-zirconia by the microwave cavity perturbation method  
*Journal of the American Ceramic Society*, **106**, 2875-2892 (2023), doi: 10.1111/jace.18938

R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:

Gauge to simultaneously determine the electrical conductivity, the Hall constant, and the Seebeck coefficient up to 800 °C  
*Journal of Sensors and Sensor Systems*, **12**, 69-84 (2023), doi: 10.5194/jsss-12-69-2023

K. Fykouras, J. Lahnsteiner, N. Leupold, P. Tinnemans, R. Moos, F. Panzer, G. de Wijs, M. Bokdam, H. Grüninger, A. Kentgens:

Disorder to order: how halide mixing in MAPb<sub>3-x</sub>Br<sub>x</sub> perovskites restricts MA dynamics  
*Journal of Materials Chemistry A*, **11**, 4587-4597 (2023), doi: 10.1039/D2TA09069D

J. Distler, T. Wöhr, R. Werner, M. Gerlach, M. Gollner, F. Linseis, J. Kita, R. Moos:

Miniaturized differential scanning calorimeter with an integrated mass sensing system: first steps  
*Journal of Sensors and Sensor Systems*, **12**, 9-19 (2023), doi: 10.5194/jsss-12-9-2023

V. Malashchuk, A. Jess, R. Moos:

Operando monitoring of gas drying by adsorption on supported ionic liquids: Determination of velocity of adsorption front by microwaves  
*Sensors and Actuators B: Chemical*, **380**, 133291 (2023), doi: 10.1016/j.snb.2023.133291

D. Kohlmann, H. Wulfmeier, M. Schewe, I. Kogut, C. Steiner, R. Moos, C. Rembe, H. Fritze:

Chemical expansion of CeO<sub>2-δ</sub> and Ce<sub>0.8</sub>Zr<sub>0.2</sub>O<sub>2-δ</sub> thin films determined by laser Doppler vibrometry at high temperatures and different oxygen partial pressures  
*Journal of Materials Science*, **58**, 1481-1504 (2023), doi: 10.1007/s10853-022-07830-4

## Doctoral Theses

T. Nazarenius:

Aerosolbasierte Kaltabscheidung zur industriellen Produktion von oxidkeramischen Festelektrolyten für metallische Lithiumakkumulatoren  
(Powder aerosol deposition for the industrial production of oxide ceramic solid electrolytes for metallic lithium accumulators)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 21, Shaker-Verlag, Düren (2023), ISBN: 978-3-8440-9142-7

T. Michlik:

Zink-Glas-Kompositelektroden für wiederaufladbare Zink-Luft-Batterien  
(Zinc-glass composite electrodes for rechargeable zinc-air batteries)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 20, Shaker-Verlag, Düren (2023), ISBN: 978-3-8440-9059-8

A. Ruchets:

Application of solid electrolyte gas sensors based on YSZ for dynamic electrochemical measurements  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 39, Shaker-Verlag, Düren (2023), ISBN: 978-3-8440-8889-2

## Invited Talks

The 19<sup>th</sup> International Meeting on Chemical Sensors, IMCS 19, Changchun, China, 4<sup>th</sup> - 8<sup>th</sup> August 2023

G. Hagen: *Sensors for Biomass Use in Energy Technology*

98. DKG-Jahrestagung, 27.03.-30.03.2023, Jena

R. Moos, L. Hennerici, E. Kita, N. Leupold, M. Linz, D. Paulus, J. Schneider, D. Schönauer-Kamin, M. Sozak, R. Werner, J. Kita:  
*Powder aerosol deposition (PAD): a promising coating tool (not only) for functional ceramics*

“Friday Talk”, Micro and Nanosystems Seminar, Zürich, Switzerland, 22.3.2023

R. Moos:

*Resistive gas dosimetry: A novel measurement method to measure small gas concentrations and quantities both accumulative and timely resolved*

Workshop on the stability of CO<sub>2</sub>R/COR systems, Toronto, March 9-10, 2023, online presentation

M. Hämmerle, R. Moos:

*CO<sub>2</sub>R: pulsed potential electrolysis for enhanced stability*

## Published Conference Contributions

P. Ramming, T. Siegert, S. Biberger, C. Witt, N. Leupold, R. Moos, H. Grüninger, F. Panzer, A. Köhler:

Perovskite Research Highlights  
12<sup>th</sup> SolTech Conference 2023, October 3-5, 2023, Würzburg, Germany, Book of Abstracts p. 12

S. Biberger, M. Spies, K. Schötz, F.-J. Kahle, N. Leupold, R. Moos, H. Grüninger, A. Köhler, F. Panzer:

Improved Control of Perovskite Thin Film Formation by Reactive Spin Coating and Real Time In-Situ Feedback  
12<sup>th</sup> SolTech Conference 2023, October 3-5, 2023, Würzburg, Germany, Book of Abstracts p. 22

T. Siegert, M. Griesbach, C. Greve, R. Moos, E. M. Herzig, F. Panzer, A. Köhler, H. Grüninger:

Influence of Particle Size on Halide Mixing Between MAPb<sub>3</sub> and MAPbBr<sub>3</sub>  
12<sup>th</sup> SolTech Conference 2023, October 3-5, 2023, Würzburg, Germany, Book of Abstracts p. 42

## Year 2023

T. Wöhrl, M. König, T. Ritter, A. Sauter, H. Eisazadeh, G. Hagen, R. Moos:

Konzepte zur Optimierung der Selektiven Katalytischen Reduktion (SCR) von Stickoxiden bei der Verbrennung biogener Rest- und Abfallstoffe  
*11. Statuskonferenz Bioenergie*, 20.-22.9.2023, Leipzig, p. 24-25

G. Hagen, J. Herrmann, T. Kern, T. Wöhrl, R. Moos:

Sensor Protection Caps: Development Aspects and Verification  
*Eurosensors XXXV*, September 10 - 13, 2023, Lecce, Italy  
also:

G. Hagen, J. Herrmann, T. Kern, T. Wöhrl, R. Moos:

Sensor Protection Caps: Development Aspects and Verification  
*Proceedings*, **97**, 161 (2024), doi: 10.3390/proceedings2024097161

R. Moos, A. Groß, D. Schönauer-Kamin:

Resistive Gas Dosimeters as a Novel Method to Measure Small Gas Concentrations and Quantities, Both Accumulative and Timely Resolved  
*Eurosensors XXXV*, September 10 - 13, 2023, Lecce, Italy  
also:

R. Moos, A. Groß, D. Schönauer-Kamin:

Resistive Gas Dosimeters as a Novel Method to Measure Small Gas Concentrations and Quantities, Both Accumulative and Timely Resolved  
*Proceedings*, **97**, 147 (2024), doi: 10.3390/proceedings2024097147

L. Hennerici, M. Linz, M. Schamel, T. Nazarenus, J. Kita, M.A. Danzer, R. Moos:

Powder Aerosol Deposition, a Novel Way for Processing Garnet Solid Electrolytes to fabricate All-Solid-State Batteries  
*The 4<sup>th</sup> World Conference on Solid Electrolytes for Advanced Applications: Garnets and Competitors*, 4-7 September 2023, Tromsø, Norway, P19, p.62.

S. Lang, L. Hennerici, M. Linz, D. Avadanii, J. Kita, D. Kramer, R. Moos, R. Mönig:

Characterisation of Electrodes, Electrolyte and Electrode/Electrolyte Stacks Obtained by Powder Aerosol Deposition  
*The 4<sup>th</sup> World Conference on Solid Electrolytes for Advanced Applications: Garnets and Competitors*, 4-7 September 2023, Tromsø, Norway, P22, p.65.

M. Hämmerle, K. Hilgert, R. Moos:

Simultaneous determination of laccase activity in a cuvette assay: photometric assay versus oxygen dipping probe  
*EBS 2023, 4<sup>th</sup> European Biosensor Symposium 2023*, August 27 - 30, 2023, Aachen, Germany, p.177

G. Hagen, T. Wöhrl, A. Müller, J. Herrmann, I. Hartmann, R. Moos:

Flue gas analysis of wood combustion  
*SMSI 2023 Sensor and Measurement Science International*, 08-11 May 2023, Nuremberg, Germany, doi: 10.5162/SMSI2023/D3.4

S. Walter, J. Kita, D. Schönauer-Kamin, G. Hagen, R. Moos:

Dielectric Properties of Materials used for a Radio-Frequency based NO<sub>x</sub> Dosimeter  
*SMSI 2023 Sensor and Measurement Science International*, 08-11 May 2023, Nuremberg, Germany, doi: 10.5162/SMSI2023/B4.4

J. Distler, R. Werner, M. Gerlach, M. Gollner, F. Linseis, J. Kita, R. Moos:

Development of a Miniaturized Combined DSC and TGA Sensor  
*SMSI 2023 Sensor and Measurement Science International*, 08-11 May 2023, Nuremberg, Germany, doi: 10.5162/SMSI2023/P07

T. Wöhrl, T. Ritter, G. Hagen, R. Moos:

Detection of the ammonia storage of vanadia-based SCR-catalysts by a radio-frequency method  
*SMSI 2023 Sensor and Measurement Science International*, 08-11 May 2023, Nuremberg, Germany, doi: 10.5162/SMSI2023/P08

D. Schönauer-Kamin, M. Linz, M. Herzing, R. Moos:

Zinc Oxide Dosimeter-type NO<sub>2</sub> Sensor Prepared by Discontinuous Powder Aerosol Deposition  
*SMSI 2023 Sensor and Measurement Science International*, 08-11 May 2023, Nuremberg, Germany, doi: 10.5162/SMSI2023/P29

C. Witt, K. Schötz, S. Biberger, N. Leupold, M. Kuhn, P. Ramming, E. M. Herzig, R. Moos, A. Köhler, F. Panzer:

Fully Dry-Processed and Powder-Based Halide Perovskite Solar Cells by Powder-Aerosol-Deposition and Hot-Pressing  
*2023 MRS Spring Meeting & Exhibit*, San Francisco, California, USA, April 10-14, 2023, Poster EL02.14.35

C. Witt, K. Schötz, M. Kuhn, N. Leupold, S. Biberger, P. Ramming, A. Köhler, R. Moos, E. M. Herzig, F. Panzer:

Understanding Structural Differences in Completely Dry-Processed MAPbI<sub>3</sub> Thin Films by Detailed Analyses of Temperature-Dependent Optical Spectroscopy  
*2023 MRS Spring Meeting & Exhibit*, San Francisco, California, USA, April 10-14, 2023, Poster EL02.09.28

S. Biberger, K. Schötz, N. Leupold, P. Ramming, M. Spies, R. Moos, A. Köhler, H. Grueninger, F. Panzer:

Using Multimodal In Situ Spectroscopy to Understand the Influence of the Ionic Liquid BMIMBF<sub>4</sub> on the Film Formation and Optoelectronic Properties of MAPbI<sub>3</sub> Thin Films  
*2023 MRS Spring Meeting & Exhibit*, San Francisco, California, USA, April 10-14, 2023, Oral Contribution EL02.13.03

R. Moos, L. Hennerici, E. Kita, N. Leupold, M. Linz, D. Paulus, J. Schneider, D. Schönauer-Kamin, M. Sozak, R. Werner, J. Kita:

Powder aerosol deposition (PAD): a promising coating tool (not only) for functional ceramics  
*98. DKG-Jahrestagung*, 27.03.-30.03.2023, Jena, p. 104

D. Paulus, J. Kita, R. Moos:

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Intrinsic compressive stress relaxation in ceramic films manufactured by powder aerosol deposition (PAD)

98. *DKG-Jahrestagung*, 27.03.-30.03.2023, Jena, p. 115

J. Schneider, J. Kita, R. Moos:

Rapid posttreatment of powder aerosol deposited garnet-type lithium ion conductor films using LED radiation

98. *DKG-Jahrestagung*, 27.03.-30.03.2023, Jena, p. 131

D. Schönauer-Kamin, S. Bresch, D. Paulus, R. Moos:

Powder-Aerosol deposited (PAD) calcium cobaltite as textured p-type thermoelectric material

98. *DKG-Jahrestagung*, 27.03.-30.03.2023, Jena, p. 132

M. Sozak, L. Hennerici, D. Paulus, J. Kita, R. Moos:

The effects of calcination parameters of garnet-type ALLZTO solid electrolyte powders on the deposition of thick films via powder aerosol deposition (PAD) method

98. *DKG-Jahrestagung*, 27.03.-30.03.2023, Jena, p. 140

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### Peer Reviewed Journals

- U. Eckstein, J. Exner, A. Bencan Golob, K. Ziberna, G. Drazic, H. Ursic, H. Wittkämper, C. Papp, J. Kita, R. Moos, K.G. Webber, N.H. Khansur:  
Temperature-dependent dielectric anomalies in powder aerosol deposited ferroelectric ceramic films  
*Journal of Materiomics*, **8**, 1239-1250 (2022), doi: 10.1016/j.jmat.2022.05.001
- C. Witt, N. Leupold, P. Ramming, K. Schötz, R. Moos, F. Panzer:  
How the Microstructure of MAPbI<sub>3</sub> Powder Impacts Pressure-Induced Compaction and Optoelectronic Thick-Film Properties  
*The Journal of Physical Chemistry C*, **126**, 15424-15435 (2022), doi: 10.1021/acs.jpcc.2c03329
- S. Biberger, K. Schötz, P. Ramming, N. Leupold, R. Moos, A. Köhler, H. Grüninger, F. Panzer:  
How the ionic liquid BMIMBF<sub>4</sub> influences the formation and optoelectronic properties of MAPbI<sub>3</sub> thin films  
*Journal of Materials Chemistry A*, **10**, 18038-18049 (2022), doi: 10.1039/d2ta04448j
- S. Bresch, B. Mieller, R. Moos, T. Rabe:  
Lowering the sintering temperature of calcium manganate for thermoelectric applications  
*AIP Advances*, **12**, 085116 (2022), doi: 10.1063/5.0098015
- Y. Jännsch, M. Hämmerle, E. Simon, M. Fleischer, R. Moos:  
Contributions of Pulsed Operation Along with Proper Choice of the Substrate for Stabilizing the Catalyst Performance in Electrochemical Reduction of CO<sub>2</sub> Toward Ethylene in Gas Diffusion Electrode Based Flow Cell Reactors  
*Energy Technology*, **10**, 2200046 (2022), doi: 10.1002/ente.202200046
- H. Wulfmeier, D. Kohlmann, T. Defferriere, C. Steiner, R. Moos, H.L. Tuller, H. Fritze:  
Thin-film chemical expansion of ceria based solid solutions: laser vibrometry study  
*Zeitschrift für Physikalische Chemie*, **236**, 1013-1053 (2022), doi: 10.1515/zpch-2021-3125
- T. Nazarenius, K. Schlesier, F. Lebeda, M. Retsch, R. Moos:  
Microstrain release decouples electronic and thermal conductivity in powder aerosol deposited films  
*Materials Letters*, **322**, 132461 (2022), doi: 10.1016/j.matlet.2022.132461
- R. Werner, J.S. Matejka, D. Schönauer-Kamin, R. Moos:  
From Thermoelectric Powder Directly to Thermoelectric Generators: Flexible Bi<sub>2</sub>Te<sub>3</sub> Films on Polymer Sheets Prepared by the Powder Aerosol Deposition Method at Room Temperature  
*Energy Technology*, **10**, 2101091 (2022), doi: 10.1002/ente.202101091
- S. Walter, P. Schwanzer, C. Steiner, G. Hagen, H.-P. Rabl, M. Dietrich, R. Moos:  
Mixing Rules for an Exact Determination of the Dielectric Properties of Engine Soot Using the Microwave Cavity Perturbation Method and Its Application in Gasoline Particulate Filters  
*Sensors*, **22**, 3311 (2022), doi: 10.3390/s22093311
- M. Linz, J. Exner, T. Nazarenius, J. Kita, R. Moos:  
Mobile sealing and repairing of damaged ceramic coatings by powder aerosol deposition at room temperature  
*Open Ceramics*, **10**, 100253 (2022), doi: 10.1016/j.oceram.2022.100253
- T. Nazarenius, K. Schlesier, S. Biberger, J. Exner, J. Kita, A. Köhler, R. Moos:  
Posttreatment of powder aerosol deposited oxide ceramic films by high power LED  
*International Journal of Applied Ceramic Technology*, **19**, 1540-1553 (2022), doi: 10.1111/ijac.13977
- S. Bresch, B. Mieller, P. Mrkwitschka, R. Moos, T. Rabe:  
Glass-ceramic composites as insulation material for thermoelectric oxide multilayer generators  
*Journal of the American Ceramic Society*, **105**, 2140-2149 (2022), doi: 10.1111/jace.18235
- C. Steiner, G. Hagen, I. Kogut, H. Fritze, R. Moos:  
Analysis of defect chemistry and microstructural effects of non-stoichiometric ceria by the high-temperature microwave cavity perturbation method  
*Journal of the European Ceramic Society*, **42**, 499-511 (2022), doi: 10.1016/j.jeurceramsoc.2021.08.053

### Doctoral Theses

- S. Chalupczok:  
Untersuchung einer voltammetrischen Methode zur pH-Wert-Messung mit protonenleitenden Funktionsschichten  
(Investigations on a voltammetric method for pH measurements with proton-conducting functional layers)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 38, Shaker-Verlag, Düren (2022), ISBN: 978-3-8440-8865-6
- S. Bresch:  
Oxidkeramische Werkstoffe und Folien für thermoelektrische Multilayergeneratoren  
(Oxide ceramic materials and tapes for thermoelectric multilayer generators)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 19, Shaker-Verlag, Düren (2022), ISBN: 978-3-8440-8802-1
- Y. Jännsch:

## Year 2022

Elektrochemische CO<sub>2</sub>-Reduktion durch gepulste Elektrolyse: Entwicklung und Optimierung eines Ethen-selektiven, langzeitstabilen und skalierbaren Prozesses

(Electrochemical CO<sub>2</sub> reduction by pulsed electrolysis: Development and optimization of an ethene-selective, long-term stable and scalable process)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 18, Shaker-Verlag, Düren (2022), ISBN: 978-3-8440-8770-3

## Invited Talks

CICMT 2022 - Ceramic Interconnect and Ceramic Microsystems Technologies, Vienna, July 13-15, 2022, oral presentation

J. Kita, T. Nazarenius, L. Hennerici, N. Leupold, M. Linz, D. Paulus, M. Sozak, R. Moos:

*The Powder Aerosol Deposition Method as Supplementary Process for Additive Manufacturing*

Deutsche Keramische Gesellschaft e.V. (DKG), Fachausschuss Funktionskeramik, Jena, 2.6.2022 (online)

R. Moos: *Die Pulveraerosol-Depositionsmethode: Überblick über ein Verfahren zur Herstellung dichter Funktionskeramiksichten bei Raumtemperatur*

PCC - Resolving challenges and new breakthroughs?, 29.03.2022, online

T. Nazarenius, J. Kita, R. Moos: *Fabrication of Thin Ceramic Electrolytes at Room Temperature via Powder Aerosol Deposition Method*

97. DKG-Jahrestagung, 07.03.-09.03.2022, online

J. Kita: *Ceramic sensors for materials characterization*

## Published Conference Contributions

J. Herrmann, T. Kern, T. Wöhrl, R. Moos, G. Hagen:

Simulationsgestützte Entwicklung individueller Gassensor-Schutzkappen

16. *Dresdner Sensor-Symposium*, 5.-7. Dezember 2022, Dresden, p. 207-208, doi: 10.5162/16dss2022/P42

T. Wöhrl, G. Hagen, R. Moos:

Impedanzbasierter Ammoniaksensor für SCR-Anwendungen

16. *Dresdner Sensor-Symposium*, 5.-7. Dezember 2022, Dresden, p. 205-206, doi: 10.5162/16dss2022/P41

N. Donker, D. Schönauer-Kamin, R. Moos:

Selektiver NH<sub>3</sub>-Mischpotentialsensor mit einer mittels der Pulveraerosoldepositionsmethode hergestellten Festelektrolytschicht

16. *Dresdner Sensor-Symposium*, 5.-7. Dezember 2022, Dresden, p. 10-11, doi: 10.5162/16dss2022/1.2

N. Warnecke, H. Wulfmeier, C. Steiner, R. Moos, H. Fritze:

Sauerstoffsensor- und -pumpsystem auf der Basis von Yttriumoxid-stabilisierten Zirkoniumdioxid-Schichten

16. *Dresdner Sensor-Symposium*, 5.-7. Dezember 2022, Dresden

L. Hennerici, M. Sozak, M. Linz, M. Schamel J. Kita, M.A. Danzer, R. Moos, S. Lang, D. Kramer, R. Mönig:

Powder Aerosol Deposition, a Novel Way to Manufacture All-Solid-State Batteries

*Solid-State Batteries V, an International Bunsen Discussion Meeting*, Nov 22-24, 2022, Frankfurt a. Main, Germany

T. Wöhrl, G. Hagen, R. Moos:

Concept of an impedance-based ammonia sensor for SCR applications

*Eurosensors XXXIV*, Sep. 19-23, 2022, Leuven, Belgium

R. Moos, R. Werner, J. Distler, M. Gerlach, M. Gollner, F. Linseis, J. Kita:

Miniaturized differential scanning calorimeter (DSC) with high resolution and high heating rates

*Eurosensors XXXIV*, Sep. 19-23, 2022, Leuven, Belgium

J. Distler, T. Wöhrl, R. Werner, M. Gerlach, M. Gollner, V. Linseis, F. Linseis, J. Kita, R. Moos:

Miniaturized DSC device with integrated weighing system: First steps

*ESTAC13 - The 13<sup>th</sup> European Symposium on Thermal Analysis and Calorimetry*, 19.-22.9.2022, Palermo, Italy, p. 76

M. Gerlach, R. Werner:

Chip-based Calorimeter in combination with several sensor layouts inclusive related investigations

*ESTAC13 - The 13<sup>th</sup> European Symposium on Thermal Analysis and Calorimetry*, 19.-22.9.2022, Palermo, Italy, p. 26

R. Werner, J. S. Matejka, D. Schönauer-Kamin, R. Moos:

Flexible Bi<sub>2</sub>Te<sub>3</sub> Films on Polymer Sheets Prepared by the Powder Aerosol Deposition Method at Room Temperature

*18<sup>th</sup> European Conference on Thermoelectrics*, Barcelona, Spain, September 14 - 16, 2022, Poster-ID 05075

S. Bresch, R. Moos, P. Stargardt, B. Mieller:

Comparison of design concepts for ceramic oxide thermoelectric multilayer generators

*18<sup>th</sup> European Conference on Thermoelectrics*, Barcelona, Spain, September 14 - 16, 2022, Poster-ID 05076

R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:

Measurement device for measuring the electrical conductivity, the Hall constant and the Seebeck coefficient up to 800 °C

*18<sup>th</sup> European Conference on Thermoelectrics*, Barcelona, Spain, September 14 - 16, 2022, Poster-ID 05077

D. Schönauer-Kamin, K. Hetzel, S. Bresch, R. Moos:

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- Powder-Aerosol deposited (PAD) calcium manganate as n-type thermoelectric material  
*18<sup>th</sup> European Conference on Thermoelectrics*, Barcelona, Spain, September 14 - 16, 2022, Poster-ID 05138
- S. Walter, G. Hagen, D.T. Koch, A. Geißelmann, R. Moos:  
On the Suitability of NO<sub>x</sub>-Storage-Catalysts for Hydrogen Internal Combustion Engines and a Radio Frequency-Based NO<sub>x</sub> Loading Monitoring  
*CAPoC12 - 12<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control*, Brussels, Belgium, Aug. 29 - 31, 2022, p. 154-167
- V. Malashchuk, S. Walter, G. Hagen, M. Engler, G. Link, J. Jelonnek, F. Raß, R. Moos:  
Reducing Cold-Start-Emissions by Microwave-Based Catalyst Heating: Simulative Studies  
*CAPoC12 - 12<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control*, Brussels, Belgium, Aug. 29 - 31, 2022, p. 208-217
- H. Wulfmeier, D. Kohlmann, T. Defferriere, C. Steiner, M. Schewe, C. Rembe, R. Moos, H.L. Tuller, H. Fritze:  
Chemical expansion of cerium oxide based thin films  
*Solid State Ionics 23*, July 17-22, 2022, Boston, USA, DT24.02
- C. Berger, R. Merkle, J. Exner, R. Moos, J. Maier:  
Proton Conductivity and Mobility in Triple-Conducting Perovskites Ba<sub>0.95</sub>La<sub>0.05</sub>Fe<sub>1-x</sub>(Y,Zn)<sub>x</sub>O<sub>3-δ</sub>  
*Solid State Ionics 23*, July 17-22, 2022, Boston, USA, DT16.01
- J. Kita, T. Nazarenus, L. Hennerici, N. Leupold, M. Linz, D. Paulus, M. Sozak, R. Moos:  
The Powder Aerosol Deposition Method as Supplementary Process for Additive Manufacturing  
*CICMT 2022 - Ceramic Interconnect and Ceramic Microsystems Technologies*, Vienna, July 13-15, 2022
- J. Kita, T. Nazarenus, D. Paulus, N. Leupold, M. Linz, M. Sozak, L. Hennerici, R. Moos:  
The Powder Aerosol Deposition Method – Possibilities and Actual Limitations  
*Ceramics in Europe*, July 10-14, 2022, Cracow, Poland, book of abstracts, p. 103
- M. Linz, J. Kita, R. Moos:  
Discontinuous Powder Aerosol Deposition Method: Formation of ceramic films at room temperature using small powder quantities  
*Ceramics in Europe*, July 10-14, 2022, Cracow, Poland, book of abstracts, p. 112
- D. Paulus, J. Kita, R. Moos:  
Influence of powder composition on the internal stresses and thermal annealing behavior of ceramic films formed by Powder Aerosol Co-Deposition  
*Ceramics in Europe*, July 10-14, 2022, Cracow, Poland, book of abstracts, p. 241
- S. Bresch, P. Stargardt, J. Töpfer, R. Moos, B. Mieller:  
Thermoelectric multilayer generators: development from oxide powder to demonstrator  
*Ceramics in Europe*, July 10-14, 2022, Cracow, Poland, book of abstracts, p. 277
- T. Wöhr, G. Hagen, R. Moos, F. Noack, D. Bleicker, I. Hartmann, M. König:  
Neue Sensorik für die Prozessoptimierung von SCR-Verfahren  
*DBFZ Jahrestagung 2022, Thema „Green Deal & beyond - Der Beitrag biomassebasierter Forschung und Innovation“*, 21.-23. Juni 2022, Leipzig
- Y. Jännsch, M. Hämmerle, E. Simon, M. Fleischer, R. Moos:  
Optimizing a Gas Diffusion Electrode for Stable CO<sub>2</sub>RR to Ethylene  
*32<sup>nd</sup> Topical Meeting of the International Society of Electrochemistry*, June 19-22, 2022, Stockholm, Sweden, Poster s3-013
- H. Hoffmann, M. C. Paulisch, Y. Jännsch, R. Moos, I. Manke, C. Roth:  
Development of a Modular Operando Cell for Radiography Analysis of Gas Diffusion Electrodes in Gas-consuming Reactions  
*Electrochemical Cell Concepts Colloquium – E3C*, 19.5.2022, virtual conference, oral presentation
- D. Schönauer-Kamin, R. Wagner, W. Bäther, R. Moos:  
Dosimeterartige Sensoren zur Detektion krebserzeugender Stoffe  
*Sensoren und Messsysteme 2022*, 10.5.-11.5.2022, Nürnberg, Keynote Talk, A 3.1  
ITG-Fachbericht 303, Beiträge der 21. ITG/GMA-Fachtagung, VDE-Verlag, Berlin, ISBN 978-3-8007-5835-7, S. 50-52
- T. Wöhr, M. Steiner, J. Herrmann, G. Hagen, J. Kita, R. Moos, F. Noack, D. Bleicker:  
Kombinierter Stickoxid- und Sauerstoffsensoren in Planartechnik  
*Sensoren und Messsysteme 2022*, 10.5.-11.5.2022, Nürnberg, Talk, A 3.3  
ITG-Fachbericht 303, Beiträge der 21. ITG/GMA-Fachtagung, VDE-Verlag, Berlin, ISBN 978-3-8007-5835-7, S. 55-56
- J. Distler, T. Wöhr, R. Werner, R. Moos, J. Kita, M. Gerlach, M. Gollner, V. Linseis, F. Linseis:  
Miniaturisiertes DSC-Gerät mit integrierter Wägeeinrichtung: Erste Schritte  
*Sensoren und Messsysteme 2022*, 10.5.-11.5.2022, Nürnberg, Keynote Talk, C 2.1  
ITG-Fachbericht 303, Beiträge der 21. ITG/GMA-Fachtagung, VDE-Verlag, Berlin, ISBN 978-3-8007-5835-7, S. 333-335
- V. Malashchuk, A. Jess, R. Moos:  
Berührungslose Prozesszustandsdiagnose von Gasreinigungsprozessen mittels immobilisierter ionischer Flüssigkeitsphase unter Verwendung der Resonanzstörkörpermethode  
*Sensoren und Messsysteme 2022*, 10.5.-11.5.2022, Nürnberg, Talk, C 4.4  
ITG-Fachbericht 303, Beiträge der 21. ITG/GMA-Fachtagung, VDE-Verlag, Berlin, ISBN 978-3-8007-5835-7, S. 387-389

## Year 2022

S. Walter, P. Schwanzer, G. Hagen, H.-P. Rabl, M. Dietrich, R. Moos:  
Combined Ash and Soot Monitoring in Gasoline Particulate Filters with a Radio-Frequency-Based Sensor  
*2022 SAE World Congress Experience*, April 5-7, 2022, Detroit, Michigan, USA

T. Nazarenius, J. Kita, R. Moos:  
Fabrication of Thin Ceramic Electrolytes at Room Temperature via Powder Aerosol Deposition Method  
*PCC - Resolving challenges and new breakthroughs?*, 29.03.2022, online, oral presentation

J. Kita:  
Ceramic sensors for materials characterization  
*97. DKG-Jahrestagung*, 07.03.-09.03.2022, online, oral presentation, Book of Abstracts, p. 74

N. Leupold, D. Nägele, D. Lukas, S. Biberger, F. Panzer, R. Moos:  
Powder aerosol deposition of lead halide perovskites for optoelectronic applications  
*97. DKG-Jahrestagung*, 07.03.-09.03.2022, online, oral presentation, Book of Abstracts, p. 86

M. Sozak, T. Nazarenius, J. Exner, J. Kita, R. Moos:  
Fabrication of dense NaSICON solid electrolyte films via aerosol deposition method  
*97. DKG-Jahrestagung*, 07.03.-09.03.2022, online, oral presentation, Book of Abstracts, p. 132

## Year 2021

### Peer Reviewed Journals

- A. Ruchets, N. Donker, J. Zosel, D. Schönauer-Kamin, R. Moos, U. Guth, M. Mertig:  
CO Gas Detection on Pt|YSZ|Pt Solid Electrolyte Sensors by Methods Based on Dynamic Voltage Variations  
*Journal of The Electrochemical Society*, **168**, 117506 (2021), doi: 10.1149/1945-7111/ac2fc5
- J. Exner, M. Linz, J. Kita, R. Moos:  
Making powder aerosol deposition accessible for small amounts: A novel and modular approach to produce dense ceramic films  
*International Journal of Applied Ceramic Technology*, **18**, 2178-2196 (2021), doi: 10.1111/ijac.13841
- P. Ramming, N. Leupold, K. Schötz, A. Köhler, R. Moos, H. Grüninger, F. Panzer:  
Suppressed ion migration in powder-based perovskite thick films using an ionic liquid  
*Journal of Materials Chemistry C*, **9**, 11827-11837 (2021), doi: 10.1039/D1TC01554K
- I. Kogut, C. Steiner, H. Wulfmeier, A. Wollbrink, G. Hagen, R. Moos, H. Fritze:  
Comparison of the electrical conductivity of bulk and film  $Ce_{1-x}Zr_xO_{2-\delta}$  in oxygen-depleted atmospheres at high temperatures  
*Journal of Materials Science*, **56**, 17191-17204 (2021), doi: 10.1007/s10853-021-06348-5
- Y. Jännsch, M. Hämmerle, J. Leung, E. Simon, M. Fleischer, R. Moos:  
Gas evolution in electrochemical flow cell reactors induces resistance gradients with consequences for the positioning of the reference electrode  
*RSC Advances*, **11**, 28189-28197 (2021), doi: 10.1039/D1RA05345K
- R. Wagner, D. Schönauer-Kamin, W. Bätcher, R. Moos:  
Concept study with experimental proof for a new type of detector for gas chromatography  
*Sensors and Actuators B: Chemical*, **346**, 130490 (2021), doi: 10.1016/j.snb.2021.130490
- N. Leupold, A.L. Seibel, R. Moos, F. Panzer:  
Electrical Conductivity of Halide Perovskites Follows Expectations from Classical Defect Chemistry  
*European Journal of Inorganic Chemistry*, **2021**, 2882-2889 (2021), doi: 10.1002/ejic.202100381
- M. Linz, J. Exner, J. Kita, F. Bühner, M. Seipenbusch, R. Moos:  
Discontinuous Powder Aerosol Deposition: An Approach to Prepare Films Using Smallest Powder Quantities  
*Coatings*, **11**, 844 (2021), doi: 10.3390/coatings11070844
- T. Nazareus, Y. Sun, J. Exner, J. Kita, R. Moos:  
Powder Aerosol Deposition as a Method to Produce Garnet-Type Solid Ceramic Electrolytes: A Study on Electrochemical Film Properties and Industrial Application  
*Energy Technology*, **9**, 2100211 (2021), doi: 10.1002/ente.202100211
- P. Schwanzer, M. Schillinger, J. Mieslinger, S. Walter, G. Hagen, S. Märkl, G. Haft, M. Dietrich, R. Moos, M. Gaderer, H.-P. Rabl:  
A Synthetic Ash-Loading Method for Gasoline Particulate Filters with Active Oil Injection  
*SAE International Journal of Engines*, **14**, 493-505 (2021), doi: 10.4271/03-14-04-0029
- P. Glosse, S. Denneler, O. Stier, R. Moos:  
Investigation of the Powder Aerosol Deposition Method Using Shadowgraph Imaging  
*Materials*, **14**, 2502 (2021), doi: 10.3390/ma14102502
- N. Leupold, S. Denneler, G. Rieger, R. Moos:  
Powder Treatment for Increased Thickness of Iron Coatings Produced by the Powder Aerosol Deposition Method and Formation of Iron–Alumina Multilayer Structures  
*Journal of Thermal Spray Technology*, **30**, 480-487 (2021), doi: 10.1007/s11666-020-01098-3
- N. Leupold, F. Panzer:  
Recent Advances and Perspectives on Powder-Based Halide Perovskite Film Processing  
*Advanced Functional Materials*, **31**, 2007350 (2021), doi: 10.1002/adfm.202007350
- R. Wang, R. Moos:  
Electrical conductivity determination of semiconductors by utilizing photography, finite element simulation and resistance measurement  
*Journal of Materials Science*, **56**, 10449-10457 (2021), doi: 10.1007/s10853-021-05949-4
- R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:  
Novel, low-cost device to simultaneously measure the electrical conductivity and the Hall coefficient from room temperature up to 600 °C  
*Journal of Sensors and Sensor Systems*, **10**, 71-81 (2021), doi: 10.5194/jsss-10-71-2021
- V. Malashchuk, A. Jess, R. Moos:  
Determination of water loading of supported ionic liquids by microwave analysis - A contribution for operando monitoring of gas drying by adsorption  
*Sensors and Actuators B: Chemical*, **335**, 129646 (2021), doi: 10.1016/j.snb.2021.129646
- I. Kogut, A. Wollbrink, C. Steiner, F.-E. El Azzouzi, R. Moos, H. Fritze:  
Linking the Electrical Conductivity and Non-Stoichiometry of Thin Film  $Ce_{1-x}Zr_xO_{2-\delta}$  by a Resonant Nanobalance Approach  
*Materials*, **14**, 748 (2021), doi: 10.3390/ma14040748

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H. Grüniger, M. Bokdam, N. Leupold, P. Tinnemans, R. Moos, G.A. De Wijs, F. Panzer, A.P.M. Kentgens:  
Microscopic (Dis)order and Dynamics of Cations in Mixed FA/MA Lead Halide Perovskites  
*The Journal of Physical Chemistry C*, **125**, 1742-1753 (2021), doi: 10.1021/acs.jpcc.0c10042

S. Bresch, B. Mieller, D. Schönauer-Kamin, R. Moos, T. Reimann, F. Giovannelli, T. Rabe:  
Influence of pressure and dwell time on pressure-assisted sintering of calcium cobaltite  
*Journal of the American Ceramic Society*, **104**, 917-927 (2021), doi: 10.1111/jace.17541

## Doctoral Theses

N. Müller:  
Untersuchungen zur Teilentladungsresistenz von Polymeren  
(Investigations on the partial discharge resistance of polymers)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 17, Shaker-Verlag, Düren (2021), ISBN: 978-3-8440-8168-8

R. Wagner:  
Zinkoxid als Material zur resistiven Detektion von NO<sub>2</sub> bei Raumtemperatur  
(Zinc oxide as a material to detect resistively NO<sub>2</sub> at room temperature)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 35, Shaker-Verlag, Düren (2021), ISBN: 978-3-8440-8039-1

## Invited Talks

*Eurosensors 2021 Virtual Meeting*, online, 7.9.2021  
R. Moos: *Powder Aerosol Deposition: A novel technique to manufacture sensors and functional devices*

*Solid State Proton Conductors (SSPC-20)*, September 27 - October 1, 2021, online conference  
T. Nazarenius, J. Kita, R. Moos, J. Exner: *Making Thin and Dense Ceramic Membranes at Room Temperature using Powder Aerosol Deposition*

## Published Conference Contributions

R. Moos, J. Kita, R. Werner, M. Gerlach, M. Gollner, F. Linseis:  
A novel fully LTCC-based differential scanning calorimeter with high resolution and high heating rates  
*PACRIM 14, The 14<sup>th</sup> Pacific Rim Conference of Ceramic Societies*, Vancouver (virtual), USA, 13.12.-16.12.2021, p. 117, PACRIM-449-2021

C. Steiner, I. Kogut, G. Hagen, H. Fritze, R. Moos:  
Investigation of the Defect-Chemistry of Ceria-Zirconia Mixed Oxides (CZO) Using Microwaves  
*PACRIM 14, The 14<sup>th</sup> Pacific Rim Conference of Ceramic Societies*, Vancouver (virtual), USA, 13.12.-16.12.2021, p. 113, PACRIM-434-2021

J. Exner, M. Linz, J. Kita, R. Moos:  
µPAD makes Powder Aerosol Deposition accessible: A modular and inexpensive approach to produce dense ceramic films at room temperature  
*PACRIM 14, The 14<sup>th</sup> Pacific Rim Conference of Ceramic Societies*, Vancouver (virtual), USA, 13.12.-16.12.2021, p. 101, PACRIM-378-2021

D. Paulus, J. Exner, J. Kita, R. Moos:  
Influence of filler materials on the internal stresses and thermal annealing behavior of ceramic films formed by Powder Aerosol Deposition  
*PACRIM 14, The 14<sup>th</sup> Pacific Rim Conference of Ceramic Societies*, Vancouver (virtual), USA, 13.12.-16.12.2021, p. 86, PACRIM-310-2021

T. Nazarenius, J. Exner, Y. Sun, J. Kita, R. Moos:  
Powder Aerosol Deposition Method: A pathway for the large-scale production of solid oxide electrolyte films for lithium metal batteries?  
*PACRIM 14, The 14<sup>th</sup> Pacific Rim Conference of Ceramic Societies*, Vancouver (virtual), USA, 13.12.-16.12.2021, p. 50, PACRIM-151-2021

T. Wöhrl, J. Herrmann, G. Hagen, J. Kita, R. Moos:  
Temperaturverteilung beheizter keramischer Sensorelemente innerhalb eines Gehäuses – Experimentelle Untersuchungen  
*15. Dresdner Sensor-Symposium*, 6.-8. Dezember 2021, Dresden (virtuell), p. 321-322, doi: 10.5162/15dss2021/P10.1

R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:  
Entwicklung eines Hochtemperaturmessgerätes für die elektrische Leitfähigkeit, die Hall-Konstante und den Seebeck-Koeffizienten  
*15. Dresdner Sensor-Symposium*, 6.-8. Dezember 2021, Dresden (virtuell), p. 303-304, doi: 10.5162/15dss2021/P9.3

R. Moos:  
Die Pulveraerosoldepositions-methode - ein neues Verfahren zur Herstellung dichter Sensorschichten bei Raumtemperatur  
*15. Dresdner Sensor-Symposium*, 6.-8. Dezember 2021, Dresden (virtuell), p. 72-74, doi: 10.5162/15dss2021/4.5

N. Leupold, A. Seibel, R. Moos, F. Panzer:  
Iodine Partial Pressure Dependent Electrical Conductivity of Halide Perovskites in the Framework of Defect Chemistry  
*nanoGe Fall Meeting 2021*, 18.10.-22.10.2021, online, oral presentation

T. Nazarenius, J. Kita, R. Moos, J. Exner:  
Making Thin and Dense Ceramic Membranes at Room Temperature using Powder Aerosol Deposition

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SSPC-20 Bad Aibling, September 27 - October 1, 2021, online conference, Book of Abstracts p. 60

D. Schönauer-Kamin, R. Wagner, W. Bätther, R. Moos:

Gas Dosimeters As Detector for Gas Chromatography

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS2021*, online conference, May 30 - June 6, 2021, oral presentation, IMCS 03-1440

See also: *ECS Meeting Abstracts*, MA2021-01, 1440 (2021), doi: 10.1149/MA2021-01561440mtgabs

T. Ritter, G. Hagen, R. Moos:

Dynamic Catalyst Conversion Measurement Using One Single Sensor

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS2021*, online conference, May 30 - June 6, 2021, oral presentation, IMCS 03-1487

See also: *ECS Meeting Abstracts*, MA2021-01, 1487 (2021), doi: 10.1149/MA2021-01561487mtgabs

N. Donker, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

NO<sub>x</sub> Detection By Pulse Polarization: Influence of Gold Electrodes

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS2021*, online conference, May 30 - June 6, 2021, oral presentation, IMCS 03-1501

See also: *ECS Meeting Abstracts*, MA2021-01, 1501 (2021), doi: 10.1149/MA2021-01561501mtgabs

D. Schönauer-Kamin, R. Moos:

Explanation of the Non-Linear Electrical Behavior of a Resistive NO<sub>x</sub> Dosimeter By Operando DRIFT Spectroscopy

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS2021*, online conference, May 30 - June 6, 2021, oral presentation, IMCS 03-1503

See also: *ECS Meeting Abstracts*, MA2021-01, 1503 (2021), doi: 10.1149/MA2021-01561503mtgabs

C. Steiner, V. Malashchuk, G. Hagen, D. Kubinski, R. Moos:

Microwave-Based State Diagnosis for Three-Way Catalysts – A Promising Technology for Future Gasoline Exhaust Gas Aftertreatment

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS2021*, online conference, May 30 - June 6, 2021, oral presentation, IMCS 05-1582

See also: *ECS Meeting Abstracts*, MA2021-01, 1582 (2021), doi: 10.1149/MA2021-01561582mtgabs

J. Herrmann, T. Wöhrl, R. Werner, G. Hagen, J. Kita, R. Moos:

Experimental Verification of the Temperature Homogeneity of Heated Gas Sensor Transducers Inside a Protection Cap

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS2021*, online conference, May 30 - June 6, 2021, oral presentation, IMCS 05-1580

See also: *ECS Meeting Abstracts*, MA2021-01, 1580 (2021), doi: 10.1149/MA2021-01561580mtgabs

A. Ruchets, N. Donker, D. Schönauer-Kamin, R. Moos, U. Guth, M. Mertig:

Convection Influence on Redox Potential Measurements at Hot Platinum Electrodes

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS2021*, online conference, May 30 - June 6, 2021, oral presentation, IMCS 03-1520

See also: *ECS Meeting Abstracts*, MA2021-01, 1520 (2021), doi: 10.1149/MA2021-01561520mtgabs

R. Moos, M. Bektas, G. Hagen, J. Kita, D. Schönauer-Kamin, D. Hanft, J. Exner:

How to Make Ceramic Gas Sensor Films at Room Temperature - the Powder Aerosol Deposition

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS2021*, online conference, May 30 - June 6, 2021, oral presentation, IMCS 03-1521

See also: *ECS Meeting Abstracts*, MA2021-01, 1521 (2021), doi: 10.1149/MA2021-01561521mtgabs

R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:

Adding Seebeck coefficient measurements to an existing high temperature device for Hall constant and electrical conductivity measurements

*SMSI Sensor and Measurement Science International*, Virtual Conference, 03-06 May 2021, Nuremberg, Germany, doi: 10.5162/SMSI2021/A6.2

A. Ruchets, N. Donker, D. Schönauer-Kamin, R. Moos, J. Zosel, U. Guth, M. Mertig:

Multiple gas detection by dynamic electrochemical methods

*SMSI Sensor and Measurement Science International*, Virtual Conference, 03-06 May 2021, Nuremberg, Germany, doi: 10.5162/SMSI2021/B2.1

N. Donker, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

Pulsed polarization on Au|YSZ-NO<sub>x</sub>-sensors with and without catalytic layer

*SMSI Sensor and Measurement Science International*, Virtual Conference, 03-06 May 2021, Nuremberg, Germany, doi: 10.5162/SMSI2021/B2.2

J. Herrmann, G. Hagen, J. Kita, F. Noack, D. Bleicker, R. Moos:

Impedimetric NO<sub>x</sub> sensor for exhaust applications with internal lambda correction

*SMSI Sensor and Measurement Science International*, Virtual Conference, 03-06 May 2021, Nuremberg, Germany, doi: 10.5162/SMSI2021/B2.3

S. Walter, C. Steiner, G. Hagen, R. Moos:

Determination of the Dielectric Properties of Ceria and Soot Powders by the Microwave Cavity Perturbation Method

*SMSI Sensor and Measurement Science International*, Virtual Conference, 03-06 May 2021, Nuremberg, Germany, doi: 10.5162/SMSI2021/B5.1

V. Malashchuk, A. Jess, R. Moos:

Operando State Diagnosis of Supported Ionic Liquid Phase Gas Purification Processes by a Resonant Perturbation Method

*SMSI Sensor and Measurement Science International*, Virtual Conference, 03-06 May 2021, Nuremberg, Germany, doi: 10.5162/SMSI2021/C6.2

J. Herrmann, T. Kern, G. Hagen, R. Moos:

Influence of the Gas Velocity on the Temperature Homogeneity of Transducers for Gas Sensors

*SMSI Sensor and Measurement Science International*, Virtual Conference, 03-06 May 2021, Nuremberg, Germany, doi: 10.5162/SMSI2021/B7.2

J. Herrmann, G. Hagen, J. Kita, R. Moos, D. Bleicker, F. Noack:

Konzept eines Multigasensors zur Erfüllung strengster Emissionsanforderungen an Verbrennungsmotoren

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Concept of a Multi-Gas Sensor to Meet the Strictest Emission Requirements for Combustion Engines  
42. Internationales Wiener Motorensymposium, 28.–30. April 2021, Wien, Österreich

Y. Jännsch, M. Hämmerle, R. Moos:

Electrochemical CO<sub>2</sub> Reduction to Ethylene via a CuO Nanocatalyst with Focus on Long-term Stability and Scalability  
*International Conference on Electrocatalysis for Renewable Energy*, 29.03 - 31.03.2021, Oral presentation, Online

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### Peer Reviewed Journals

R. Wagner, D. Schönauer-Kamin, R. Moos:

Influence of Humidity and Different Gases on a Resistive Room Temperature NO<sub>2</sub> Gas Dosimeter Based on Al-Doped ZnO for ppb-Concentration Detection  
*Journal of The Electrochemical Society*, **167**, 167516 (2020), doi: 10.1149/1945-7111/abcb65

T. Nazarenius, J. Kita, R. Moos, J. Exner:

Laser-Annealing of Thermoelectric CuFe<sub>0.98</sub>Sn<sub>0.02</sub>O<sub>2</sub> Films Produced by Powder Aerosol Deposition Method  
*Advanced Materials Interfaces*, **7**, 2001114 (2020), doi: 10.1002/admi.202001114

Y. Jännsch, J.J. Leung, M. Hämmerle, E. Magori, K. Wiesner-Fleischer, E. Simon, M. Fleischer, R. Moos:

Pulsed potential electrochemical CO<sub>2</sub> reduction for enhanced stability and catalyst reactivation of copper electrodes  
*Electrochemistry Communications*, **121**, 106861 (2020), doi: 10.1016/j.elecom.2020.106861

A. Ruchets, N. Donker, J. Zosel, D. Schönauer-Kamin, R. Moos, U. Guth, M. Mertig:

Cyclic and square-wave voltammetry for selective simultaneous NO and O<sub>2</sub> gas detection by means of solid electrolyte sensors  
*Journal of Sensors and Sensor Systems*, **9**, 355-362 (2020), doi: 10.5194/jsss-9-355-2020

C. Steiner, S. Walter, V. Malashchuk, G. Hagen, I. Kogut, H. Fritze, R. Moos:

Determination of the Dielectric Properties of Storage Materials for Exhaust Gas Aftertreatment Using the Microwave Cavity Perturbation Method  
*Sensors*, **20**, 6024 (2020), doi: 10.3390/s20216024

J. Herrmann, G. Hagen, J. Kita, F. Noack, D. Bleicker, R. Moos:

Multi-gas sensor to detect simultaneously nitrogen oxides and oxygen  
*Journal of Sensors and Sensor Systems*, **9**, 327-335 (2020), doi: 10.5194/jsss-9-327-2020

N. Donker, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

Influence of Pt paste and the firing temperature of screen-printed electrodes on the NO detection by pulsed polarization  
*Journal of Sensors and Sensor Systems*, **9**, 293-300 (2020), doi: 10.5194/jsss-9-293-2020

C. Witt, A. Schmid, N. Leupold, M. Schultz, J. Höcker, A. Baumann, R. Moos, F. Panzer:

Impact of Pressure and Temperature on the Compaction Dynamics and Layer Properties of Powder-Pressed Methylammonium Lead Halide Thick Films  
*ACS Applied Electronic Materials*, **2**, 2619-2628 (2020), doi: 10.1021/acsaelm.0c00493

D. Schönauer-Kamin, I. Marr, M. Zehentbauer, C. Zängle, R. Moos:

Characterization of the sensitive material for a resistive NO<sub>x</sub> gas dosimeter by DRIFT spectroscopy  
*Sensors and Actuators B: Chemical*, **320**, 128568 (2020), doi: 10.1016/j.snb.2020.128568

J. Exner, T. Nazarenius, D. Hanft, J. Kita, R. Moos:

What Happens during Thermal Post-Treatment of Powder Aerosol Deposited Functional Ceramic Films? Explanations Based on an Experiment-Enhanced Literature Survey  
*Advanced Materials*, **32**, 1908104 (2020), doi: 10.1002/adma.201908104

S. Walter, P. Schwanzer, G. Hagen, G. Haft, H.-P. Rabl, M. Dietrich, R. Moos:

Modelling the Influence of Different Soot Types on the Radio-Frequency-Based Load Detection of Gasoline Particulate Filters  
*Sensors*, **20**, 2659 (2020), doi: 10.3390/s20092659

M. Hahn, D. Rosenbach, A. Krimalowski, T. Nazarenius, R. Moos, M. Thelakkat, M.A. Danzer:

Investigating solid polymer and ceramic electrolytes for lithium-ion batteries by means of an extended Distribution of Relaxation Times analysis  
*Electrochimica Acta*, **344**, 136060 (2020), doi: 10.1016/j.electacta.2020.136060

M. Streibl, S. Werner, J. Kaschta, D.W. Schubert, R. Moos:

The Influence of Nanoparticles and their Functionalization on the Dielectric Properties of Biaxially Oriented Polypropylene for Power Capacitors  
*IEEE Transactions on Dielectrics and Electrical Insulation*, **27**, 468-475 (2020), doi: 10.1109/TDEI.2019.008521

J. Exner, T. Nazarenius, J. Kita, R. Moos:

Dense Y-doped ion conducting perovskite films of BaZrO<sub>3</sub>, BaSnO<sub>3</sub>, and BaCeO<sub>3</sub> for SOFC applications produced by powder aerosol deposition at room temperature  
*International Journal of Hydrogen Energy*, **45**, 10000-10016 (2020), doi: 10.1016/j.ijhydene.2020.01.164

U. Schadeck, T. Gerdes, W. Krenkel, R. Moos:

A Glass Platelet Coating on Battery Electrodes and Its Use as a Separator for Lithium-Ion Batteries  
*Journal of Electrochemical Conversion and Storage*, **17**, 034502 (2020), doi: 10.1115/1.4045783

### Doctoral Theses

M. Streibl:

Polymere Dielektrika für Leistungskondensatoren  
(Polymer dielectrics for power capacitors)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 16, Shaker-Verlag, Düren (2020), ISBN: 978-3-8440-7564-9

## Year 2020

M. Bektas:

BaFe<sub>(1-x)0.01Al<sub>0.01</sub>Ta<sub>0.3-6</sub>O<sub>3-6</sub>: A material for temperature independent resistive and thermoelectric oxygen sensors</sub>

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 31, Shaker-Verlag, Düren (2020), ISBN: 978-3-8440-7459-8

U. Schadeck:

Entwicklung glasbasierter Separatoren für Lithium-Ionen-Batterien

(Development of glass-based separators for lithium-ion batteries)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 15, Shaker-Verlag, Düren (2020), ISBN: 978-3-8440-7225-9

J. Metzner:

Entwicklung einer neuartigen Biosensor-Plattform zur Protein-Detektion

(Development of a novel biosensor platform for protein detection)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 30, Shaker-Verlag, Düren (2020), ISBN: 978-3-8440-7209-8

## Book Contributions

S. Walter, P. Schwanzer, G. Hagen, G. Haft, M. Dietrich, H.-P. Rabl, R. Moos:

Hochfrequenzsensorik zur direkten Beladungserkennung von Benzinpartikelfiltern

In: T. Tille (Hrsg.), Automobil-Sensorik 3 - Prinzipien, Technologien und Anwendungen, Springer-Verlag, Heidelberg (2020), p. 185-208, 978-3-662-61259-0 (gedruckt), ISBN 978-3-662-61260-6 (online), doi: 10.1007/978-3-662-61260-6\_7

F. Rettig, R. Moos:

Semiconducting direct thermoelectric gas sensors

In: R. Jaaniso, O.K. Tan (eds.), Semiconductor gas sensors, 2<sup>nd</sup> edition, Woodhead Publishing Ltd., Cambridge, UK (2019), p. 347-384, ISBN 978-0-08-102559-8 (print), ISBN 978-0-08-102560-4 (online), doi: 10.1016/B978-0-08-102559-8.00011-2

## Invited Talks

Sensoren im Automobil, München, 17.9.-18.9.2020

S. Walter, P. Schwanzer, G. Hagen, G. Haft, M. Dietrich, H.-P. Rabl, R. Moos: *Hochfrequenzsensorik zur direkten Beladungserkennung von Benzinpartikelfiltern*

NMB TechDays Thermisches Spritzen: Vom Beschichtungsverfahren zur Additiven Fertigung, Bayreuth, 10.-11.3.2020

R. Moos, J. Exner: *Dichte keramische Schichten bei Raumtemperatur spritzen – die Pulveraerosoldepositionsmethode macht Unmögliches möglich*

## Published Conference Contributions

J. Exner, M. Linz, T. Nazarenus, D. Hanft, N. Leupold, P. Glosse, J. Kita, R. Moos:

Powder aerosol deposition - dense ceramic thick films without any heat treatment

*young Ceramists Additive Manufacturing Forum (yCAM) 2020*, Toulouse - Online, France, 28.10.-30.10.2020,

Oral presentation, Session: Hybrid and Emerging Technologies

J. Exner, M. Linz, T. Nazarenus, N. Leupold, J. Kita, R. Moos:

Powder Aerosol Deposition - How to Spray Dense Functional Ceramic Films at Room Temperature without any Sintering

*Electroceramics XVII*, Virtual Darmstadt, 24.-28. August 2020

S. Bresch, B. Mieller, R. Moos, T. Rabe:

Improved thermoelectric properties of calcium manganate and calcium cobaltite by increasing the driving force for sintering

*Electroceramics XVII*, Virtual Darmstadt, 24.-28. August 2020

R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:

Development of a New Low-Cost Measurement System for Electrical Conductivity, Hall Constant and Seebeck Coefficient at Temperatures up to 800°C  
*VCT 2020, Virtual Conference on Thermoelectrics*, July 21-23, 2020, Book of Abstracts, p. 212

S. Bresch, B. Mieller, R. Moos, T. Rabe:

Reaction sintering and sintering additives for cost-effective production of thermoelectric oxides

*VCT 2020, Virtual Conference on Thermoelectrics*, July 21-23, 2020, Book of Abstracts, p. 240

N. Donker, M. Müller, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

NO detection by pulsed polarization with Pt interdigital electrodes on yttria stabilized zirconia

*SMSI Sensor and Measurement Science International*, cancelled conference, 22-25 June 2020, Nuremberg, Germany, doi: 10.5162/SMSI2020/P1.7

R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:

Development of a new Measurement System for Electrical Conductivity and Hall Constant

*SMSI Sensor and Measurement Science International*, cancelled conference, 22-25 June 2020, Nuremberg, Germany, doi: 10.5162/SMSI2020/A5.4

J. Wohlrab, T. Kern, G. Hagen, R. Moos:

## Year 2020

Influence of Gas Flow on the Temperature Homogeneity of Sensor Transducers

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS 18, cancelled conference, Montreal, Canada, 10<sup>th</sup> - 15<sup>th</sup> May 2020*  
Available at: *ECS Meeting Abstracts*, MA2020-01, 2293, doi: 10.1149/MA2020-01302293mtgabs

R. Moos, M. Bektas, G. Hagen, J. Kita, D. Schönauer-Kamin, D. Hanft, J. Exner:

The Powder Aerosol Deposition Method - Making Ceramic Gas Sensor Films at Room Temperature

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS 18, cancelled conference, Montreal, Canada, 10<sup>th</sup> - 15<sup>th</sup> May 2020*  
Available at: *ECS Meeting Abstracts*, MA2020-01, 2263, doi: 10.1149/MA2020-01302263mtgabs

T. Ritter, G. Hagen, R. Moos:

Dynamic Catalyst Conversion Measurement Using One Single Sensor Device

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS 18, cancelled conference, Montreal, Canada, 10<sup>th</sup> - 15<sup>th</sup> May 2020*  
Available at: *ECS Meeting Abstracts*, MA2020-01, 2157, doi: 10.1149/MA2020-01282157mtgabs

R. Wagner, D. Schönauer-Kamin, R. Moos:

Influence of Humidity on a Resistive Room Temperature NO<sub>2</sub> Dosimeter Based on Al-Doped ZnO

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS 18, cancelled conference, Montreal, Canada, 10<sup>th</sup> - 15<sup>th</sup> May 2020*  
Available at: *ECS Meeting Abstracts*, MA2020-01, 2079, doi: 10.1149/MA2020-01282079mtgabs

N. Donker, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

NO<sub>x</sub> Detection By Pulse Polarization: Influence of Gold Electrodes

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS 18, cancelled conference, Montreal, Canada, 10<sup>th</sup> - 15<sup>th</sup> May 2020*  
Available at: *ECS Meeting Abstracts*, MA2020-01, 2062, doi: 10.1149/MA2020-01282062mtgabs

D. Schönauer-Kamin, R. Moos:

In-Situ DRIFT Spectroscopy on a Resistive NO<sub>x</sub> Dosimeter – How Can the Non-Linear Electrical Behavior be Explained?

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS 18, cancelled conference, Montreal, Canada, 10<sup>th</sup> - 15<sup>th</sup> May 2020*  
Available at: *ECS Meeting Abstracts*, MA2020-01, 2060, doi: 10.1149/MA2020-01282060mtgabs

A. Ruchets, N. Donker, D. Schönauer-Kamin, R. Moos, J. Zosel, U. Guth, M. Mertig:

NO Detection By Cyclic Voltammetry with Platinum Electrodes on YSZ

*The 18<sup>th</sup> International Meeting on Chemical Sensors, IMCS 18, cancelled conference, Montreal, Canada, 10<sup>th</sup> - 15<sup>th</sup> May 2020*  
Available at: *ECS Meeting Abstracts*, MA2020-01, 2059, doi: 10.1149/MA2020-01282059mtgabs

P. Schwanzer, J. Mieslinger, H.-P. Rabl, M. Dietrich, G. Haft, S. Walter, G. Hagen, R. Moos, M. Gaderer:

Monitoring eines Partikelfilters für direkteinspritzende Benzinmotoren mit einer Hochfrequenzantenne

Monitoring of a Particulate Filter for Gasoline Direct Injection Engines with a Radio-Frequency-Sensor

*11. Internationales Forum Abgas- und Partikelemissionen / Proceedings, 11<sup>th</sup> International Exhaust Gas and Particulate Emissions Forum, 3.-4.3.2020, Ludwigsburg, Germany*

D. Hanft, T. Nazareus, J. Kita, R. Moos:

Aerosol-Deposition Lithium-Ionen leitender Festelektrolytmembranen für Festkörperbatterien

*Batterieforum Deutschland 2020, 22.-24. Januar 2020, Berlin*

U. Schadeck, M. Hahn, T. Gerdes, W. Krenkel, M.A. Danzer, R. Moos:

Natriumborosilikatglas-Separatoren als Elektrolyt-Additiv Donator zur Verbesserung der elektrochemischen Leistungsfähigkeit von Lithium-Ionen-Batterien

*Batterieforum Deutschland 2020, 22.-24. Januar 2020, Berlin*

## Year 2019

### Peer Reviewed Journals

U. Schadeck, M. Hahn, T. Gerdes, W. Krenkel, M.A. Danzer, R. Moos:

Sodium Borosilicate Glass Separators as an Electrolyte Additive Donor for Improving the Electrochemical Performance of Lithium-Ion Batteries  
*Journal of the Electrochemical Society*, **166**, A3416-A3424 (2019), doi: 10.1149/2.1011914jes

R. Wagner, D. Schönauer-Kamin, R. Moos:

Novel Operation Strategy to Obtain a Fast Gas Sensor for Continuous ppb-Level NO<sub>2</sub> Detection at Room Temperature Using ZnO—A Concept Study with Experimental Proof  
*Sensors*, **19**, 4104 (2019), doi: 10.3390/s19194104

M. Schubert, D. Hanft, T. Nazarenus, J. Exner, M. Schubert, P. Nieke, P. Glosse, N. Leupold, J. Kita, R. Moos:

Powder aerosol deposition method — novel applications in the field of sensing and energy technology  
*Functional Materials Letters*, **12**, 1930005 (2019), doi: 10.1142/S1793604719300056

N. Müller, S. Lang, R. Moos:

Influence of Ambient Conditions on Electrical Partial Discharge Resistance of Epoxy Anhydride Based Polymers Using IEC 60343 Method  
*IEEE Transactions on Dielectrics and Electrical Insulation*, **26**, 1463-1470 (2019), doi: 10.1109/TDEI.2019.008070

N. Leupold, K. Schötz, S. Cacovich, I. Bauer, M. Schultz, M. Daubinger, L. Kaiser, A. Rebai, J. Rousset, A. Köhler, P. Schulz, R. Moos, F. Panzer:

High Versatility and Stability of Mechanochemically Synthesized Halide Perovskite Powders for Optoelectronic Devices  
*ACS Applied Materials & Interfaces*, **11**, 30259-30268 (2019), doi: 10.1021/acsami.9b09160

C. Steiner, V. Malashchuk, D. Kubinski, G. Hagen, R. Moos:

Catalyst State Diagnosis of Three-Way Catalytic Converters Using Different Resonance Parameters—A Microwave Cavity Perturbation Study  
*Sensors*, **19**, 3559 (2019), doi: 10.3390/s19163559

J. Exner, J. Kita, R. Moos:

In- and through-plane conductivity of 8YSZ films produced at room temperature by aerosol deposition  
*Journal of Materials Science*, **54**, 13619-13634 (2019), doi: 10.1007/s10853-019-03844-7

S. Bresch, B. Mieller, D. Schönauer-Kamin, R. Moos, F. Giovannelli, T. Rabe:

Influence of pressure assisted sintering and reaction sintering on microstructure and thermoelectric properties of bi-doped and undoped calcium cobaltite  
*Journal of Applied Physics*, **126**, 075102 (2019), doi: 10.1063/1.5107476

T. Ritter, J. Lattus, G. Hagen, R. Moos:

On the influence of the NO<sub>x</sub> equilibrium reaction on mixed potential sensor signals: A comparison between FE modelling and experimental data  
*Sensors and Actuators B: Chemical*, **296**, 126627 (2019), doi: 10.1016/j.snb.2019.126627

M. Schubert, J. Kita, C. Münch, R. Moos:

Investigation of the in situ calcination of aerosol co-deposited NiO-Mn<sub>2</sub>O<sub>3</sub> films  
*Functional Materials Letters*, **12**, 1950039 (2019), doi: 10.1142/S1793604719500395

M. Dietrich, G. Hagen, R. Moos:

Dielectric properties and temperature dependency of automotive catalyst coatings and substrate materials: Experimental results, influences and approximation approach  
*Functional Materials Letters*, **12**, 195024 (2019), doi: 10.1142/S1793604719500243

M. Schubert, C. Münch, S. Schuurman, V. Poulain, J. Kita, R. Moos:

Novel Method for NTC Thermistor Production by Aerosol Co-Deposition and Combined Sintering  
*Sensors*, **19**, 1632 (2019), doi: 10.3390/s19071632

N. Donker, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

Influence of polarization time and polarization current of Pt|YSZ-based NO sensors utilizing the pulsed polarization when applying constant charge  
*Sensors and Actuators B: Chemical*, **290**, 28-33 (2019), doi: 10.1016/j.snb.2019.03.060

A. Ruchets, N. Donker, D. Schönauer-Kamin, R. Moos, J. Zosel, U. Guth, M. Mertig:

Selectivity improvement towards hydrogen and oxygen of solid electrolyte sensors by dynamic electrochemical methods  
*Sensors and Actuators B: Chemical*, **290**, 53-58 (2019), doi: 10.1016/j.snb.2019.03.063

C. Steiner, A. Gänzler, M. Zehentbauer, G. Hagen, M. Casapu, S. Müller, J.-D. Grunwaldt, R. Moos:

Oxidation State and Dielectric Properties of Ceria-Based Catalysts by Complementary Microwave Cavity Perturbation and X-Ray Absorption Spectroscopy Measurements  
*Topics in Catalysis*, **62**, 227-236 (2019), doi: 10.1007/s11244-018-1110-3

M. Dietrich, G. Hagen, R. Moos:

Modelling Both the NH<sub>3</sub> Storage on Automotive SCR Catalysts and the Radio-Frequency-Based Response  
*Topics in Catalysis*, **62**, 172-178 (2019), doi: 10.1007/s11244-019-01140-x

S. Walter, L. Ruwisch, U. Göbel, G. Hagen, R. Moos:

Radio Frequency-Based Determination of the Oxygen and the NO<sub>x</sub> Storage Level of NO<sub>x</sub> Storage Catalysts  
*Topics in Catalysis*, **62**, 157-163 (2019), doi: 10.1007/s11244-018-1079-y

## Year 2019

T. Ritter, M. Seibel, F. Hofmann, M. Weibel, R. Moos:

Simulation of a NO<sub>x</sub> Sensor for Model-Based Control of Exhaust Aftertreatment Systems  
*Topics in Catalysis*, **62**, 150-156 (2019), doi: 10.1007/s11244-018-1102-3

T. Michlik, A. Rosin, T. Gerdes, R. Moos:

Improved Discharge Capacity of Zinc Particles by Applying Bismuth-Doped Silica Coating for Zinc-Based Batteries  
*Batteries*, **5**, 32 (2019), doi: 10.3390/batteries5010032

M. Schubert, N. Leupold, J. Kita, R. Moos:

Oxygen partial pressure dependency of the electrical conductivity of aerosol deposited alumina films between 650 °C and 900 °C  
*Materials Letters*, **245**, 208-210 (2019), doi: 10.1016/j.matlet.2019.02.094

T. Ritter, J. Lattus, G. Hagen, R. Moos:

A finite element model for mixed potential sensors  
*Sensors and Actuators B: Chemical*, **287**, 476-485 (2019), doi: 10.1016/j.snb.2019.02.052

P. Chen, V. Rizzotto, A. Khetan, K. Xie, R. Moos, H. Pitsch, D. Ye, U. Simon:

Mechanistic understanding of Cu-CHA catalyst as sensor for direct NH<sub>3</sub>-SCR monitoring: the role of Cu mobility  
*ACS Applied Materials & Interfaces*, **11**, 8097-8105 (2019), doi: 10.1021/acsami.8b22104

M.-L. Anke, M. Hämmerle, R. Moos, A. Jess:

Operando Determination of the Thermal Decomposition of Supported Ionic Liquids by a Radio-Frequency-Based Method  
*ACS Omega*, **4**, 3351-3360 (2019), doi: 10.1021/acsomega.8b02421

P. Nieke, J. Kita, M. Häming, R. Moos:

Manufacturing Dense Thick Films of Lunar Regolith Simulant EAC-1 at Room Temperature  
*Materials*, **12**, 487 (2019), doi: 10.3390/ma12030487

S. Walter, A. Bogner, G. Hagen, R. Moos:

Novel radio-frequency-based gas sensor with integrated heater  
*Journal of Sensors and Sensor Systems*, **8**, 49-56 (2019), doi: 10.5194/jsss-8-49-2019

J. Exner, M. Schubert, D. Hanft, J. Kita, R. Moos:

How to treat powders for the room temperature aerosol deposition method to avoid porous, low strength ceramic films  
*Journal of the European Ceramic Society*, **39**, 592-600 (2019), doi: 10.1016/j.jeurceramsoc.2018.08.008

## Doctoral Theses

M. Schubert:

Aerosolbasierte Kaltabscheidung für die Herstellung von schichtbasierten NTC-Thermistorbauteilen  
(Powder aerosol deposition for the production of film-type NTC thermistor devices)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 29, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-7041-5

D. Hanft:

Aerosolbasierte Kaltabscheidung Lithium-Ionen leitender Festelektrolytschichten mit Granatstruktur  
(Powder aerosol-based deposition of lithium ion conducting solid electrolyte layers with garnet structure)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 14, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-7044-6

A. Engelbrecht:

Ausgewählte Materialien und Methoden für die elektrochemische Reduktion von CO<sub>2</sub>  
(Materials and methods for the electrochemical reduction of CO<sub>2</sub>)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 13, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-7081-1

M. Feulner:

Methoden der Rußdetektion im Dieselaabgas  
(Methods for soot detection in diesel exhausts)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 28, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-6926-6

T. Ritter:

Untersuchung und Modellierung der elektrochemischen Vorgänge von Elektroden für Mischpotential-Sensoren  
(Investigation and modelling of electrochemical processes of electrodes for mixed potential sensors)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 27, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-6906-8

Y. Zheng:

Untersuchung von Sauerstoffreaktionen an Pt-basierten Modellelektroden auf Yttriumoxid-stabilisiertem Zirkoniumdioxid  
(Investigation of oxygen reactions at Pt-based model electrodes on yttria-stabilized zirconium dioxide)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 12, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-6800-9

M. Schubert:

Die aerosolbasierte Kaltabscheidung von Aluminiumoxid: Verfahren, Hintergründe, Anwendungen

## Year 2019

(Aerosol deposition of aluminum oxide: process, background, and applications)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 11, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-6725-5

T.N.H. Hanus:

Herstellung und Charakterisierung von Aluminiumoxidschichten nach dem Verfahren der aerosolbasierten Kaltabscheidung

(Production and characterization of aluminum oxide layers by the aerosol deposition method)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 10, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-6663-0

T. Stöcker:

Delafossite für die thermoelektrische Energiewandlung bei hohen Temperaturen

(Delafossites for thermoelectric energy conversion at high temperatures)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 9, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-6496-4

M.L. Anke:

Bestimmung der thermischen Stabilität von ionischen Fluiden auf porösen Trägern und festen Katalysatoren mittels elektrischer Sensoren

(Determination of the thermal stability of ionic fluids on porous supports and on solid catalysts by electrical sensors)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 26, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-6508-4

J. Exner:

Aerosolbasierte Kaltabscheidung von Funktionskeramiken für neuartige Anwendungen im Bereich der Sensorik und Energiewandlung

(Aerosol deposition of functional ceramics for novel applications in the field of sensor technology and energy conversion)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 8, Shaker-Verlag, Düren (2019), ISBN: 978-3-8440-6399-8

## Invited Talks

PACRIM 13, The 13<sup>th</sup> Pacific Rim Conference of Ceramic Societies, Okinawa, Japan, 27.10.-1.11.2019

R. Moos, M. Schubert, P. Nieke, N. Leupold, J. Kita, D. Hanft, T. Nazarenus, P. Glosse, J. Exner, M. Schubert: *The Aerosol Deposition Method: Novel Ideas for Functional Films*

Institutskolloquium, Fraunhofer-Institut für Schicht- und Oberflächentechnik (IST), Braunschweig, 30.04.2019

J. Exner, Ralf Moos: *Aerosol-Deposition - Abscheidung von dichten keramischen Schichten bei Raumtemperatur*

DGM Fortbildungsseminar Hochtemperatursensorik, Goslar, 14.2.-15.2.2019

C. Steiner: *Gas- und Zustandssensoren für den Automobilbereich*

Meeting of the ProcessNet/AMA-Section „Mess- und Sensortechnik“, Frankfurt am Main, DECHEMA-Haus, 24.1.2019

R. Moos: *Is it possible to operate exhaust aftertreatment systems without exhaust gas sensors? About the possibilities of high-frequency-based catalyst state recognition*

## Published Conference Contributions

N. Donker, J. Zander, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

Einfluss der Elektrodenmorphologie auf die NO-Detektion mittels Puls polarisation

14. *Dresdner Sensor-Symposium*, 2.-4. Dezember 2019, Dresden, p. 107-109, doi: 10.5162/14dss2019/P2.09

R. Wagner, D. Schönauer-Kamin, R. Moos:

Einfluss der Partikelmorphologie auf das Raumtemperaturdosimeterverhalten von ZnO zur NO<sub>2</sub>-Detektion

14. *Dresdner Sensor-Symposium*, 2.-4. Dezember 2019, Dresden, p. 101-103, doi: 10.5162/14dss2019/P2.07

J. Wohlrab, G. Hagen, F. Noack, D. Bleicker, R. Moos:

Multigassensor zur simultanen Detektion von Stickoxiden und Sauerstoff

14. *Dresdner Sensor-Symposium*, 2.-4. Dezember 2019, Dresden, p. 47-48, doi: 10.5162/14dss2019/3.3

A. Ruchets, N. Donker, J. Zosel, D. Schönauer-Kamin, R. Moos, U. Guth, M. Mertig:

Selektive Gasmessung mit cyclovoltammetrisch betriebenen Festelektrolytsensoren

14. *Dresdner Sensor-Symposium*, 2.-4. Dezember 2019, Dresden, p. 30-33, doi: 10.5162/14dss2019/2.2

R. Moos, M. Schubert, P. Nieke, N. Leupold, J. Kita, D. Hanft, T. Nazarenus, P. Glosse, J. Exner, M. Schubert:

The Aerosol Deposition Method: Novel Ideas for Functional Films

PACRIM 13, The 13<sup>th</sup> Pacific Rim Conference of Ceramic Societies, Okinawa, Japan, 27.10.-1.11.2019, 29-B1B-S33-25

N. Leupold, D. Lukas, T. Herrmannsdörfer, F. Panzer, R. Moos:

Fabrication of lead halide perovskite films via aerosol deposition method for optoelectronic applications

PACRIM 13, The 13<sup>th</sup> Pacific Rim Conference of Ceramic Societies, Okinawa, Japan, 27.10.-1.11.2019, 29-B1B-S33-27

T. Nazarenus, D. Hanft, R. Moos:

Aerosol Deposition Method: A new way to fabricate conductive solid electrolytes for next generation Li ion batteries

PACRIM 13, The 13<sup>th</sup> Pacific Rim Conference of Ceramic Societies, Okinawa, Japan, 27.10.-1.11.2019, 28-B6-S16-14

## Year 2019

- V. Malashchuk, C. Steiner, G. Hagen, R. Moos:  
Simulation model for the radio frequency based state diagnosis of three-way catalytic converters  
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- T. Nazarenius, J. Exner, P. Glosse, D. Hanft, N. Leupold, P. Nieke, M. Schubert, M. Schubert, J. Kita, R. Moos:  
Aerosolbasierte Kaltabscheidung - Herstellung dichter keramischer Funktionsschichten bei Raumtemperatur  
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Shadow-optical visualization of the gas jet formation in the Aerosol Deposition Method  
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- D. Schönauer-Kamin, S. Ewinger, J. Exner, R. Moos:  
Planar Thermoelectric Generator Transducer for the High-Temperature Characterization of Materials Performance  
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- R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:  
Current State on the Development of a New Low Cost Measurement System for Conductivity, Hall Constant and Seebeck Coefficient at Temperatures up to 800 °C  
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- J. Wohlrab, G. Hagen, H. Kohler, R. Moos:  
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*Sensoren und Messsysteme 2019*, 25.6.-26.6.2019, Nürnberg, P.1.23, Proceedings, p. 654-655, doi: 10.5162/sensoren2019/P1.23
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Mittels aerosolbasierter Kaltabscheidung bei Raumtemperatur hergestellte schichtförmige NTC-Thermistorbauelemente  
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Simulative Modelling of the Location Dependent Soot Distribution in Gasoline Particle Filters and their Influence to the Soot Mass Determination by Radio Frequency and Differential Pressure Sensors  
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P. Glosse, S. Denneler, O. Stier, D. Hanft, R. Moos:

Shadow optical investigation of the gas jet used for ceramic film formation by the Aerosol Deposition Method  
*The 15<sup>th</sup> International Conference on Fluid Control, Measurements and Visualization*, 27-30 May 2019, Naples, Italy, #162

N. Donker, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

Pulse polarization measurements on the system Pt|YSZ by varying the polarization voltage  
*7<sup>th</sup> Regional Symposium on Electrochemistry of South-East Europe (RSE-SEE 7)*, May 27-30, Split, Croatia, KSS-O-8

A. Ruchets, N. Donker, D. Schönauer-Kamin, R. Moos, J. Zosel, U. Guth, M. Mertig:

Selective multi-gas measurements with solid electrolyte cells operated by cyclovoltammetry  
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N. Donker, A. Ruchets, D. Schönauer-Kamin, J. Zosel, U. Guth, R. Moos:

Effects of voltage variations in pulsed polarization measurements  
*2<sup>nd</sup> Cross-Border Seminar on Electroanalytical Chemistry (CBSEC)*, 10.4.-12.4.2019, Budweis, Czech Republic, L2

A. Ruchets, N. Donker, D. Schönauer-Kamin, R. Moos, J. Zosel, U. Guth, M. Mertig:

Use of cyclovoltammetry for selective solid electrolyte sensors  
*2<sup>nd</sup> Cross-Border Seminar on Electroanalytical Chemistry (CBSEC)*, 10.4.-12.4.2019, Budweis, Czech Republic, L1

N. Leupold, M. Schulz, K. Schötz, R. Moos, F. Panzer:

A completely solvent free route for hybrid perovskite film processing based on pressure treatment of perovskite powders - decoupling material synthesis and film formation  
*DPG-Frühjahrstagung*, 31.03.-05.04.2019, Regensburg, HL 40.11

M. Schultz, N. Leupold, K. Schötz, R. Moos, F. Panzer:

Impact of microstructure of hybrid perovskite powders on the mechanical properties of completely dry processed perovskite layers via pressing  
*DPG-Frühjahrstagung*, 31.03.-05.04.2019, Regensburg, CPP 37.6

U. Schadeck, T. Gerdes, W. Krenkel, R. Moos:

Electrochemically active glass separators for lithium-ion batteries  
*Advanced Functional Materials Spectroscopy and Electrochemistry Congress*, March 24-27, 2019, Stockholm, Sweden, S14

U. Schadeck, K. Kyrgyzbaev, H. Zettl, T. Gerdes, R. Moos:

Flexible, heat-resistant and flame-retardant glass fiber nonwoven/glass platelet-composite separator for lithium-ion batteries  
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A completely Solvent free Route for Hybrid Perovskite Film Processing Based on Pressure Treatment of Perovskite Powders – Decoupling Material Synthesis and Film Formation  
*International Conference on Interfaces in Organic and Hybrid Thin-Film Optoelectronics (INFORM)*, 05. – 07.03.2019, Valencia, Spain, doi: 10.29363/nanoge.inform.2019.028

M. Hämmerle, K. Hilgert, R. Moos:

Optimisation of a biocathode for O<sub>2</sub> reduction based on multi-walled carbon nanotubes and laccase  
*2<sup>nd</sup> European Biosensor Symposium*, 18-21 February 2019, Florence, Italy, PII.8, p. 162

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### Peer Reviewed Journals

M. Streibl, R. Karmazin, R. Moos:

Materials and Applications of Polymer Films for Power Capacitors with Special Respect to Nanocomposites  
*IEEE Transactions on Dielectrics and Electrical Insulation*, **25**, 2429-2442 (2018), doi: 10.1109/TDEI.2018.007392

T. Ritter, J. Lattus, G. Hagen, R. Moos:

Effect of the Heterogeneous Catalytic Activity of Electrodes for Mixed Potential Sensors  
*Journal of the Electrochemical Society*, **165**, B795-B803 (2018), doi: 10.1149/2.0181816jes

M. Schubert, C. Münch, S. Schuurman, V. Poulain, J. Kita, R. Moos:

Thermal Treatment of Aerosol Deposited NiMn<sub>2</sub>O<sub>4</sub> NTC Thermistors for Improved Aging Stability  
*Sensors*, **18**, 3982 (2018), doi: 10.3390/s18113982

J. Exner, H. Pöpke, F.-M. Fuchs, J. Kita, R. Moos:

Annealing of Gadolinium-Doped Ceria (GDC) Films Produced by the Aerosol Deposition Method  
*Materials*, **11**, 2072 (2018), doi: 10.3390/ma11112072

G. Hagen, C. Spannauer, M. Feulner, J. Kita, A. Müller, R. Moos:

Conductometric Soot Sensors: Internally Caused Thermophoresis as an Important Undesired Side Effect  
*Sensors*, **18**, 3531 (2018), doi: 10.3390/s18103531

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Thermal, dielectric, and mechanical properties of h-BN-filled PTFE composites  
*Journal of Applied Polymer Science*, **135**, 46859 (2018), doi: 10.1002/APP.46859

S. Bresch, B. Mieller, F. Delorme, C. Chen, M. Bektas, R. Moos, T. Rabe:

Influence of Reaction-Sintering and Calcination Conditions on Thermoelectric Properties of Sm-doped Calcium Manganate CaMnO<sub>3</sub>  
*Journal of Ceramic Science and Technology*, **9**, 289-300 (2018), doi: 10.4416/JCST2018-00017

T. Stöcker, R. Moos:

Effect of Oxygen Partial Pressure on the Phase Stability of Copper-Iron Delafossites at Elevated Temperatures  
*Materials*, **11**, 1888 (2018), doi: 10.3390/ma11101888

A. Engelbrecht, C. Uhlig, O. Stark, M. Hämmerle, G. Schmid, E. Magori, K. Wiesner-Fleischer, M. Fleischer, R. Moos:

On the Electrochemical CO<sub>2</sub> Reduction at Copper Sheet Electrodes with Enhanced Long-Term Stability by Pulsed Electrolysis  
*Journal of the Electrochemical Society*, **165**, J3059-J3068 (2018), doi: 10.1149/2.0091815jes

L. Vogel, R. Wagner, R. Moos, D. Schönauer-Kamin:

Investigations on the crystal growth mechanism of one-pot-synthesized Al-doped ZnO and its UV-enhanced room temperature NO<sub>2</sub> gas sensing characteristics  
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D. Hanft, P. Glosse, S. Dennerler, T. Berthold, M. Oomen, S. Kauffmann-Weiss, F. Weis, W. Häßler, B. Holzapfel, R. Moos:

The Aerosol Deposition Method: A Modified Aerosol Generation Unit to Improve Coating Quality  
*Materials*, **11**, 1572 (2018), doi: 10.3390/ma11091572

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*Materials*, **11**, 1342 (2018), doi: 10.3390/ma11081342

M.-L. Anke, M. Hämmerle, A. Jess, R. Moos:

Radio frequency- and impedance-based sensing of ionic liquids supported on porous carriers and their limitations  
*Sensors and Actuators B: Chemical*, **273**, 1564-1571 (2018), doi: 10.1016/j.snb.2018.07.036

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Influence of the calcination procedure on the thermoelectric properties of calcium cobaltite Ca<sub>3</sub>Co<sub>4</sub>O<sub>9</sub>  
*Journal of Electroceramics*, **40**, 225-234 (2018), doi: 10.1007/s10832-018-0124-3

M. Schubert, N. Leupold, J. Exner, J. Kita, R. Moos:

High-Temperature Electrical Insulation Behavior of Alumina Films Prepared at Room Temperature by Aerosol Deposition and Influence of Annealing Process and Powder Impurities  
*Journal of Thermal Spray Technology*, **27**, 870-879 (2018), doi: 10.1007/s11666-018-0719-x

O. Isakin, S. Hiltl, O. Struck, M. Willert-Porada, R. Moos:

High-Yield Preparation of ZnO Nanoparticles on Exfoliated Graphite as Anode Material for Lithium Ion Batteries and the Effect of Particle Size as well as of Conductivity on the Electrochemical Performance of Such Composites  
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Influence of high temperature annealing on the dielectric properties of alumina films prepared by the aerosol deposition method  
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J. Metzner, K. Luckert, K. Lemuth, M. Hämmerle, R. Moos:

Towards an Electrochemical Immunosensor System with Temperature Control for Cytokine Detection  
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Flexible, Heat-Resistant, and Flame-Retardant Glass Fiber Nonwoven/Glass Platelet Composite Separator for Lithium-Ion Batteries  
*Energies*, **11**, 999 (2018), doi: 10.3390/en11040999

M. Bektas, T. Stöcker, A. Mergner, G. Hagen, R. Moos:

Combined resistive and thermoelectric oxygen sensor with almost temperature-independent characteristics  
*Journal of Sensors and Sensor Systems*, **7**, 289-297 (2018), doi: 10.5194/jsss-7-289-2018

S.A. Müller, D. Degler, C. Feldmann, M. Türk, R. Moos, K. Fink, F. Studt, D. Gerthsen, N. Bârsan, J.-D. Grunwaldt:

Exploiting Synergies in Catalysis and Gas Sensing using Noble Metal-Loaded Oxide Composites  
*ChemCatChem*, **10**, 864-880 (2018), doi: 10.1002/cctc.201701545

T. Michlik, M. Schmid, A. Rosin, T. Gerdes, R. Moos:

Mechanical Coating of Zinc Particles with Bi<sub>2</sub>O<sub>3</sub>-Li<sub>2</sub>O-ZnO Glasses as Anode Material for Rechargeable Zinc-Based Batteries  
*Batteries*, **4**, 12 (2018), doi: 10.3390/batteries4010012

G. Hagen, A. Harsch, R. Moos:

A pathway to eliminate the gas flow dependency of a hydrocarbon sensor for automotive exhaust applications  
*Journal of Sensors and Sensor Systems*, **7**, 79-84 (2018), doi: 10.5194/jsss-7-79-2018

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Ultrasound-assisted one-pot syntheses of ZnO nanoparticles that are homogeneously adsorbed on exfoliated graphite and a simplified method to determine the graphite layer thickness in such composites  
*Journal of Materials Science*, **53**, 6586-6601 (2018), doi: 10.1007/s10853-018-2023-z

U. Schadeck, K. Kyrgyzbaev, T. Gerdes, M. Willert-Porada, R. Moos:

Porous and non-porous micrometer-sized glass platelets as separators for lithium-ion batteries  
*Journal of Membrane Science*, **550**, 518-525 (2018), doi: 10.1016/j.memsci.2017.10.061

Y. Zheng, U. Sauter, R. Moos:

Oxygen transport paths in screen-printed Pt-Al<sub>2</sub>O<sub>3</sub> composite model electrodes on YSZ  
*Solid State Ionics*, **316**, 53-58 (2018), doi: 10.1016/j.ssi.2017.12.026

M. Bektas, T. Stöcker, G. Hagen, R. Moos:

On the defect chemistry of BaFe<sub>0.89</sub>Al<sub>0.01</sub>Ta<sub>0.1</sub>O<sub>3-δ</sub>, a material for temperature independent resistive and thermoelectric oxygen sensors  
*Solid State Ionics*, **316**, 1-8 (2018), doi: 10.1016/j.ssi.2017.12.017

M. Schubert, C. Münch, S. Schuurman, V. Poulain, J. Kita, R. Moos:

Characterization of Nickel Manganite NTC thermistor films prepared by Aerosol Deposition at room temperature  
*Journal of the European Ceramic Society*, **38**, 613-619 (2018), doi: 10.1016/j.jeurceramsoc.2017.09.005

T. Ritter, G. Hagen, J. Lattus, R. Moos:

Solid state mixed-potential sensors as direct conversion sensors for automotive catalysis  
*Sensors and Actuators B: Chemical*, **255**, 3025-3032 (2018), doi: 10.1016/j.snb.2017.09.126

## Doctoral Theses

O. Isakin:

ZnO-Graphit-Komposite als Anodenmaterialien für Lithium-Ionen-Batterien  
(ZnO graphite composites as anode materials for lithium ion batteries)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Materialien und Prozessen, Bd. 7, Shaker-Verlag, Aachen (2018), ISBN: 978-3-8440-6279-3, doi: 10.2370/9783844062793

F. Schubert:

Tian-Calvet-Kalorimeter mit Wärmestromsensoren in keramischer Mehrlagentechnik  
(Tian-Calvet calorimeter with heat flow sensors in ceramic multilayer technology)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 24, Shaker-Verlag, Aachen (2018), ISBN: 978-3-8440-6127-7

M. Dietrich:

Anwendung der hochfrequenzgestützten Zustandsdiagnose zur Überwachung und Regelung von SCR-Katalysatoren  
(Application of radio frequency-based techniques for monitoring and control of SCR catalysis)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 23, Shaker-Verlag, Aachen (2018), ISBN: 978-3-8440-5782-9

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### Book Contributions

R. Moos, M. Dietrich:  
Beladungsregelung eines NH<sub>3</sub>-SCR-Katalysator-Systems auf minimale NO<sub>x</sub>-Emissionen mittels Hochfrequenzsensorik  
In: T. Tille (Hrsg.), *Automobil-Sensorik 2 - Systeme, Technologien und Applikationen*, Springer-Verlag, Heidelberg (2018), p. 225-244, ISBN 978-3-662-56309-0 (gedruckt), ISBN 978-3-662-56310-6 (online), doi: 10.1007/978-3-662-56310-6\_10

R. Moos:  
Kap. 2.5 Elektrische Eigenschaften.  
In W. Kollenberg (Hrsg.): *Technische Keramik*, Vulkan-Verlag GmbH, Essen (2018), 133-147, 3. Auflage, ISBN 978-3-8027-2986-7

R. Moos:  
Kap. 4.9.5 Aerosol-Depositionsschichten.  
In W. Kollenberg (Hrsg.): *Technische Keramik*, Vulkan-Verlag GmbH, Essen (2018), 588-591, 3. Auflage, ISBN 978-3-8027-2986-7

R. Moos:  
Kap. 5.4 Anwendungen keramischer Werkstoffe in der Technik: Elektronik.  
In W. Kollenberg (Hrsg.): *Technische Keramik*, Vulkan-Verlag GmbH, Essen (2018), 627-630, 3. Auflage, ISBN 978-3-8027-2986-7

### Invited Talks

54<sup>th</sup> International Conference on Microelectronics, Devices and Materials with the Workshop on Sensors and Transducers, 3.-5.10.2018, Ljubljana, Slovenia.

J. Kita: *Multilayer Technologies and New Deposition Techniques in Sensors and Transducers Applications*

Materials Science and Engineering Congress (MSE), 26.-28.9.2018, Darmstadt, Germany  
R. Moos, J. Kita, M. Bektas, J. Exner, P. Glosse, D. Hanft, N. Leupold, T. Nazareus, P. Nieke, M. Schubert, M. Schubert:  
*Dense films prepared at room temperature directly from the ceramic powder: An overview on the Aerosol Deposition Method (ADM)*

Eurosensors XXXII, September 9 - 12, 2018, Graz, Austria  
R. Moos, S. Walter, C. Steiner, G. Hagen: *Sensing catalytic converters and filters at work using radio frequencies*

5. Internationale Fachkonferenz Emissionsreduktion und Emissionssensoren, Stuttgart, 11.-12.7.2018  
R. Moos: *Radio frequency sensors for catalyst control – an overview / RF-Sensoren zur Katalysator-Kontrolle – ein Überblick*

Sensoren im Automobil, München, 19.4.-20.4.2018  
R. Moos, M. Dietrich: *Beladungsregelung eines NH<sub>3</sub>-SCR-Katalysator-Systems auf minimale NO<sub>x</sub>-Emissionen mittels Hochfrequenzsensorik*

### Published Conference Contributions

J. Exner, J. Kita, R. Moos:  
Influence of the Powder Crystallite Size on the Successful Film Formation Using Room Temperature Aerosol Deposition  
*8<sup>th</sup> Tsukuba International Coating Symposium (TICS8)*, Tsukuba, Japan, 12.12.-13.12.2018, p. 57

T. Nazareus, D. Hanft, J. Kita, R. Moos:  
Fabrication of Lithium Ion Conductive Solid-Electrolytes by Aerosol Deposition  
*Third Bunsen Colloquium on Solid-State Batteries*, 14.11.2018 - 16.11.2018, Frankfurt/Main, P052

U. Schadeck, K. Kyrgyzbaev, H. Zettl, T. Gerdes, R. Moos:  
Flexible, Heat-Resistant and Flame-Retardant Glass Fiber Nonwoven/Glass Platelet Composite-Separator for Lithium-Ion Batteries  
*The Energy & Materials Research Conference (EMR 2018)*, November 8-9, 2018, Torremolinos, Spain

U. Schadeck, T. Gerdes, W. Krenkel, R. Moos:  
Electrochemically Active Glass Separators for Lithium-Ion Batteries  
*The Energy & Materials Research Conference (EMR 2018)*, November 8-9, 2018, Torremolinos, Spain

M. Dietrich, G. Hagen, R. Moos:  
Modelling both the NH<sub>3</sub> Storage on Automotive SCR Catalysts and the Radio-Frequency-Based Response  
*CAPOC11 - 11<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control*, Brussels, Belgium, Oct. 29 - 31, 2018, Vol. 1, p. 111-120

T. Ritter, M. Seibel, F. Hofmann, M. Weibel, R. Moos:  
Simulation of a NO<sub>x</sub> sensor for model-based control of exhaust aftertreatment systems  
*CAPOC11 - 11<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control*, Brussels, Belgium, Oct. 29 - 31, 2018, Vol. 1, p. 377-386

S. Walter, L. Ruwisch, U. Göbel, G. Hagen, R. Moos:  
Radio-frequency-based determination of the oxygen and the NO<sub>x</sub> storage level of NO<sub>x</sub> storage catalysts  
*CAPOC11 - 11<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control*, Brussels, Belgium, Oct. 29 - 31, 2018, Vol. 1, p. 387-390

C. Steiner, A. Gänzler, G. Hagen, M. Casapu, J.-D. Grunwaldt, R. Moos:

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Oxidation state and dielectric properties of ceria-based catalysts by complementary microwave cavity perturbation and X-ray absorption spectroscopy measurements

CAPOC11 - 11<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, Oct. 29 - 31, 2018, Vol. 2, p. 81-94

J. Kita:

Multilayer Technologies and New Deposition Techniques in Sensors and Transducers Applications

54<sup>th</sup> International Conference on Microelectronics, Devices and Materials with the Workshop on Sensors and Transducers, 3.-5.10.2018, Ljubljana, Slovenia.

N. Leupold, K. Schötz, M. Daubinger, A. Dürrmann, I. Bauer, A. Köhler, R. Moos, F. Panzer:

Large batch mechanochemically synthesized powders of hybrid perovskites for optoelectronic applications

4<sup>th</sup> International Conference on Perovskite Solar Cells and Optoelectronics, 30.09. - 02.10. 2018, Lausanne, Switzerland

R. Moos, J. Kita, M. Bektas, J. Exner, P. Glosse, D. Hanft, N. Leupold, T. Nazarenu, P. Nieke, M. Schubert, M. Schubert:

Dense films prepared at room temperature directly from the ceramic powder: An overview on the Aerosol Deposition Method (ADM)

Materials Science and Engineering Congress (MSE), 26.-28.9.2018, Darmstadt, Germany

A. Wollbrink, C. Steiner, R. Moos, H. Fritze:

Non-stoichiometry and electrical impedance of thin-film ceria-zirconia solid solutions at elevated temperatures

Materials Science and Engineering Congress (MSE), 26.-28.9.2018, Darmstadt, Germany, F01

A. Engelbrecht, C. Uhlig, O. Stark, M. Hämmerle, G. Schmid, E. Magori, K. Wiesner-Fleischer, M. Fleischer, R. Moos:

Electrochemical CO<sub>2</sub> reduction at copper electrodes with enhanced long-term stability by pulsed electrolysis

Electrochemistry, 24.-26. September 2018, Ulm, Germany, H011

R. Moos, S. Walter, C. Steiner, G. Hagen:

Sensing catalytic converters and filters at work using radio frequencies

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also:

R. Moos, S. Walter, C. Steiner, G. Hagen:

Sensing Catalytic Converters and Filters at Work Using Radio Frequencies

Proceedings, 13, 1101 (2018), doi: 10.3390/proceedings2131101

Y. Zheng, U. Sauter, R. Moos:

Low temperature characteristics of the Pt|YSZ electrode system

The 69<sup>th</sup> Annual Meeting of the International Society of Electrochemistry, 2.-7.9.2018, Bologna, Italy, S21-054

T. Ritter, G. Hagen, R. Moos:

Mixed-potential based direct catalyst conversion sensor: Independency of the sensor response from oxygen, electrode material, and from the type of analyte

The 17<sup>th</sup> International Meeting on Chemical Sensors, IMCS 17, Vienna, Austria, 15<sup>th</sup> - 19<sup>th</sup> July 2018, p. 132-133, doi: 10.5162/IMCS2018/GS3.4

V. Rizzotto, P. Chen, G. Hagen, R. Moos, U. Simon:

A Gas Sensing Approach to Gain Insight into the Mechanism of DeNO<sub>x</sub>-SCR over Fe-ZSM-5 Catalysts

The 17<sup>th</sup> International Meeting on Chemical Sensors, IMCS 17, Vienna, Austria, 15<sup>th</sup> - 19<sup>th</sup> July 2018, p. 134-135, doi: 10.5162/IMCS2018/GS3.5

J. Lattus, G. Hagen, J. Kita, D. Bleicker, F. Noack, R. Moos:

NO<sub>x</sub> sensor for exhaust applications

The 17<sup>th</sup> International Meeting on Chemical Sensors, IMCS 17, Vienna, Austria, 15<sup>th</sup> - 19<sup>th</sup> July 2018, p. 438-439, doi: 10.5162/IMCS2018/P1AP.2

R. Wagner, L. Vogel, S. Schneider, D. Schönauer-Kamin, R. Moos:

Room Temperature UV-Enhanced NO<sub>2</sub>-Gas Sensing of Doped and Undoped Sol-Gel-Synthesized ZnO

The 17<sup>th</sup> International Meeting on Chemical Sensors, IMCS 17, Vienna, Austria, 15<sup>th</sup> - 19<sup>th</sup> July 2018, p. 521-522, doi: 10.5162/IMCS2018/P1GS.1

D. Schönauer-Kamin, M. Schubert, Y. Jännsch, H. Kurz, I. Marr, R. Moos:

Dosimeter for Low-Level NO<sub>x</sub> Detection – Influence of the Deposition Method of the NO<sub>x</sub> Storage Film

The 17<sup>th</sup> International Meeting on Chemical Sensors, IMCS 17, Vienna, Austria, 15<sup>th</sup> - 19<sup>th</sup> July 2018, p. 558-559, doi: 10.5162/IMCS2018/P1GS.21

G. Hagen, C. Spannbauer, R. Moos:

Electrophoretic and thermophoretic effects on conductometric soot sensing: special challenges when using synthetic soot

The 17<sup>th</sup> International Meeting on Chemical Sensors, IMCS 17, Vienna, Austria, 15<sup>th</sup> - 19<sup>th</sup> July 2018, p. 639-640, doi: 10.5162/IMCS2018/P1SM.1

A. Ruchets, N. Donker, D. Schönauer-Kamin, R. Moos, J. Zosel, M. Mertig:

Dynamic methods for solid electrolyte sensors

The 17<sup>th</sup> International Meeting on Chemical Sensors, IMCS 17, Vienna, Austria, 15<sup>th</sup> - 19<sup>th</sup> July 2018, p. 707-708, doi: 10.5162/IMCS2018/P2EC.3

N. Donker, A. Ruchets, J. Zosel, D. Schönauer-Kamin, R. Moos:

Investigation of the pulsed-polarization sensor mechanism in YSZ-based gas sensors

The 17<sup>th</sup> International Meeting on Chemical Sensors, IMCS 17, Vienna, Austria, 15<sup>th</sup> - 19<sup>th</sup> July 2018, p. 826-827, doi: 10.5162/IMCS2018/P2MM.1

R. Werner, J. Kita, M. Gollner, F. Linseis, R. Moos:

On the development of a new measurement system for conductivity, Hall constant and Seebeck coefficient

37<sup>th</sup> International and 16<sup>th</sup> European Conference on Thermoelectrics, 1.7.-5.7.2018, Caen, France, P.25

## Year 2018

S. Walter, A. Bogner, R. Moos, G. Hagen:

Beheizbarer planarer Hochfrequenz-Sensor

*Sensoren und Messsysteme 2018*, 26.6.-27.6.2018, Nürnberg, p. 69-72, ISBN 978-3-8007-4683-5

M. Bektas, S. Püls, G. Hagen, R. Moos:

Resistiver Sauerstoffsensoren mit temperaturunabhängiger Kennlinie

*Sensoren und Messsysteme 2018*, 26.6.-27.6.2018, Nürnberg, p. 77-79, ISBN 978-3-8007-4683-5

M. Schubert, C. Münch, J. Kita, R. Moos:

Untersuchung der Langzeitstabilität von NTCR-Dickschicht-Sensoren hergestellt mittels aerosolbasierter Kaltabscheidung

*Sensoren und Messsysteme 2018*, 26.6.-27.6.2018, Nürnberg, p. 269-272, ISBN 978-3-8007-4683-5

F. Weis, D. Hanft, P. Glosse, S. Dennerler, T. Berthold, M. Oomen, S. Kauffmann-Weiss, E. Günther, M. Weiss, W. Häßler, B. Holzapfel, R. Moos:

Synthesis of superconducting MgB<sub>2</sub>-Films by aerosol deposition method (ADM)

*Aerosol Technology 2018*, 18.-20.06.2018, Bilbao, Spain

R. Wagner, J. Bauer, B. Plochmann, S. Lang, D. Schönauer-Kamin, R. Moos:

Effect of ambient conditions on the resistance of metal oxides as a novel material for outer corona protection systems

*36<sup>th</sup> Electrical Insulation Conference (EIC)*, San Antonio, TX, USA, 17.-20.6.2018, p. 73-76, ISBN 978-1-5386-4178-1, doi: 10.1109/EIC.2018.8481102

M. Anke, M. Hämmerle, R. Moos, A. Jess:

Microwave-based in operando measurements of the thermal stability and the catalytic activity of supported ionic liquid catalysts during the selective hydrogenation of 1,3-butadiene

*ProcessNet Jahrestreffen Reaktionstechnik 2018*, Würzburg, Deutschland, 7.-9.5.2018, P01

S. Bresch, B. Mieller, R. Moos, T. Rabe:

Lowering the sintering temperature of calcium manganate for thermoelectric applications

*93. DKG Jahrestagung / Symposium Hochleistungskeramik 2018*, München, 10.4.-13.4.2018, p. 27

J. Exner, M. Schubert, D. Hanft, J. Kita, R. Moos:

Annealing of conductive films formed at room temperature by powder Aerosol Deposition to improve their electrical properties

*42<sup>nd</sup> International Conference and Expo on Advanced Ceramics and Composites, ICACC18*, 21.-26.1.2018, Daytona Beach, USA, p. 72, ICACC-S2-024-2018

M. Schubert, R. Wang, J. Kita, R. Moos:

Influence of Carrier Gas Species on the Room Temperature Powder Aerosol Deposition Process

*42<sup>nd</sup> International Conference and Expo on Advanced Ceramics and Composites, ICACC18*, 21.-26.1.2018, Daytona Beach, p. 72, USA, ICACC-S2-023-2018

J. Exner, T. Nazareus, H. Pöpke, F. Fuchs, J. Kita, R. Moos:

Aerosol Deposition of barium-based perovskites as solid electrolyte film for fuel cells

*42<sup>nd</sup> International Conference and Expo on Advanced Ceramics and Composites, ICACC18*, 21.-26.1.2018, Daytona Beach, USA, p. 97, ICACC-S3-P014-2018

M. Schubert, N. Leupold, J. Kita, R. Moos:

High Temperature Insulating Properties of Aerosol Deposited Alumina Films

*42<sup>nd</sup> International Conference and Expo on Advanced Ceramics and Composites, ICACC18*, 21.-26.1.2018, Daytona Beach, USA, p. 95, ICACC-S2-P003-2018

## Year 2017

### Peer Reviewed Journals

- M. Schubert, J. Kita, C. Münch, R. Moos:  
Analysis of the characteristics of thick-film NTC thermistor devices manufactured by screen-printing and firing technique and by room temperature aerosol deposition method (ADM)  
*Functional Materials Letters*, **10**, 1750073 (2017), doi: 10.1142/S1793604717500734
- T. Ritter, S. Wiegärtner, G. Hagen, R. Moos:  
Simulation of a thermoelectric gas sensor that determines hydrocarbon concentrations in exhausts and the light-off temperature of catalyst materials  
*Journal of Sensors and Sensor Systems*, **6**, 395-405 (2017), doi: 10.5194/jsss-6-395-2017
- M. Dietrich, G. Hagen, W. Reitmeier, K. Burger, M. Hien, P. Grass, D. Kubinski, J. Visser, R. Moos:  
Radio-Frequency-Controlled Urea Dosing for NH<sub>3</sub>-SCR Catalysts: NH<sub>3</sub> Storage Influence to Catalyst Performance under Transient Conditions  
*Sensors*, **17**, 2746 (2017), doi: 10.3390/s17122746
- A. Bogner, C. Steiner, S. Walter, J. Kita, G. Hagen, R. Moos:  
Planar Microstrip Ring Resonators for Microwave-Based Gas Sensing: Design Aspects and Initial Transducers for Humidity and Ammonia Sensing  
*Sensors*, **17**, 2422 (2017), doi: 10.3390/s17102422
- M. Dietrich, C. Steiner, G. Hagen, R. Moos:  
Radio-Frequency-Based Urea Dosing Control for Diesel Engines with Ammonia SCR Catalysts  
*SAE International Journal of Engines*, **10**, 1638-1645 (2017), doi: 10.4271/2017-01-0945
- M. Daab, P. Loch, W. Milius, D. Schönauer-Kamin, M. Schubert, A. Wunder, R. Moos, F.E Wagner, J. Breu:  
Single-Crystal Structure and Electronic Conductivity of Melt Synthesized Fe-rich, near End-Member Ferro-Kinoshitalite  
*Zeitschrift für anorganische und allgemeine Chemie*, **643**, 1661-1667, (2017) doi: 10.1002/zaac.201700265
- M.-L. Anke, M. Hämmerle, J. Gerchau, R. Moos, A. Jess:  
Radio Frequency-Based In Situ Determination of the Mass Loss of Supported Ionic Liquids  
*Chemical Engineering and Technology*, **40**, 1660-1665 (2017), doi: 10.1002/ceat.201700190
- M. Schubert, M. Hahn, J. Exner, J. Kita, R. Moos:  
Effect of substrate hardness and surface roughness on the film formation of aerosol-deposited ceramic films  
*Functional Materials Letters*, **10**, 1750045 (2017), doi: 10.1142/S179360471750045X
- J. Exner, G. Albrecht, D. Schönauer-Kamin, J. Kita, R. Moos:  
Pulsed Polarization-Based NO<sub>x</sub> Sensors of YSZ Films Produced by the Aerosol Deposition Method and by Screen-Printing  
*Sensors*, **17**, 1715 (2017), doi: 10.3390/s17081715
- M. Dietrich, G. Hagen, W. Reitmeier, K. Burger, M. Hien, P. Grass, D. Kubinski, J. Visser, R. Moos:  
Radio-Frequency-Based NH<sub>3</sub>-Selective Catalytic Reduction Catalyst Control: Studies on Temperature Dependency and Humidity Influences  
*Sensors*, **17**, 1615 (2017), doi: 10.3390/s17071615
- O. Isakin, R. Schneider, M. Ringl, O. Struck, T. Gerdes, M. Willert-Porada, R. Moos:  
High-yield synthesis of ZnO nanoparticles homogeneously coated on exfoliated graphite and simplified method to determine the surface coverage  
*Surface and Coatings Technology*, **325**, 445-453 (2017), doi: 10.1016/j.surfcoat.2017.07.002
- D. Hanft, J. Exner, R. Moos:  
Thick-films of garnet-type lithium ion conductor prepared by the Aerosol Deposition Method: The role of morphology and annealing treatment on the ionic conductivity  
*Journal of Power Sources*, **361**, 61-69 (2017), doi: 10.1016/j.jpowsour.2017.06.061
- T. Ritter, G. Hagen, J. Kita, S. Wiegärtner, F. Schubert, R. Moos:  
Self-Heated HTCC-based Ceramic Disc for Mixed Potential Sensors and for Direct Conversion Sensors for Automotive Catalysts  
*Sensors and Actuators B: Chemical*, **248**, 793-802 (2017), doi: 10.1016/j.snb.2016.11.079
- I. Marr, R. Moos:  
Resistive NO<sub>x</sub> dosimeter to detect very low NO<sub>x</sub> concentrations – Proof-of-principle and comparison with classical sensing devices  
*Sensors and Actuators B: Chemical*, **248**, 848-855 (2017), doi: 10.1016/j.snb.2016.12.112
- M. Schütt, M. Gallinger, R. Moos:  
Particulate Filter Substrates with SCR-Functionality Manufactured by Co-extrusion of Ceramic Substrate and SCR Active Material  
*Topics in Catalysis*, **60**, 204-208 (2017), doi: 10.1007/s11244-016-0598-7
- D. Rauch, M. Dietrich, T. Simons, U. Simon, A. Porch, R. Moos:  
Microwave Cavity Perturbation Studies on H-form and Cu Ion-Exchanged SCR Catalyst Materials: Correlation of Ammonia Storage and Dielectric Properties  
*Topics in Catalysis*, **60**, 243-249 (2017), doi: 10.1007/s11244-016-0605-z
- G. Hagen, N. Leupold, S. Wiegärtner, R. Moos:  
Sensor Tool for Fast Catalyst Material Characterization  
*Topics in Catalysis*, **60**, 312-317 (2017), doi: 10.1007/s11244-016-0617-8

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M. Feulner, F. Seufert, A. Müller, G. Hagen R. Moos:

Influencing Parameters on the Microwave-Based Soot Load Determination of Diesel Particulate Filters  
*Topics in Catalysis*, **60**, 374-380 (2017), doi: 10.1007/s11244-016-0626-7

S. Kauffmann-Weiss, W. Hässler, E. Guenther, J. Scheiter, S. Denneler, P. Glosse, T. Berthold, M. Oomen, T. Arndt, T. Stöcker, D. Hanft, R. Moos, M. Weiss, F. Weis, B. Holzapfel:

Superconducting properties of thick films on Hastelloy prepared by the Aerosol Deposition Method with ex-situ MgB<sub>2</sub> powder  
*IEEE Transactions on Applied Superconductivity*, **27**, 6200904 (2017), doi: 10.1109/TASC.2017.2669479

M. Feulner, G. Hagen, K. Hottner, S. Redel, A. Müller, R. Moos:

Comparative Study of Different Methods for Soot Sensing and Filter Monitoring in Diesel Exhausts  
*Sensors*, **17**, 400 (2017), doi: 10.3390/s17020400

A. Engelbrecht, M. Hämmerle, R. Moos, M. Fleischer, G. Schmid:

Improvement of the selectivity of the electrochemical conversion of CO<sub>2</sub> to hydrocarbons using cupreous electrodes with in-situ oxidation by oxygen  
*Electrochimica Acta*, **224**, 642-648 (2017), doi: 10.1016/j.electacta.2016.12.059

## Doctoral Theses

D. Rauch:

Mikrowellengestützte Untersuchung des NH<sub>3</sub>-Speicherverhaltens von SCR-Katalysatormaterialien  
(Microwave-based Characterization of the Ammonia Loading of SCR Catalysts Materials)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 20, Shaker-Verlag, Aachen (2017), ISBN: 978-3-8440-5081-3

I. Marr:

Materialien für dosimeterartige Gassensoren zur Detektion im ppm- und Sub-ppm-Bereich  
(Materials for dosimeter-type gas sensors for ppm- and sub-ppm-detection)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 19, Shaker-Verlag, Aachen (2017), ISBN: 978-3-8440-5022-6

G. Beulertz:

Anwendung der hochfrequenzgestützten Zustandsdiagnose für Dreiwegekatalysatoren  
(Application of the microwave-based state diagnosis for three way catalysts)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 18, Shaker-Verlag, Aachen (2017), ISBN: 978-3-8440-4988-6

## Invited Talks

15. FAD-Konferenz: Herausforderung - Abgasnachbehandlung für Dieselmotoren, Radebeul bei Dresden, 8.-9.11.2017

R. Moos: *Regelung von Diesel-Abgasnachbehandlungssystemen mittels Hochfrequenztechnik - ein Überblick über den Stand der Entwicklung beim SCR-Katalysator und beim Diesel-Partikelfilter*

7. Sitzung des Arbeitskreises „Funktionskeramik“ des Gemeinschaftsausschusses Hochleistungskeramik von DGM und DKG, 19.10.2017

R. Moos: *Der keramische Abgassensor - vom einfachen Keramikteil zum komplexen Sensor mit hoher Funktionalität*

Workshop Sensorik trifft Feuerungstechnik 2017: Neue Sensorik- und Regelungskonzepte für Holzfeuerungsanlagen – Aktuelle Ergebnisse und weiterer Forschungsbedarf, Karlsruhe, 20.10.2017

G. Hagen, H. Kohler: *Thermoelektrische Sensoren zur Detektion reduzierender Gase: Potenzial der Anwendung in Kleinfeuerungsanlagen*

41<sup>th</sup> International Microelectronics and Packaging IMAPS Conference, Warsaw, Poland, 11. - 13.09.2017

M. Bruckner, J. Kita, C. Münch, R. Moos: *Aerosol Deposition Method vs. Screen-Printing Technique – Novel Manufacturing Process for NTCR Thermistor Devices*

Emissions 2017, Am Buesing Palais Frankfurt, Germany, 12.9.-13.9.2017

R. Moos: *Overview on Recent Developments on Engine Control by Radio Frequency-Based Catalyst and Filter Monitoring*

4. Internationale Fachkonferenz Sensoren zur Abgasreinigung und CO<sub>2</sub>-Reduktion, Augsburg, 28.-29.6.2017

R. Moos: *SCR Control using Radio Frequency Sensors / Regelung eines SCR-Systems mit Mikrowellensensoren*

8<sup>th</sup> International Conference on Electroceramics (ICE2017), Nagoya, Japan, 28.5.-31.5.2017

R. Moos: *Ceramic Exhaust Gas Sensors: Recent Developments*

Institutskolloquium, National Institute of Advanced Industrial Science and Technology (AIST), Advanced Coating Technology Research Center, Tsukuba Japan, Mai 19<sup>th</sup>, 2017

R. Moos: *Overview on Aerosol Deposition Method at the Department of Functional Materials*

## Published Conference Contributions

G. Hagen, B. Ojha, J. Wohlrab, H. Kohler, R. Moos:

Anwendung eines thermoelektrischen Gassensors zur Erfassung reduzierender Komponenten in Verbrennungsabgasen von Kleinfeuerungsanlagen

## Year 2017

13. *Dresdner Sensor-Symposium*, 4.-6. Dezember 2017, Dresden, p. 111-113, doi: 10.5162/13dss2017/3.5

R. Wagner, D. Schönauer-Kamin, R. Moos:

Sol-Gel-Synthese von aluminiumdotiertem Zinkoxid für UV-unterstützte resistive Raumtemperatur-Stickoxidsensoren

13. *Dresdner Sensor-Symposium*, 4.-6. Dezember 2017, Dresden, p. 269-271, doi: 10.5162/13dss2017/P4.01

R. Moos:

Regelung von Diesel-Abgasnachbehandlungssystemen mittels Hochfrequenztechnik - ein Überblick über den Stand der Entwicklung beim SCR-Katalysator und beim Diesel-Partikelfilter

15. *FAD-Konferenz: Herausforderung - Abgasnachbehandlung für Dieselmotoren*, Radebeul bei Dresden, 8.-9.11.2017, p. 39-48

S. Bresch, B. Mieller, R. Moos, T. Rabe:

Pressure-assisted sintering of tape casted calcium cobaltite  $\text{Ca}_3\text{Co}_4\text{O}_9$  with varied powder compositions

15<sup>th</sup> *European Conference on Thermoelectrics*, Padova, Italy, September 25-27, 2017

M. Bruckner, J. Kita, C. Münch, R. Moos:

Aerosol Deposition Method vs. Screen-Printing Technique – Novel Manufacturing Process for NTCR Thermistor Devices

41<sup>th</sup> *International Microelectronics and Packaging IMAPS Conference*, Warsaw, Poland, 11. - 13.09.2017

J. Kita, G. Hagen, C. Schmitt, R. Moos:

Sensitivity Improvement of Thermoelectric Hydrocarbon Sensors: Combination of Glass-Ceramic Tapes and Alumina Substrates

*Eurosenors XXXI*, September 3 - 6, 2017, Paris, France

*Proceedings*, 1, 403 (2017), doi: 10.3390/proceedings1040403

A. Bogner, C. Steiner, S. Walter, J. Kita, G. Hagen, R. Moos:

Planar Microstrip Ring Resonator Structure for Gas Sensing and Humidity Sensing Purposes

*Eurosenors XXXI*, September 3 - 6, 2017, Paris, France

*Proceedings*, 1, 414 (2017), doi: 10.3390/proceedings1040414

T. Ritter, G. Hagen, R. Moos:

Direct Catalyst Conversion Sensor in Form of a Single Self-Heated Mixed-Potential Device

*Eurosenors XXXI*, September 3 - 6, 2017, Paris, France

*Proceedings*, 1, 424 (2017), doi: 10.3390/proceedings1040424

D. Schönauer-Kamin, Y. Li, W. Wlodarski, S. Ippolito, R. Moos:

2D  $\text{SnS}_2$  – A Material for Impedance-Based Low Temperature  $\text{NO}_x$  Sensing?

*Eurosenors XXXI*, September 3 - 6, 2017, Paris, France

*Proceedings*, 1, 455 (2017), doi: 10.3390/proceedings1040455

B. Ojha, G. Hagen, H. Kohler, R. Moos:

Exhaust Gas Analysis of Firewood Combustion Processes: Application of a Robust Thermoelectric Gas Sensor

*Eurosenors XXXI*, September 3 - 6, 2017, Paris, France

*Proceedings*, 1, 457 (2017), doi: 10.3390/proceedings1040457

S. Bresch, B. Mieller, R. Moos, T. Rabe:

Pressure assisted sintering of tape casted calcium cobaltite

15<sup>th</sup> *International Conference of the European Ceramic Society*, July 9-13, 2017, Budapest, Hungary, p. 422-423

M. Bektas, T. Stöcker, G. Hagen, R. Moos:

Initial Defect Model of Gas Sensitive  $\text{BaFe}_{1-x}\text{Ta}_x\text{O}_{3-\delta}$  Films

*Solid State Ionics* 21, June 18-23, 2017, Padua, Italy, I-12\_45/O, Proceedings, p. 370-371

Y. Zheng, U. Sauter, R. Moos:

Oxygen transport paths in screen-printed dense Pt electrodes on YSZ

*Solid State Ionics* 21, June 18-23, 2017, Padua, Italy, I-12\_22/O, Proceedings, p. 363-364

G. Hagen, A. Harsch, R. Moos:

Setup to eliminate the gas flow dependency of a hydrocarbon sensor for automotive exhaust applications

*Sensor 2017*, Proceedings of the 18<sup>th</sup> International Conference on Sensors and Measurement Technology, 30.5.-1.6.2017, Nürnberg,

doi: 10.5162/sensor2017/A4.1

T. Ritter, G. Hagen, R. Moos:

Novel mixed potential sensor device to compare two gas compartments and to determine directly the conversion of an automotive catalyst

*Sensor 2017*, Proceedings of the 18<sup>th</sup> International Conference on Sensors and Measurement Technology, 30.5.-1.6.2017, Nürnberg,

doi: 10.5162/sensor2017/A6.4

M. Bruckner, C. Münch, S. Schuurman, V. Poulain, J. Kita, R. Moos:

Dense Ceramic NTC Thermistor Films Produced at Room Temperature by the Novel Aerosol Deposition Method (ADM) for Temperature Sensor Applications

*Sensor 2017*, Proceedings of the 18<sup>th</sup> International Conference on Sensors and Measurement Technology, 30.5.-1.6.2017, Nürnberg,

doi: 10.5162/sensor2017/P1.4

## Year 2017

T. Ritter, S. Wiegärtner, G. Hagen, R. Moos:

Simulation of a thermoelectric gas sensor to determine hydrocarbons in exhaust gases and to characterize catalyst materials  
*Sensor 2017*, Proceedings of the 18<sup>th</sup> International Conference on Sensors and Measurement Technology, 30.5.-1.6.2017, Nürnberg,  
doi: 10.5162/sensor2017/P5.7

M. Bektas, T. Stöcker, G. Hagen, R. Moos:

Thermopower and Conductivity of Aerosol Deposited Gas Sensitive BaFe<sub>1-x</sub>Ta<sub>x</sub>O<sub>3-δ</sub> Films  
*Sensor 2017*, Proceedings of the 18<sup>th</sup> International Conference on Sensors and Measurement Technology, 30.5.-1.6.2017, Nürnberg,  
doi: 10.5162/sensor2017/P5.9

J. Exner, M. Schubert, D. Hanft, M. Bruckner, P. Fuierer, R. Moos:

Ceramic Composite Films formed by Aerosol Co-Deposition – Overview and Potential Applications  
*8<sup>th</sup> International Conference on Electroceramics (ICE2017)*, Nagoya, Japan, 28.5.-31.5.2017, p. 108

R. Moos:

Ceramic Exhaust Gas Sensors: Recent Developments  
*8<sup>th</sup> International Conference on Electroceramics (ICE2017)*, Nagoya, Japan, 28.5.-31.5.2017, p. 186

J. Exner, H. Pöpke, F.-M. Fuchs, J. Kita, R. Moos:

Influence of Powder Pretreatment for Aerosol Deposition of Ceria based Diffusion Barrier Layers for Solid Oxide Fuel Cells  
*8<sup>th</sup> International Conference on Electroceramics (ICE2017)*, Nagoya, Japan, 28.5.-31.5.2017, p. 216

R. Moos, M. Schubert, J. Exner, M. Hahn, N. Leupold, J. Kita:

Some novel aspects when manufacturing alumina films by the Aerosol Deposition Method (ADM)  
*PACRIM 12, The 12<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Waikoloa, Hawaii, 21.5.-26.5.2017, p. 165, S14-007-2017

D. Hanft, R. Moos:

The role of the Aerosol Deposition process on the film properties of Li<sub>7</sub>La<sub>3</sub>Zr<sub>2</sub>O<sub>12</sub> thick-films  
*PACRIM 12, The 12<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Waikoloa, Hawaii, 21.5.-26.5.2017, p. 233, S14-026-2017

D. Hanft, T. Stöcker, P. Glosse, S. Denneler, T. Berthold, M. P. Oomen, S. Kauffmann-Weiss, E. Günther, F. Weis, M. Weiss, W. Häßler, B. Holzapfel, R. Moos:

Aerosol Deposition of MgB<sub>2</sub> as a novel processing method for superconducting tapes  
*PACRIM 12, The 12<sup>th</sup> Pacific Rim Conference on Ceramic and Glass Technology*, Waikoloa, Hawaii, 21.5.-26.5.2017, p. 134, P-047-2017

M. Dietrich, C. Steiner, G. Hagen, R. Moos:

Radio-Frequency-Based Urea Dosing Control for Diesel Engines with Ammonia SCR Catalysts  
*2017 SAE World Congress*, April 4-6, 2017, Detroit, Michigan, USA, *SAE paper 2017-01-0945 (2017)*, doi: 10.4271/2017-01-0945

M. Hämmerle, K. Hilgert, R. Moos:

Gas diffusion biocathode for oxygen reduction based on direct electron transfer between carbon nanotubes and laccase  
*1<sup>st</sup> European & 10<sup>th</sup> German BioSensor Symposium*, Potsdam, 20.3.-23.3.2017, p. 130

J. Metzner, K. Luckert, R. Moos, M. Hämmerle:

A novel biosensor platform for inflammation analysis - assessment of platform feasibility  
*1<sup>st</sup> European & 10<sup>th</sup> German BioSensor Symposium*, Potsdam, 20.3.-23.3.2017, p. 205

M. Bruckner, C. Münch, S. Schuurman, V. Poulain, J. Kita, R. Moos:

Spinel-based NiMn<sub>2</sub>O<sub>4</sub> negative temperature coefficient (NTC) thermistor thick films produced by the Aerosol Deposition Method (ADM)  
*92. DKG Jahrestagung / Symposium Hochleistungskeramik 2017*, Berlin, 19.3.-22.3.2017, p. 33

S. Schönebaum, P. Chen, J. Simböck, D. Rauch, T. Simons, R. Palkovits, R. Moos, U. Simon:

Monitoring NH<sub>3</sub> storage and conversion in Cu-ZSM-5 and Cu-SAPO-34 catalysts for NH<sub>3</sub>-SCR by simultaneous impedance and DRIFT spectroscopy  
*50. Jahrestreffen Deutscher Katalytiker*, 15. - 17. März 2017, Weimar

M. Deluca, R. Wimmer-Teubenbacher, M. Bruckner, J. Kita, R. Moos, K. Reichmann, G.A. Maier:

Alternative spray-based processing methods for dielectric and piezoelectric film deposition  
*Electronic Materials and Applications 2017*, Orlando, Florida, Jan 18-20, 2017, EMA-S2-025-2017

## Year 2016

### Peer Reviewed Journals

P. Chen, R. Moos, U. Simon:

Metal Loading Affects the Proton Transport Properties and the Reaction Monitoring Performance of Fe-ZSM-5 and Cu-ZSM-5 in NH<sub>3</sub>-SCR  
*Journal of Physical Chemistry C*, **120**, 25361-25370 (2016), doi: 10.1021/acs.jpcc.6b07353

F. Schubert, M. Gollner, J. Kita, F. Linseis, R. Moos:

Optimization of a sensor for a Tian-Calvet calorimeter with LTCC-based sensor discs  
*Journal of Sensors and Sensors Systems*, **5**, 381-388 (2016), doi: 10.5194/jsss-5-381-2016

P. Chen, M. Jabłońska, P. Weide, T. Caumanns, T. Weirich, M. Muhler, R. Moos, R. Palkovits, U. Simon:

Formation and Effect of NH<sub>4</sub><sup>+</sup> Intermediates in NH<sub>3</sub>-SCR over Fe-ZSM-5 Zeolite Catalysts  
*ACS Catalysis*, **6**, 7696-7700 (2016), doi: 10.1021/acscatal.6b02496

G. Hagen, M. Feulner, R. Werner, M. Schubert, A. Müller, G. Rieß, D. Brüggemann, R. Moos:

Capacitive soot sensor for diesel exhausts  
*Sensors and Actuators B: Chemical*, **236**, 1020-1027 (2016), doi: 10.1016/j.snb.2016.05.006

P. Chen, J. Simböck, S. Schönebaum, D. Rauch, T. Simons, R. Palkovits, R. Moos, U. Simon:

Monitoring NH<sub>3</sub> storage and conversion in Cu-ZSM-5 and Cu-SAPO-34 catalysts for NH<sub>3</sub>-SCR by simultaneous impedance and DRIFT spectroscopy  
*Sensors and Actuators B: Chemical*, **236**, 1075-1082 (2016), doi: 10.1016/j.snb.2016.05.164

R. Moos, D. Rauch, M. Votsmeier, D. Kubinski:

Review on Radio Frequency Based Monitoring of SCR and Three Way Catalysts  
*Topics in Catalysis*, **59**, 961-969 (2016), doi: 10.1007/s11244-016-0575-1

F. Panzer, S. Baderschneider, T. Gujar, T. Unger, S. Bagnich, H. Bässler, M. Jakoby, S. Hüttner, J. Köhler, R. Moos, M. Thelakkat, R. Hildner, A. Köhler:

Reversible Laser-Induced Amplified Spontaneous Emission from Coexisting Tetragonal and Orthorhombic Phases in Hybrid Lead Halide Perovskites  
*Advanced Optical Materials*, **4**, 917-928 (2016), doi: 10.1002/adom.201500765

F. Schubert, M. Gollner, J. Kita, F. Linseis, R. Moos:

First steps to develop a sensor for a Tian-Calvet calorimeter with increased sensitivity  
*Journal of Sensors and Sensors Systems*, **5**, 205-212 (2016), doi: 10.5194/jsss-5-205-2016

Y. Zheng, U. Sauter, R. Moos:

Investigation of Oxygen Transport Paths in Geometrically Defined Thick-Film Composite Pt Electrodes on YSZ  
*Journal of the Electrochemical Society*, **163**, F877-F884 (2016), doi: 10.1149/2.1081608jes

P. Chen, D. Rauch, P. Weide, S. Schönebaum, T. Simons, M. Muhler, R. Moos, U. Simon:

The effect of Cu and Fe cations on NH<sub>3</sub>-supported proton transport in DeNO<sub>x</sub>-SCR zeolite catalysts  
*Catalysis Science & Technology*, **6**, 3362-3366 (2016), doi: 10.1039/C6CY00452K

F. Panzer, D. Hanft, T.P. Gujar, F.-J. Kahle, M. Thelakkat, A. Köhler, R. Moos:

Compact Layers of Hybrid Halide Perovskites Fabricated via the Aerosol Deposition Process – Uncoupling Material Synthesis and Layer Formation  
*Materials*, **9**, 277 (2016), doi: 10.3390/ma9040277

T. Stöcker, J. Exner, M. Schubert, M. Streibl, R. Moos:

Influence of Oxygen Partial Pressure during Processing on the Thermoelectric Properties of Aerosol-Deposited CuFeO<sub>2</sub>  
*Materials*, **9**, 227 (2016), doi: 10.3390/ma9040227

J. Exner, M. Schubert, D. Hanft, T. Stöcker, P. Fuierer, R. Moos:

Tuning of the electrical conductivity of Sr(Ti,Fe)O<sub>3</sub> oxygen sensing films by aerosol co-deposition with Al<sub>2</sub>O<sub>3</sub>  
*Sensors and Actuators B: Chemical*, **230**, 427-433 (2016), doi: 10.1016/j.snb.2016.02.033

A. Brandenburg, E. Wappler, J. Kita, R. Moos:

Miniaturized ceramic DSC device with strain gauge-based mass detection - First steps to realize a fully integrated DSC/TGA device  
*Sensors and Actuators A: Physical*, **241**, 145-151 (2016), doi: 10.1016/j.sna.2016.02.011

F. Schubert, S. Wollenhaupt, J. Kita, G. Hagen, R. Moos:

Platform to develop exhaust gas sensors manufactured by glass-solder-supported joining of sintered yttria-stabilized zirconia  
*Journal of Sensors and Sensor Systems*, **5**, 25-32 (2016), doi: 10.5194/jsss-5-25-2016

D. Ortolino, J. Kita, K. Beart, R. Wurm, S. Kleinewig, A. Pletsch, R. Moos:

Failure of electrical vias manufactured in thick-film technology when loaded with short high current pulses  
*Microelectronics Reliability*, **56**, 121-128 (2016), doi: 10.1016/j.microrel.2015.10.011

I. Pricha, W. Rossner, R. Moos:

Layered Ceramic Phosphors Based on CaAlSiN<sub>3</sub>:Eu and YAG:Ce for White Light-Emitting Diodes  
*Journal of the American Ceramic Society*, **99**, 211-217 (2016), doi: 10.1111/jace.13948

## Year 2016

T. Simons, P. Chen, D. Rauch, R. Moos, U. Simon:  
Sensing catalytic conversion: Simultaneous DRIFT and impedance spectroscopy for *in situ* monitoring of NH<sub>3</sub>-SCR on zeolites  
*Sensors and Actuators B: Chemical*, **224**, 492-499 (2016), doi: 10.1016/j.snb.2015.10.069

## Book Contributions

R. Moos:  
Mikrowellengestützte Systeme zur Zustandserkennung von Abgaskatalysatoren und Abgasfiltern im Überblick  
In: T. Tille (Hrsg.), *Automobil-Sensorik - Ausgewählte Sensorprinzipien und deren automobiler Anwendung*, Springer-Verlag, Heidelberg (2016), p. 115-132, ISBN 978-3-662-48943-7 (gedruckt), ISBN 978-3-662-48944-4 (online), doi: 10.1007/978-3-662-48944-4\_6

P. Fuierer, K. Ring, J. Exner, R. Moos:  
BiCu(Ti)VOX as a Low/Intermediate Temperature SOFC Electrolyte: Another Look  
In: T. Pfeifer, J. Matyáš, P. Balaya, D. Singh, J. Wei (Eds.): *Ceramics for Energy Conversion, Storage, and Distribution Systems: Ceramic Transactions*, Volume 255, John Wiley & Sons, Inc., Hoboken, New Jersey, USA, (2016), p. 29-40, ISBN: 978-1-119-23448-7 (print), ISSN: 1042-1122, doi: 10.1002/9781119234531.ch3

## Doctoral Theses

S. Fischer:  
Neuartiges Sensorprinzip basierend auf einer Spannungs-Puls-Methode zur Detektion von Stickoxiden an Zirkondioxid  
(Novel zirconia sensor principle based on a voltage pulse method to detect nitrogen oxides)  
In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 17, Shaker-Verlag, Aachen (2016), ISBN: 978-3-8440-4478-2

A. Groß:  
Einfluss von NO<sub>x</sub> auf die elektrische Leitfähigkeit von NO<sub>x</sub>-Speichermaterialien und die Anwendung dieser Materialien für neuartige NO<sub>x</sub>-Dosimeter  
(The effect of NO<sub>x</sub> on the electrical conductivity of NO<sub>x</sub> storage materials and the application of these materials for novel NO<sub>x</sub> dosimeters)  
In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 16, Shaker-Verlag, Aachen (2016), ISBN: 978-3-8440-4217-7

W. Missal:  
Miniaturisiertes Dynamisches Differenzkalorimeter in Mehrlagenkeramiktechnologie  
(Miniaturized dynamic differential scanning calorimeter manufactured in low temperature co-fired ceramic multilayer technology)  
In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 15, Shaker-Verlag, Aachen (2016), ISBN: 978-3-8440-4182-8

## Invited Talks

Deutsche Keramische Gesellschaft e.V. (DKG), Fachausschusses FA III Verfahrenstechnik, Erlangen, 30.11.-1.12.2016  
J. Kita, A. Brandenburg, F. Schubert, R. Moos: *Unkonventionelle Verarbeitung keramischer Folien für sensorische Anwendungen*

4<sup>th</sup> International Conference on Real Driving Emissions, Berlin, Germany, 25.-27.10.2016  
G. Hagen, R. Moos (tandem presentation): *OBM-PEMS made of chemical sensors – illusion or probable perspective?*

40<sup>th</sup> International Microelectronics and Packaging IMAPS Conference, Książ Castle, Poland, 25. - 28.09.2016  
J. Kita: *Cold film deposition of ceramic functional materials using the Aerosol-Deposition-Method – an overview*

Institutskolloquium, College of Electronic Science and Engineering, Jilin University, Changchun, China, July 15<sup>th</sup>, 2016  
R. Moos: *Chemical gas sensors with electrical readout: novel principles and novel materials*

Sensoren im Automobil, München, 5.4.-6.4.2016  
R. Moos: *Mikrowellengestützte Systeme zur Zustandserkennung von Abgaskatalysatoren und Abgasfiltern im Überblick*

91. DKG Jahrestagung / Symposium Hochleistungskeramik 2016, Freiberg, 7.3.-9.3.2016  
R. Moos: *Automotive exhaust gas sensors from an electroceramics point of view / Stand der Abgassensorik aus keramischer Sicht*

DGM Fortbildungsseminar Hochtemperatursensorik, Goslar, 25.2.-26.2.2016  
R. Moos: *Gas- und Zustandssensoren für den Automobilbereich*

## Published Conference Contributions

S. Denneler, P. Glosse, M. Oomen, T. Berthold, T. Stöcker, D. Hanft, R. Moos, S. Kauffmann-Weiss, B. Holzapfel, W. Häßler, M. Weiss, F. Weis:  
Superconducting MgB<sub>2</sub> films prepared by the Aerosol Deposition Method  
*The 7<sup>th</sup> Tsukuba International Coating Symposium 2016*, Tsukuba, Japan, 8.12.-9.12.2016

D. Hanft, R. Moos:  
Solid-Electrolyte Garnet-type Thick-Films by Aerosol Deposition  
*Bunsen-Kolloquium Solid-State Batteries II - from Fundamentals to Application*, 23.11.-25.11.2016, Frankfurt, Germany, p. 57-58

G. Hagen, R. Moos:  
OBM-PEMS made of chemical sensors – illusion or probable perspective?  
4<sup>th</sup> International Conference on Real Driving Emissions, Berlin, Germany, 25.-27.10.2016

## Year 2016

D. Schönauer-Kamin, I. Marr, R. Moos:

Dosimeter-Type Sensor for sub-ppm NO<sub>x</sub> Detection

*COST Action TD1105 EuNetAir, J. Heyrovsky Institute of Physical Chemistry, Prague, Czech Republic, 5-7 October 2016*

*Final Meeting at PRAGUE (CZ) on New Sensing Technologies for Air Quality Monitoring, Prague, Czech Republic*

S. Kauffmann-Weiss, W. Hässler, E. Guenther, J. Scheiter, S. Denneler, P. Glosse, T. Berthold, M. Oomen, T. Arndt, T. Stöcker, R. Moos, M. Weiss, F. Weis, B. Holzapfel:

MgB<sub>2</sub> superconducting films on Hastelloy prepared by Aerosol Deposition Method

*Applied Superconductivity Conference 2016, ASC2016, Denver, Colorado, Sep. 4-9, 2016, 3MPo2B-02*

M. Oomen, T. Arndt, P. van Hasselt, M. Frank, S. Denneler, P. Glosse, T. Stoecker, S. Kauffmann-Weiss, W. Haessler:

HTS Technology for High-Field Persistent-Current Magnet Systems

*Applied Superconductivity Conference 2016, ASC2016, Denver, Colorado, Sep. 4-9, 2016, 5Lor1A-02*

M. Bektas, T. Stöcker, G. Hagen, R. Moos:

Thermopower and conductivity of aerosol deposited BaFe<sub>1-x</sub>Ta<sub>x</sub>O<sub>3-δ</sub> films

*Nonstoichiometric Compounds VI, September 4-8, 2016, Santa Fe, New Mexico, USA*

P. Glosse, S. Denneler, S. Kauffmann-Weiss, M. Oomen, R. Moos:

MgB<sub>2</sub> superconducting films prepared by the aerosol deposition method

*6<sup>th</sup> International Congress on Ceramics, 21.-25.8.2016, Dresden, Germany, S. 134*

M. Schubert, M. Hahn, J. Exner, J. Kita, R. Moos:

Influence of substrate hardness and surface roughness on the formation of aerosol deposited films

*6<sup>th</sup> International Congress on Ceramics, 21.-25.8.2016, Dresden, Germany, S. 290*

J. Exner, G. Albrecht, M. Schubert, T. Stöcker, D. Hanft, R. Moos:

NO<sub>x</sub> detection by pulsed polarization of YSZ films prepared by aerosol deposition

*6<sup>th</sup> International Congress on Ceramics, 21.-25.8.2016, Dresden, Germany, S. 300*

T. Stöcker, J. Exner, M. Schubert, R. Moos:

Thermoelectric properties of copper based oxide materials processed with the novel aerosol deposition method

*6<sup>th</sup> International Congress on Ceramics, 21.-25.8.2016, Dresden, Germany, S. 335*

G. Hagen, R. Werner, M. Feulner, M. Schubert, A. Müller, D. Brüggemann, R. Moos:

Soot Sensing: Modelling and Real Gas Test of a Capacitive Approach

*The 16<sup>th</sup> International Meeting on Chemical Sensors, IMCS 16, Jeju, Korea, 10<sup>th</sup> - 13<sup>th</sup> July 2016, 3.5.7*

I. Marr, R. Moos:

Conductometric NO<sub>x</sub> Dosimeter to Detect Very Low NO<sub>x</sub> Concentrations - Comparison with Established Sensing Devices

*The 16<sup>th</sup> International Meeting on Chemical Sensors, IMCS 16, Jeju, Korea, 10<sup>th</sup> - 13<sup>th</sup> July 2016, 5.2.2*

T. Ritter, G. Hagen, J. Kita, F. Schubert, S. Wiegärtner, R. Moos:

Self-heated Direct Conversion Sensor for Automotive Catalysts Manufactured in HTCC Technology

*The 16<sup>th</sup> International Meeting on Chemical Sensors, IMCS 16, Jeju, Korea, 10<sup>th</sup> - 13<sup>th</sup> July 2016, 5.2.4*

D. Schönauer-Kamin, I. Marr, M. Zehentbauer, C. Zängle, R. Moos:

Characterization of the Sensitive Material for a Resistive NO<sub>x</sub> Gas Dosimeter by DRIFT Spectroscopy

*The 16<sup>th</sup> International Meeting on Chemical Sensors, IMCS 16, Jeju, Korea, 10<sup>th</sup> - 13<sup>th</sup> July 2016, 5.2.5*

D. Schönauer-Kamin, S. Fischer, J. Kita, R. Moos:

Temperature Independent Resistive Oxygen Sensors on Flexible Steel substrates

*The 16<sup>th</sup> International Meeting on Chemical Sensors, IMCS 16, Jeju, Korea, 10<sup>th</sup> - 13<sup>th</sup> July 2016, P1.4.8*

G. Hagen, C. Spannauer, M. Feulner, J. Kita, A. Müller, D. Brüggemann, R. Moos:

Conductometric Soot Sensors: Influence of Voltage and Temperature on the Soot Deposition

*The 16<sup>th</sup> International Meeting on Chemical Sensors, IMCS 16, Jeju, Korea, 10<sup>th</sup> - 13<sup>th</sup> July 2016, P2.3.2*

T. Ritter, S. Wiegärtner, G. Hagen, R. Moos:

Modelling of a Temperature Modulated Thermoelectric Hydrocarbon Gas Sensor

*The 16<sup>th</sup> International Meeting on Chemical Sensors, IMCS 16, Jeju, Korea, 10<sup>th</sup> - 13<sup>th</sup> July 2016, P2.4.2*

P. Chen, S. Schönebaum, D. Rauch, R. Moos, U. Simon:

Proton transport in Fe-ZSM-5 and Cu-ZSM-5 zeolites for NH<sub>3</sub>-SCR: an in situ impedance-DRIFT spectroscopy study

*16<sup>th</sup> International Congress on Catalysis (ICC 16), July 3-8, 2016, Beijing, China, OD01*

A. Engelbrecht, M. Hämmerle, R. Moos, M. Fleischer, G. Schmid:

Improvement of the selectivity of the electrochemical conversion of CO<sub>2</sub> to hydrocarbons using cupreous electrodes with in-situ oxidation by oxygen

*6<sup>th</sup> Baltic Electrochemistry Conference, 15<sup>th</sup> - 17<sup>th</sup> June, 2016, Helsinki, Finland, p. 60*

M. Hämmerle, K. Hilgert, R. Moos:

## Year 2016

Electrochemistry of laccase at multi-walled carbon nanotube modified electrodes: investigation of various immobilisation conditions and electrode configurations

*Biosensors 2016, 26<sup>th</sup> Anniversary World Congress on Biosensors*, May 25.-27., 2016, Gothenburg, Sweden, P3.001

F. Schubert, M. Gollner, J. Kita, F. Linseis, R. Moos:

Optimierung eines neuentwickelten Sensorkopfes für ein Tian-Calvet-Kalorimeter

*Sensoren und Messsysteme 2016*, 10.5.-11.5.2016, Nürnberg, p. 50-52, doi: 10.5162/sensoren2016/1.2.2

S. Wiegärtner, G. Hagen, J. Kita, D. Schönauer-Kamin, W. Reitmeier, K. Burger, P. Grass, M. Kaspar, H.-P. Rabl, A. Prince, P. Weigand, R. Moos:

Thermoelektrischer Kohlenwasserstoffsensoren in Dickschichttechnik mit Pt|PtRh Thermopile zur On-Board-Diagnose eines Diesel-Oxidations-Katalysators

*Sensoren und Messsysteme 2016*, 10.5.-11.5.2016, Nürnberg, p. 126-129, doi: 10.5162/sensoren2016/2.2.3

G. Hagen, R. Werner, M. Feulner, A. Müller, R. Moos:

Grundlegende Betrachtungen zu kapazitiven Rußsensoren

*Sensoren und Messsysteme 2016*, 10.5.-11.5.2016, Nürnberg, p. 173-176, doi: 10.5162/sensoren2016/3.2.2

P. Chen, S. Schönebaum, D. Rauch, R. Moos, U. Simon:

Molecular understanding of catalyst as sensor: an in situ impedance-DRIFT spectroscopy study of NH<sub>3</sub>-SCR reaction on zeolites

*EMRS Spring Meeting 2016*, May 2-6, 2016, Lille, France X.XI.7

F. Schubert, J. Kita, M. Gollner, F. Linseis, R. Moos:

Sensor Stack for Tian-Calvet Calorimeter made in LTCC-Technology

*IMAPS/ACerS 12<sup>th</sup> International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT 2016)*, Denver, April 19-21, 2016, p. 19-23, doi: 10.4071/2016CICMT-TP1A2

J. Kita, S. Wiegärtner, A. Prince, P. Weigand, R. Moos:

Evaluation of screen-printable type S (Pt-PtRh) thermocouples on different ceramic substrates

*IMAPS/ACerS 12<sup>th</sup> International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT 2016)*, Denver, April 19-21, 2016, p. 53-57, doi: 10.4071/2016CICMT-TP1B1

M. Anke, R. Moos, A. Jess:

Determination of the mass loss through evaporation of supported ionic liquids by a contactless microwave-based method

*49. Jahrestreffen Deutscher Katalytiker*, 16. - 18. März 2016, Weimar

P. Chen, S. Schönebaum, D. Rauch, R. Moos, U. Simon:

Proton transport in Fe-ZSM-5 and Cu-ZSM-5 zeolites for NH<sub>3</sub>-SCR: the role of NH<sub>4</sub>NO<sub>3</sub> intermediate

*49. Jahrestreffen Deutscher Katalytiker*, 16. - 18. März 2016, Weimar

R. Moos:

Automotive exhaust gas sensors from an electroceramics point of view

*91. DKG Jahrestagung / Symposium Hochleistungskeramik 2016*, Freiberg, 7.3.-9.3.2016, p. 181

M. Schubert, J. Exner, T. Stöcker, D. Hanft, R. Moos:

Effect of annealing on the permittivity of ceramic films manufactured by the Aerosol Deposition Method

*91. DKG Jahrestagung / Symposium Hochleistungskeramik 2016*, Freiberg, 7.3.-9.3.2016, p. 144

J. Exner, M. Schubert, D. Hanft, T. Stöcker, P. Fuierer, R. Moos:

Tuning of the electrical conductivity of Sr(TiFe)O<sub>3</sub> oxygen sensing films by aerosol codeposition with Al<sub>2</sub>O<sub>3</sub>

*91. DKG Jahrestagung / Symposium Hochleistungskeramik 2016*, Freiberg, 7.3.-9.3.2016, p. 139

S. Schönebaum, P. Chen, J. Simböck, D. Rauch, T. Simons, R. Palkovits R. Moos, U. Simon:

Monitoring NH<sub>3</sub> storage and conversion in Cu-SAPO-34 catalyst for NH<sub>3</sub>-SCR by simultaneous impedance and DRIFT spectroscopy

*28. Deutsche Zeolith-Tagung*, 2.3.- 4.3.2016, Gießen, P 021

## Year 2015

### Peer Reviewed Journals

S. Fischer, D. Schönauer-Kamin, R. Pohle, M. Fleischer, R. Moos:

Influence of operation temperature variations on NO measurements in low concentrations when applying the pulsed polarization technique to thimble-type lambda probes

*Journal of Sensors and Sensor Systems*, **4**, 321-329 (2015), doi: 10.5194/jsss-4-321-2015

P. Chen, S. Schönebaum, T. Simons, D. Rauch, M. Dietrich, R. Moos, U. Simon:

Correlating the Integral Sensing Properties of Zeolites with Molecular Processes by Combining Broadband Impedance and DRIFT Spectroscopy—A New Approach for Bridging the Scales

*Sensors*, **15**, 28915-28941 (2015), doi: 10.3390/s151128915

M. Feulner, G. Hagen, A. Müller, A. Schott, C. Zöllner, D. Brüggemann, R. Moos:

Conductometric Sensor for Soot Mass Flow Detection in Exhausts of Internal Combustion Engines

*Sensors*, **15**, 28796-28806 (2015), doi: 10.3390/s151128796

D. Hanft, J. Exner, M. Schubert, T. Stöcker, P. Fuierer, R. Moos:

An Overview of the Aerosol Deposition Method: Process Fundamentals and New Trends in Materials Applications

*Journal of Ceramic Science and Technology*, **6**, 147-182 (2015), doi: 10.4416/JCST2015-00018

P. Fremerey, A. Jess, R. Moos:

Why does the Conductivity of a Nickel Catalyst Increase during Sulfidation? An Exemplary Study Using an *In Operando* Sensor Device

*Sensors*, **15**, 27021-27034 (2015), doi: 10.3390/s151027021

M. Dietrich, D. Rauch, U. Simon, A. Porch, R. Moos:

Ammonia Storage Studies on H-ZSM-5 Zeolites by Microwave Cavity Perturbation: Correlation of Dielectric Properties with Ammonia Storage

*Journal of Sensors and Sensor Systems*, **4**, 263-269 (2015), doi: 10.5194/jsss-4-263-2015

M. Dietrich, C. Jahn, P. Lanzerath, R. Moos:

Microwave-Based Oxidation State and Soot Loading Determination on Gasoline Particulate Filters with Three-Way Catalyst Coating for Homogenously Operated Gasoline Engines

*Sensors*, **15**, 21971-21988 (2015), doi: 10.3390/s150921971

G. Beulertz, M. Votsmeier, R. Moos:

In operando Detection of Three-Way Catalyst Aging by a Microwave-Based Method: Initial Studies

*Applied Sciences*, **5**, 174-186 (2015), doi: 10.3390/app5030174

J. Exner, M. Hahn, M. Schubert, D. Hanft, P. Fuierer, R. Moos:

Powder requirements for aerosol deposition of alumina films

*Advanced Powder Technology*, **26**, 1143-1151 (2015), doi: 10.1016/j.apt.2015.05.016

R. Moos:

Microwave-Based Catalyst State Diagnosis - State of the Art and Future Perspectives

*SAE International Journal of Engines*, **8**, 1240-1245 (2015), doi: 10.4271/2015-01-1042

D. Rauch, D. Kubinski, G. Cavataio, D. Upadhyay, R. Moos:

Ammonia Loading Detection of Zeolite SCR Catalysts using a Radio Frequency based Method

*SAE International Journal of Engines*, **8**, 1126-1135 (2015), doi: 10.4271/2015-01-0986

G. Hagen, K. Burger, S. Wiegärtner, D. Schönauer-Kamin, R. Moos:

A mixed potential based sensor that measures directly catalyst conversion - A novel approach for catalyst on-board diagnostics

*Sensors and Actuators B: Chemical*, **217**, 158-164 (2015), doi: 10.1016/j.snb.2014.10.004

S. Wiegärtner, G. Hagen, J. Kita, W. Reitmeier, M. Hien, P. Grass, R. Moos:

Thermoelectric hydrocarbon sensor in thick-film technology for on-board-diagnostics of a diesel oxidation catalyst

*Sensors and Actuators B: Chemical*, **214**, 234-240 (2015), doi: 10.1016/j.snb.2015.02.083

P. Fremerey, A. Jess, R. Moos:

Is it possible to detect in situ the sulfur loading of a fixed bed catalysts with a sensor?

*Journal of Sensors and Sensor Systems*, **4**, 143-149 (2015), doi: 10.5194/jsss-4-143-2015

J. Kita, A. Engelbrecht, F. Schubert, A. Groß, F. Rettig, R. Moos:

Some practical points to consider with respect to thermal conductivity and electrical resistivity of ceramic substrates for high-temperature gas sensors

*Sensors and Actuators B: Chemical*, **213**, 541-546 (2015), doi: 10.1016/j.snb.2015.01.041

I. Pricha, W. Rossner, R. Moos:

Pressureless sintering of luminescent CaAlSiN<sub>3</sub>:Eu ceramics

*Journal of Ceramic Science and Technology*, **6**, 63-68 (2015), doi: 10.4416/JCST2014-00047

J. Exner, P. Fuierer, R. Moos:

Aerosol Codeposition of Ceramics: Mixtures of Bi<sub>2</sub>O<sub>3</sub>-TiO<sub>2</sub> and Bi<sub>2</sub>O<sub>3</sub>-V<sub>2</sub>O<sub>5</sub>

*Journal of the American Ceramic Society*, **98**, 717-723 (2015), doi: 10.1111/jace.13364

## Year 2015

R. Moos, G. Fischerauer:

Automotive Catalyst State Diagnosis Using Microwaves  
*Oil & Gas Science and Technology*, **70**, 55-65 (2015), doi: 10.2516/ogst/2013203

G. Beulertz, M. Votsmeier, R. Moos:

Effect of propene, propane, and methane on conversion and oxidation state of three-way catalysts: A microwave cavity perturbation study  
*Applied Catalysis B: Environmental*, **165**, 369-377 (2015), doi: 10.1016/j.apcatb.2014.09.068

D. Rauch, G. Albrecht, D. Kubinski, R. Moos:

A microwave-based method to monitor the ammonia loading of a vanadia-based SCR catalyst  
*Applied Catalysis B: Environmental*, **165**, 36-42 (2015), doi: 10.1016/j.apcatb.2014.09.059

## Invited Talks

CAPOC10 - 10<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, Oct. 28 - 30, 2015

R. Moos, D. Rauch, M. Votsmeier, D. Kubinski: *Radio frequency based monitoring of SCR and three way catalysts - a novel tool to get insight into catalyst behavior: Update on recent advances*

PACRIM 11, The 11<sup>th</sup> Pacific Rim Conference of Ceramic Societies, Jeju, Korea, 30.8.-4.9.2015, p. 396, WeD2-2

R. Moos: *Applications for Aerosol Deposition in the field of gas sensing*

2. Internationale Fachkonferenz Sensoren zur Abgasreinigung und CO<sub>2</sub>-Reduktion, Nürnberg, 24.-25.6.2015

R. Moos: *Status of the microwave-supported catalyst condition recognition / Stand der mikrowellengestützten Katalysatorzustandserkennung*

90. DKG Jahrestagung / Symposium Hochleistungskeramik 2015, Bayreuth, 15.3.-19.3.2015

R. Moos, J. Exner, D. Hanft, T. Stöcker, M. Bektas, M. Schubert: *Die Aerosol-Depositions-Methode (ADM): Ein neuartiges Verfahren zur Abscheidung dichter keramischer Schichten*

Workshop „Catalysis meets Sensing“, KIT, Karlsruhe, 6.2.2015

R. Moos: *Microwave-based determination of the oxidation state of ceria in three-way catalysts*

## Doctoral Theses

D. Ortolino:

Hochstromdurchkontaktierungen für die Hybridtechnik  
(Electrical high load vias in hybrid thick-film technology)

In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zu Materialien und Prozessen*, Bd. 6, Shaker-Verlag, Aachen (2015), ISBN: 978-3-8440-4089-0

P. Fremerey:

In-situ-Sensorik zur Bestimmung der Schwefel- und Koksbeladung auf Festbettkatalysatoren  
(In situ sensor to determine sulfur and coke loading on fixed bed catalyst)

In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 14, Shaker-Verlag, Aachen (2015), ISBN: 978-3-8440-3473-8

I. Pricha:

Vollkeramische Leuchtstoffkomposite für weißemittierende Leuchtdioden  
(Ceramic Composite Phosphors for White Light Emitting Diodes)

In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zu Materialien und Prozessen*, Bd. 5, Shaker-Verlag, Aachen (2015), ISBN: 978-3-8440-3409-7

D. Schönauer-Kamin:

Neuartiger Mischpotentialsensor zur Detektion von Ammoniak in Abgasen  
(Novel Mixed Potential Sensor for the Detection of Ammonia in Exhaust Gases)

In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 13, Shaker-Verlag, Aachen (2015), ISBN: 978-3-8440-3346-5

## Published Conference Contributions

F. Schubert, M. Gollner, J. Kita, F. Linseis, R. Moos:

Neuentwicklung eines Sensorkopfes für ein Tian-Calvet-Kalorimeter

G. Gerlach, A. Schütze (Hrsg.), *12. Dresdner Sensor-Symposium*, 7.-9. Dezember 2015, Dresden, p. 222-226, doi: 10.5162/12dss2015/P7.2

G. Hagen, N. Leupold, S. Wiegärtner, J. Kita, R. Moos:

Neuartige Sensoranwendung zur Katalysator-Materialcharakterisierung

G. Gerlach, A. Schütze (Hrsg.), *12. Dresdner Sensor-Symposium*, 7.-9. Dezember 2015, Dresden, p. 230-233, doi: 10.5162/12dss2015/P7.5

J. Exner, R. Moos:

Ermittlung spezifischer Materialkennwerte von Schichten mittels Interdigital-Elektroden

G. Gerlach, A. Schütze (Hrsg.), *12. Dresdner Sensor-Symposium*, 7.-9. Dezember 2015, Dresden, p. 256-259, doi: 10.5162/12dss2015/P7.10

R. Moos, D. Rauch, M. Votsmeier, D. Kubinski:

Radio frequency based monitoring of SCR and three way catalysts - a novel tool to get insight into catalyst behavior: Update on recent advances

## Year 2015

CAPOC10 - 10<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, Oct. 28 - 30, 2015, Vol. 1, p. 79-93

M. Schütt, M. Gallinger, R. Moos:

Particulate filter substrates with SCR-functionality manufactured by co-extrusion of ceramic substrate and SCR active material

CAPOC10 - 10<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, Oct. 28 - 30, 2015, Vol. 1, p. 249-258

D. Rauch, D. Kubinski, R. Moos:

In operando monitoring of the ammonia storage behavior of Cu Chabazite SCR catalysts using a radio frequency based method

CAPOC10 - 10<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, Oct. 28 - 30, 2015, Vol. 1, p. 259-262

D. Rauch, M. Dietrich, T. Simons, U. Simon, A. Porch, R. Moos:

Microwave cavity perturbation studies on ion-exchanged and H-form SCR catalyst materials: correlation of ammonia storage and dielectric properties

CAPOC10 - 10<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, Oct. 28 - 30, 2015, Vol. 1, p. 407-418

G. Hagen, N. Leupold, S. Wiegärtner, R. Moos:

Sensor Tool for Fast Catalyst Material Light-off Characterization

CAPOC10 - 10<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, Oct. 28 - 30, 2015, Vol. 2, p. 283-293

M. Feulner, F. Seufert, A. Müller, G. Hagen, R. Moos:

Influencing Parameters on the Microwave-Based Soot Load Determination of Diesel Particulate Filters

CAPOC10 - 10<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, Oct. 28 - 30, 2015, Vol. 2, p. 417-429

A. Brandenburg, E. Wappler, J. Kita, R. Moos:

First approaches to integrate a strain gauge-based mass detection system into a miniaturized DSC-device

Eurosensors XXIX, September 6 - 9, 2015, Freiburg, Germany, BS02-3

Procedia Engineering, **120**, 116-119 (2015), doi: 10.1016/j.proeng.2015.08.579

G. Hagen, G. Rieß, M. Schubert, M. Feulner, A. Müller, D. Brüggemann, R. Moos:

Capacitive Soot Sensor

Eurosensors XXIX, September 6 - 9, 2015, Freiburg, Germany, BS08-3

Procedia Engineering, **120**, 241-244 (2015), doi: 10.1016/j.proeng.2015.08.590

P. Chen, S. Schönebaum, T. Simons, D. Rauch, R. Moos, U. Simon:

In situ monitoring of DeNOx-SCR on zeolite catalysts by means of simultaneous impedance and DRIFT spectroscopy

Eurosensors XXIX, September 6 - 9, 2015, Freiburg, Germany, BS09-2

Procedia Engineering, **120**, 257-260 (2015), doi: 10.1016/j.proeng.2015.08.600

J. Kita, S. Wiegärtner, R. Moos, P. Weigand, A. Pliscott, M.H. LaBranche, H.D. Glicksman:

Screen-printable type S thermocouple for thick-film technology

Eurosensors XXIX, September 6 - 9, 2015, Freiburg, Germany, MP-K03

Procedia Engineering, **120**, 828-831 (2015), doi: 10.1016/j.proeng.2015.08.692

M. Schubert, J. Exner, T. Stöcker, R. Moos:

Effect of annealing on the permittivity of ceramic films prepared by the Aerosol Deposition Method

PACRIM 11, The 11<sup>th</sup> Pacific Rim Conference of Ceramic Societies, Jeju, Korea, 30.8.-4.9.2015, p. 966, WP1-54

D. Hanft, M. Bektas, M. Schubert, J. Exner, R. Moos:

Aerosol Deposition (AD) of doped and undoped SnO<sub>2</sub> films – Investigation of film formation and film properties

PACRIM 11, The 11<sup>th</sup> Pacific Rim Conference of Ceramic Societies, Jeju, Korea, 30.8.-4.9.2015, p. 968, WP1-56

R. Moos:

Applications for Aerosol Deposition in the field of gas sensing

PACRIM 11, The 11<sup>th</sup> Pacific Rim Conference of Ceramic Societies, Jeju, Korea, 30.8.-4.9.2015, p. 396, WeD2-2

T. Stöcker, J. Exner, D. Hanft, M. Schubert, R. Moos:

The Aerosol-Deposition - a novel method to process dense ceramic thermoelectrics

34<sup>th</sup> Annual Conference on Thermoelectrics (ICT 2015) and 13<sup>th</sup> European Conference on Thermoelectrics (ECT 2015), Dresden, 28.6.-2.7.2015, PA069

P.A. Fuierer, K. Ring, J. Exner, R. Moos:

BIMEVOX ceramics as an intermediate temperature SOFC electrolyte: Another look

11<sup>th</sup> International Conference on Ceramic Materials and Components for Energy and Environmental Applications, Vancouver, Canada, 14.6.-19.6.2015

J. Exner, G. Albrecht, P. Fuierer, R. Moos:

NO<sub>2</sub> Detection by Pulsed Polarization of Doped Bismuth Vanadate films prepared by the Aerosol Deposition Method

7<sup>th</sup> International Conference on Electroceramics (ICE2015), State College, PA, USA, 13.5.-16.5.2015, p. 3-O-02

J. Exner, P. Fuierer, R. Moos:

Aerosol Co-deposition of Ceramics: Composites of SrTi<sub>0.65</sub>Fe<sub>0.35</sub>O<sub>3-δ</sub> and Al<sub>2</sub>O<sub>3</sub>

7<sup>th</sup> International Conference on Electroceramics (ICE2015), State College, PA, USA, 13.5.-16.5.2015, p. PS-10

F. Schubert, S. Wollenhaupt, J. Kita, G. Hagen, R. Moos:

Switching-Type Lambda Sensor Manufactured by Joining of Sintered Zirconia via Glass Solder Paste

## Year 2015

*Sensor 2015*, Proceedings of the 17<sup>th</sup> International Conference on Sensors and Measurement Technology, 19.-21. May 2015, Nürnberg, p. 842 - 844  
doi: 10.5162/sensor2015/E8.4

G. Hagen, N. Leupold, S. Wiegärtner, H. Wittmann, R. Moos:  
Temperature Modulated Thermoelectric Gas Sensors

*Sensor 2015*, Proceedings of the 17<sup>th</sup> International Conference on Sensors and Measurement Technology, 19.-21. May 2015, Nürnberg, p. 704 - 707  
doi: 10.5162/sensor2015/E7.2

M. Dietrich, D. Rauch, U. Simon, A. Porch, R. Moos:

Correlation of Ammonia Storage and Dielectric Properties of SCR Catalyst Materials by Microwave Cavity Perturbation

*Sensor 2015*, Proceedings of the 17<sup>th</sup> International Conference on Sensors and Measurement Technology, 19.-21. May 2015, Nürnberg, p. 683 - 687  
doi: 10.5162/sensor2015/E6.2

R. Moos:

Microwave-based catalyst state diagnosis – state of the art and future perspective

2015 SAE World Congress, April 21-23, 2015, Detroit, Michigan, USA, SAE paper 2015-01-1042 (2015), doi: 10.4271/2015-01-1042

D. Rauch, D. Kubinski, G. Cavataio, D. Upadhyay, R. Moos:

Ammonia loading detection of zeolite SCR catalysts using a radio frequency based method

2015 SAE World Congress, April 21-23, 2015, Detroit, Michigan, USA, SAE paper 2015-01-0986 (2015), doi: 10.4271/2015-01-0986

J. Kita, A. Brandenburg, I. Sudina, R. Moos:

3D-Shaping of Ceramic Tapes to Manufacture a High-Temperature Miniaturized Furnace

IMAPS/ACerS 11<sup>th</sup> International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT 2015), Dresden, Germany, April 20-23, 2015, p. 288-292, doi: 10.4071/CICMT-THA15

M. Bektas, D. Hanft, D. Schönauer-Kamin, T. Stöcker, G. Hagen, R. Moos:

Conductometric temperature independent oxygen and NO sensors of BaFe<sub>0.7</sub>Ta<sub>0.3</sub>O<sub>3-δ</sub> produced by aerosol deposition method (ADM)

90. DKG Jahrestagung / Symposium Hochleistungskeramik 2015, Bayreuth, 15.3.-19.3.2015, p. 20

J. Exner, M. Hahn, M. Schubert, D. Hanft, R. Moos, P. Fuierer:

Powder requirements for Aerosol Deposition of alumina films

90. DKG Jahrestagung / Symposium Hochleistungskeramik 2015, Bayreuth, 15.3.-19.3.2015, p. 51

D. Hanft, M. Schubert, J. Exner, R. Moos:

Room temperature aerosol deposition (AD) for dense ceramic coatings – overview of a novel process

90. DKG Jahrestagung / Symposium Hochleistungskeramik 2015, Bayreuth, 15.3.-19.3.2015, p. 73

F. Schubert, S. Wollenhaupt, J. Kita, G. Hagen, R. Moos:

Lessons learned during the development of a manufacturing process for switching-type lambda sensors as a basis for new exhaust gas sensors

90. DKG Jahrestagung / Symposium Hochleistungskeramik 2015, Bayreuth, 15.3.-19.3.2015, p. 167

M. Schubert, J. Exner, R. Moos:

Influence of Carrier Gas Composition on the Stress of Alumina Coatings Prepared by the Aerosol Deposition Method

90. DKG Jahrestagung / Symposium Hochleistungskeramik 2015, Bayreuth, 15.3.-19.3.2015, p. 168

T. Stöcker, P. Dauner, R. Moos:

Thermoelectric properties of the different phases of CuFe<sub>2</sub>O<sub>4</sub> prepared by aerosol deposition

90. DKG Jahrestagung / Symposium Hochleistungskeramik 2015, Bayreuth, 15.3.-19.3.2015, p. 176

P. Chen, T. Simons, R. Moos, U. Simon:

In situ monitoring of DeNO<sub>x</sub>-SCR on zeolite catalysts by simultaneous DRIFT and impedance spectroscopy studies

48. Jahrestreffen Deutscher Katalytiker, 11. - 13. März 2015, Weimar

R. Fraas, M. Hämmerle, R. Moos:

Enzymatisches Fließinjektionsanalyse-System mit elektrochemischer NADH-Detektion: Glucosebestimmung in Fruchtsäften

9. Deutsches BioSensor Symposium, 11.-13. März 2015, München, p. 128-129

T. Simons, P. Chen, R. Moos, U. Simon:

Simultaneous DRIFT and impedance spectroscopy: a complementary approach for in situ monitoring of DeNO<sub>x</sub> SCR on zeolite catalyst

27. Deutsche Zeolith-Tagung, 25. - 27. Februar 2015, Oldenburg, DZT12

## Year 2014

### Peer Reviewed Journals

- D. Ortolino, A. Engelbrecht, H. Lauterbach, M. Bräu, J. Kita, R. Moos:  
Effect of Repeated Firing on the Resistance of Screen-Printed Thick Film Conductors  
*Journal of Ceramic Science and Technology*, **5**, 317-326 (2014), doi: 10.4416/JCST2014-00029
- J. Exner, P. Fuierer, R. Moos:  
Aerosol Deposition of (Cu,Ti) substituted Bismuth Vanadate Films  
*Thin Solid Films*, **573**, 185-190 (2014), doi: 10.1016/j.tsf.2014.11.037
- S. Schödel, R. Moos, M. Votsmeier, G. Fischerauer:  
SI-Engine Control with Microwave-Assisted Direct Observation of Oxygen Storage Level in Three-Way Catalysts  
*IEEE Transactions on Control Systems Technology*, **22**, 2346-2353 (2014), doi: 10.1109/TCST.2014.2305576
- M. Bektas, D. Hanft, D. Schönauer-Kamin, T. Stöcker, G. Hagen, R. Moos:  
Aerosol-deposited  $\text{BaFe}_{0.7}\text{Ta}_{0.3}\text{O}_{3-\delta}$  for nitrogen monoxide and temperature-independent oxygen sensing  
*Journal of Sensors and Sensor Systems*, **3**, 223-229 (2014), doi: 10.5194/jsss-3-223-2014
- I. Marr, K. Neumann, M. Thelakkat, R. Moos:  
Undoped and Doped Poly(tetraphenylbenzidine) as Sensitive Material for an Impedimetric Nitrogen Dioxide Gas Dosimeter  
*Applied Physics Letters*, **105**, 133301 (2014), doi: 10.1063/1.4896847
- M. Dietrich, D. Rauch, A. Porch, R. Moos:  
A laboratory test setup for in situ measurements of the dielectric properties of catalyst powder samples under reaction conditions by microwave cavity perturbation: set up and initial tests  
*Sensors*, **14**, 16856-16868 (2014), doi: 10.3390/s140916856
- D. Rauch, D. Kubinski, U. Simon, R. Moos:  
Detection of the ammonia loading of a Cu Chabazite SCR catalyst by a radio frequency-based method  
*Sensors and Actuators B: Chemical*, **205**, 88-93 (2014), doi: 10.1016/j.snb.2014.08.019
- M. Schubert, J. Exner, R. Moos:  
Influence of Carrier Gas Composition on the Stress of  $\text{Al}_2\text{O}_3$  Coatings Prepared by the Aerosol Deposition Method  
*Materials*, **7**, 5633-5642 (2014), doi: 10.3390/ma7085633
- D. Schönauer-Kamin, M. Fleischer, R. Moos:  
Influence of the  $\text{V}_2\text{O}_5$  content of the catalyst layer of a non-Nernstian  $\text{NH}_3$  sensor  
*Solid State Ionics*, **262**, 270-273 (2014), doi: 10.1016/j.ssi.2013.08.035
- S. Fischer, R. Pohle, E. Magori, M. Fleischer, R. Moos:  
Detection of NO by Pulsed Polarization of Pt | YSZ  
*Solid State Ionics*, **262**, 288-291 (2014), doi: 10.1016/j.ssi.2014.01.022
- D. Chen, A. Groß, D.C. Bono, J. Kita, R. Moos, H.L. Tuller:  
Electrical conductivity relaxation measurements: Application of low thermal mass heater stick  
*Solid State Ionics*, **262**, 914-917 (2014), doi: 10.1016/j.ssi.2014.01.023
- J.C. Brendel, M.M. Schmidt, G. Hagen, R. Moos, M. Thelakkat:  
Controlled Synthesis of Water-Soluble Conjugated Polyelectrolytes Leading to Excellent Hole Transport Mobility  
*Chemistry of Materials*, **26**, 1992-1998 (2014), doi: 10.1021/cm500500t
- T. Tesfamichael, M. Ahsan, M. Notarianni, A. Groß, G. Hagen, R. Moos, M. Ionescu, J. Bell:  
Gas Sensing of Ruthenium Implanted Tungsten Oxide Thin Films  
*Thin Solid Films*, **558**, 416-422 (2014), doi: 10.1016/j.tsf.2014.02.084
- I. Marr, A. Groß, R. Moos:  
Overview on Conductometric Solid-State Gas Dosimeters  
*Journal of Sensors and Sensor Systems*, **3**, 29-46 (2014), doi: 10.5194/jsss-3-29-2014
- B. Plochmann, S. Lang, R. Rügner, R. Moos:  
Optimization of thermoelectric properties of metal-oxide based polymer composites  
*Journal of Applied Polymer Science*, **131**, 40038 (2014), doi: 10.1002/app.40038
- P. Fuierer, M. Maier, J. Exner, R. Moos:  
Anisotropy and thermal stability of hot-forged BICUTIVOX oxygen ion conducting ceramics  
*Journal of the European Ceramic Society*, **34**, 943-951 (2014), doi: 10.1016/j.jeurceramsoc.2013.10.016
- M. Bektas, D. Schönauer-Kamin, G. Hagen, A. Mergner, C. Bojer, S. Lippert, W. Milius, J. Brey, R. Moos:  
 $\text{BaFe}_{1-x}\text{Ta}_x\text{O}_{3-\delta}$  - A material for temperature independent resistive oxygen sensors  
*Sensors and Actuators B: Chemical*, **190**, 208-213 (2014), doi: 10.1016/j.snb.2013.07.106

## Year 2014

### Invited Talks

Deutsche Keramische Gesellschaft e.V. (DKG), Fachausschusses FA III Verfahrenstechnik, Erlangen, 26.11.2014  
M. Schubert, J. Exner, D. Hanft, R. Moos: *Aerosol-Deposition: Kalte Abscheidung keramischer Schichten*

Offene Sitzung des AMA Wissenschaftsrats, Hannover, 30.9.2014  
R. Moos: *Neue Sensorprinzipien für die Abgas- und Umweltsensorik*

8. Internationales Forum Abgas- und Partikelemissionen / 8<sup>th</sup> *International Exhaust Gas and Particulate Emissions Forum*, Ludwigsburg, 1.-2.4.2014  
R. Moos: *Mikrowellenbasierte Beladungserkennung von Abgasnachbehandlungssystemen – ein Überblick über den Stand der Entwicklung / Microwave-based monitoring of exhaust gas aftertreatment systems – an overview* (with simultaneous translation)

DGM Fortbildungsseminar Hochtemperatursensorik, Goslar, 20.2.-21.2.2014  
R. Moos: *Gas- und Zustandssensoren für den Automobilbereich*

Institutskolloquium, Lehrstuhl für Analytische Chemie der TU München, 19.2.2014  
R. Moos: *Sensors for Automotive Emission Control*

### Published Conference Contributions

M. Bektas, D. Hanft, D. Schönauer-Kamin, T. Stöcker, G. Hagen, R. Moos  
Aerosol Deposited Thick Film BaFe<sub>0.7</sub>Ta<sub>0.3</sub>O<sub>3-δ</sub> Ceramic for Nitrogen Monoxide Sensing  
*COST Action TD1105 EuNetAir, European Environment Agency (EEA), Istanbul, 3 - 5 December 2014*  
*International Meeting on New Sensing Technologies and Methods for Air-Pollution Monitoring, Istanbul, Turkey*

J. Exner, D. Hanft, P. Fuierer, R. Moos:  
Room temperature aerosol deposition process for dense ceramic coatings - functional principle and applications  
*The 26<sup>th</sup> Rio Grande Symposium on Advanced Materials, Albuquerque, New Mexico, Oct. 6, 2014, P 24*

A. Engelbrecht, M. Hämmerle, R. Moos, M. Fleischer, G. Schmid:  
Electrochemical Carbon Dioxide Reduction at Copper Electrodes: Online Gas Chromatographic Analysis of Volatile Products  
*Electrochemistry 2014, Sep. 22-24, 2014, Mainz, Germany, p. 300*

J. Kita, A. Brandenburg, I. Sudina, R. Moos:  
High-Temperature Miniaturized Furnace manufactured in HTCC-Technology  
*38<sup>th</sup> International Microelectronics and Packaging IMAPS Conference, Rzeszów-Czarna, Poland, 21. - 24.09.2014*

A. Brandenburg, E. Wappler, R. Moos, J. Kita:  
Development and optimization of a novel miniaturized ceramic differential scanning calorimeter  
*Thermal Analysis and Calorimetry in Industry and Research - 40 Years of GEFTA, Berlin, Germany, September 16 - 19, 2014, p. E2*

A. Brandenburg, E. Wappler, J. Kita, R. Moos:  
Influence of the temperature distribution on the thermal resolution of a miniaturized ceramic differential scanning calorimeter  
*Thermal Analysis and Calorimetry in Industry and Research - 40 Years of GEFTA, Berlin, Germany, September 16 - 19, 2014, p. P6*

G. Hagen, A. Müller, M. Feulner, A. Schott, C. Zöllner, D. Brüggemann, R. Moos:  
Determination of the soot mass by conductometric soot sensors  
*Eurosensors XXVIII, September 7 - 10, 2014, Brescia, Italy, A4P-F15, Procedia Engineering, 87, 244-247 (2014), doi: 10.1016/j.proeng.2014.11.646*

J. Kita, A. Brandenburg, R. Moos:  
FEM-based modeling of the temperature distribution influence on melting process in ceramic differential micro-calorimeter  
*Eurosensors XXVIII, September 7 - 10, 2014, Brescia, Italy, A4P-H05, Procedia Engineering, 87, 412-415 (2014), doi: 10.1016/j.proeng.2014.11.277*

S. Wiegärtner, G. Hagen, J. Kita, D. Schönauer-Kamin, W. Reitmeier, M. Hien, P. Grass, R. Moos:  
Thermoelectric Hydrocarbon Sensor in Thick-film Technology for On-Board-Diagnostics of a Diesel Oxidation Catalyst  
*Eurosensors XXVIII, September 7 - 10, 2014, Brescia, Italy, B1L-A05, Procedia Engineering, 87, 616-619 (2014), doi: 10.1016/j.proeng.2014.11.564*

S. Fischer, R. Pohle, E. Magori, M. Fleischer, R. Moos:  
Detection of NO by pulsed polarization technique using Pt interdigital electrodes on yttria-stabilized zirconia  
*Eurosensors XXVIII, September 7 - 10, 2014, Brescia, Italy, B1L-A06, Procedia Engineering, 87, 620-623 (2014), doi: 10.1016/j.proeng.2014.11.565*

S. Wiegärtner, J. Kita, G. Hagen, C. Schmaus, A. Kießig, E. Glaser, A. Bolz, R. Moos:  
Development and application of a fast solid-state potentiometric CO<sub>2</sub>-Sensor in thick-film technology  
*Eurosensors XXVIII, September 7 - 10, 2014, Brescia, Italy, B4P-F10, Procedia Engineering, 87, 1031-1034 (2014), doi: 10.1016/j.proeng.2014.11.337*

## Year 2014

J. Kita, F. Schubert, F. Rettig, A. Engelbrecht, A. Groß, R. Moos:

Ceramic Alumina Substrates for High-Temperature Gas Sensors – Implications for Applicability  
*Eurosensors XXVIII*, September 7 - 10, 2014, Brescia, Italy, C2L-A04  
*Procedia Engineering*, **87**, 1505-1508 (2014), doi: 10.1016/j.proeng.2014.11.584

Y. Zheng, U. Sauter, G. Oehler, M. Streeb, R. Moos:

Identification of Oxygen Exchange Mechanisms on Geometrically Defined Pt|YSZ Electrodes  
65<sup>th</sup> Annual Meeting of the International Society of Electrochemistry, 31.8.-5.9.2014, Lausanne, Switzerland, p. s13-057

T. Stöcker, B. Plochmann, S. Lang, R. Rüger, R. Moos:

Materials for a novel thermoelectric generator with a high degree of design freedom  
*ICT2014: International Conference on Thermoelectrics*, Nashville, USA, July 6-10, 2014, PC4-001

T. Stöcker, J. Exner, R. Moos:

Influence of oxygen on the thermoelectric properties of aerosol-deposited CuFeO<sub>2</sub>  
*ICT2014: International Conference on Thermoelectrics*, Nashville, USA, July 6-10, 2014, PA4-003

M. Feulner, R. Stöber, G. Fischerauer, R. Moos:

How the humidity of a DPF affects the microwave based soot load determination  
18<sup>th</sup> ETH Conference on Combustion Generated Nanoparticles, June 22- 25, 2014, Zurich, Switzerland

J. Exner, P. Fuierer, R. Moos:

Aerosol Co-Deposition of Bi<sub>2</sub>O<sub>3</sub> and TiO<sub>2</sub> and in-situ formation of Bi<sub>4</sub>Ti<sub>3</sub>O<sub>12</sub>  
*Electroceramics XIV*, June 16-20, 2014, Bucharest, Romania, p. 357-358

D. Hanft, J. Exner, M. Schubert, R. Moos:

Room temperature aerosol deposition process for dense ceramic coatings  
*Aerosol Technology 2014*, 16.6.-18.6.2014, Karlsruhe, Germany, T240A04

T.N.H. Nguyen, S. Denneler, M. Ahlstedt, C.Schuh, R. Moos:

Fabrication and Characterization of Optical Ceramic Layers using the Aerosol Deposition Method  
*CIMTEC 13<sup>th</sup> International Ceramics Congress*, June 8-13, 2014, Montecatini Terme, Italy, CI-1:L10

S. Wiegärtner, G. Hagen, J. Kita, D. Schönauer-Kamin, R. Moos, M. Hien, W. Reitmeier, P. Grass:

Thermoelektrischer Kohlenwasserstoffsensoren in Dickschichttechnik zur On-Board-Diagnose eines Diesel-Oxidations-Katalysators  
*Sensoren und Messsysteme 2014*, 3.6.-4.6.2014, Nürnberg, ISBN 978-3-8007-3622-5

A. Brandenburg, J. Kita, E. Wappler, R. Moos:

Optimierung eines LTCC-basierten miniaturisierten dynamischen Wärmestromdifferenzkalorimeters  
*Sensoren und Messsysteme 2014*, 3.6.-4.6.2014, Nürnberg, ISBN 978-3-8007-3622-5

M. Bektas, D. Hanft, D. Schönauer-Kamin, T. Stöcker, G. Hagen, R. Moos:

Resistive temperature independent oxygen and NO sensors of BaFe<sub>1-x</sub>TaxO<sub>3-δ</sub> produced by aerosol deposition method  
E-MRS 2014 Spring Meeting, Lille, France, May 26-30, 2014, B.IX 2

I. Marr:

Gasdosimeter zur NO<sub>x</sub>-Detektion  
5. Doktorandentreffen der Gassensorik/Gasmesstechnik, 9.4.-10.4.2014, Aachen

M. Bektas:

Resistive temperature independent oxygen and NO sensors of BaFe<sub>1-x</sub>TaxO<sub>3-δ</sub> produced by aerosol deposition method  
5. Doktorandentreffen der Gassensorik/Gasmesstechnik, 9.4.-10.4.2014, Aachen

R. Moos:

Überblick über den Stand der Abgassensorik  
*Sensoren im Automobil*, 7.4.-8.4.2013, München, Germany, in: T. Tille et al.: Sensoren im Automobil V, expert Verlag 2014, p. 1 - 14, ISBN 978-3-8169-3207-9

R. Moos:

Mikrowellenbasierte Beladungserkennung von Abgasnachbehandlungssystemen – ein Überblick über den Stand der Entwicklung / *Microwave-based monitoring of exhaust gas aftertreatment systems – an overview* (in German and English)  
*Beiträge, 8. Internationales Forum Abgas- und Partikelemissionen / Proceedings, 8<sup>th</sup> International Exhaust Gas and Particulate Emissions Forum*, Ludwigsburg, Germany, 1.-2.4.2014, ISBN 978-3-00-039634-2, p. 71-79

D. Rauch, D. Kubinski, U. Simon, R. Moos:

Detection of the ammonia loading of a zeolite SCR-catalyst by a radio frequency-based method  
*The 15<sup>th</sup> International Meeting on Chemical Sensors*, IMCS 15, Buenos Aires, Argentina, 16<sup>th</sup> - 19<sup>th</sup> March 2014, M-SA-1-02

I. Marr, A. Groß, R. Moos:

Conductometric Gas Dosimeters for NO<sub>x</sub> Sensing  
*The 15<sup>th</sup> International Meeting on Chemical Sensors*, IMCS 15, Buenos Aires, Argentina, 16<sup>th</sup> - 19<sup>th</sup> March 2014, T-MCI-2-01

## Year 2014

G. Hagen, K. Burger, S. Wiegärtner, D. Schönauer-Kamin, R. Moos:

A novel approach for catalyst OBD – Comparing directly the up- and downstream atmospheres of a catalyst using a special solid electrolyte mixed-potential setup

*The 15<sup>th</sup> International Meeting on Chemical Sensors, IMCS 15, Buenos Aires, Argentina, 16<sup>th</sup> - 19<sup>th</sup> March 2014, M-MCII-2-01*

S. Fischer, R. Moos, D. Schönauer-Kamin, R. Pohle, J. Janek, M. Fleischer:

Why can we detect selectively NO<sub>x</sub> with Pt/YSZ by applying the pulsed polarization technique – a first model approach

*The 15<sup>th</sup> International Meeting on Chemical Sensors, IMCS 15, Buenos Aires, Argentina, 16<sup>th</sup> - 19<sup>th</sup> March 2014, M-SA-1-02*

D. Rauch, G. Albrecht, D. Kubinski, R. Moos:

A microwave-based method to monitor the ammonia loading of a vanadia doped tungsten-titania SCR catalyst

*The 15<sup>th</sup> International Meeting on Chemical Sensors, IMCS 15, Buenos Aires, Argentina, 16<sup>th</sup> - 19<sup>th</sup> March 2014, MPS-T2-7*

R. Moos, D. Rauch, T. Simons, U. Simon:

Can we monitor the catalytic properties of zeolite-based automotive catalysts by electrical measurements in situ?

*26. Deutsche Zeolith-Tagung, March, 26.2.-28.2.2014, Paderborn, p. 17-18*

## Doctoral Theses

B. Plochmann:

Polymer-Oxid-Verbundwerkstoffe für neuartige thermoelektrische Generatoren mit großer Designfreiheit

(Polymer-Oxide-Composites for Novel Thermoelectric Generators with a Large Degree of Design Freedom)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 4, Shaker-Verlag, Aachen (2014), ISBN: 978-3-8440-3033-4

P. Bartscherer:

Entwicklung einer elektrisch leitfähigen keramischen Funktionsschicht für Abgassensoren

(Development of a Conductive Ceramic Functional Layer for Exhaust Gas Sensors)

In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 11, Shaker-Verlag, Aachen (2014), ISBN: 978-3-8440-2912-3

## Year 2013

### Paper Awards

#### Best Paper Award 2013

S. Achmann, G. Hagen, J. Kita, I.M. Malkowsky, C. Kiener, R. Moos:  
Metal-Organic Frameworks for Sensing Applications in the Gas Phase  
*Sensors*, **9**, 1574-1589 (2009), doi: 10.3390/s90301574  
Details about the award: *Sensors*, **13**, 2113-2116 (2013), doi: 10.3390/s130202113

### Peer Reviewed Journals

#### S. Fischer, D. Schönauer-Kamin, R. Pohle, M. Fleischer, R. Moos:

NO Detection by Pulsed Polarization of Lambda Probes - Influence of the Reference Atmosphere  
*Sensors*, **13**, 16051-16064 (2013), doi: 10.3390/s131216051

#### J. Kita, W. Missal, E. Wappler, F. Bechtold, R. Moos:

Development of a Miniaturized Ceramic Differential Calorimeter Device in LTCC Technology  
*Journal of Ceramic Science and Technology*, **4**, 137-144 (2014), doi: 10.4416/JCST2013-00008

#### A. Brandenburg, J. Kita, A. Groß, R. Moos:

Novel tube-type LTCC transducers with buried heaters and inner interdigitated electrodes as a platform for gas sensing at various high temperatures  
*Sensors and Actuators B: Chemical*, **189**, 80-88 (2013), doi: 10.1016/j.snb.2012.12.119

#### A. Groß, T. Weller, H.L. Tuller, R. Moos:

Electrical Conductivity Study of NO<sub>x</sub> Trap Materials BaCO<sub>3</sub> and K<sub>2</sub>CO<sub>3</sub>/La-Al<sub>2</sub>O<sub>3</sub> during NO<sub>x</sub> Exposure  
*Sensors and Actuators B: Chemical*, **187**, 461-470 (2013), doi: 10.1016/j.snb.2013.01.083

#### M.Z. Ahmad, A.Z. Sadek, K. Latham, J. Kita, R. Moos, W. Wlodarski:

Chemically synthesized one-dimensional zinc oxide nanorods for ethanol sensing  
*Sensors and Actuators B: Chemical*, **187**, 295-300 (2013), doi: 10.1016/j.snb.2012.11.042

#### G. Hagen, J. Kita, N. Izu, U. Röder-Roith, D. Schönauer-Kamin, R. Moos:

Planar platform for temperature dependent four-wire impedance spectroscopy – A novel tool for the characterization of functional materials  
*Sensors and Actuators B: Chemical*, **187**, 174-183 (2013), doi: 10.1016/j.snb.2012.10.068

#### A. Groß, D. Hanft, G. Beulertz, I. Marr, D. Kubinski, J. Visser, R. Moos:

The Effect of SO<sub>2</sub> on the Sensitive Layer of a NO<sub>x</sub> Dosimeter  
*Sensors and Actuators B: Chemical*, **187**, 153-161 (2013), doi: 10.1016/j.snb.2012.10.039

#### R. Moos:

Special issue IMCS 2012, in Nuremberg, Germany  
*Sensors and Actuators B: Chemical*, **187**, 1 (2013), doi: 10.1016/j.snb.2013.03.027

#### N. Izu, G. Hagen, F. Schubert, D. Schönauer-Kamin, R. Moos:

Effect of a porous Pt/alumina cover layer for V<sub>2</sub>O<sub>5</sub>/WO<sub>3</sub>/TiO<sub>2</sub> resistive SO<sub>2</sub> sensing materials  
*Journal of the Ceramic Society of Japan*, **121**, 734-737 (2013), doi: 10.2109/jcersj2.121.734

#### P. Bartscherer, R. Moos:

Improvement of the sensitivity of a conductometric soot sensor by adding a conductive cover layer  
*Journal of Sensors and Sensor Systems*, **2**, 95-102 (2013), doi: 10.5194/jsss-2-95-2013

#### R. Moos, G. Beulertz, S. Reiß, G. Hagen, G. Fischerauer, M. Votsmeier, J. Gieshoff:

Overview: Status of the Microwave-Based Automotive Catalyst State Diagnosis  
*Topics in Catalysis*, **56**, 358-364 (2013), doi: 10.1007/s11244-013-9980-x

#### G. Beulertz, M. Fritsch, G. Fischerauer, F. Herbst, J. Gieshoff, M. Votsmeier, G. Hagen, R. Moos:

Microwave Cavity Perturbation as a Tool for Laboratory In Situ Measurement of the Oxidation State of Three Way Catalysts  
*Topics in Catalysis*, **56**, 405-409 (2013), doi: 10.1007/s11244-013-9987-3

#### M. Feulner, G. Hagen, A. Piontkowski, A. Müller, G. Fischerauer, D. Brüggemann, R. Moos:

In-Operation Monitoring of the Soot Load of Diesel Particulate Filters - Initial Tests  
*Topics in Catalysis*, **56**, 483-488 (2013), doi: 10.1007/s11244-013-0002-9

#### D. Schönauer-Kamin, M. Fleischer, R. Moos:

Half-cell potential analysis of an ammonia sensor with the electrochemical cell Au | YSZ | Au, VWT  
*Sensors*, **13**, 4760-4780 (2013), doi: 10.3390/s130404760

#### A. Groß, M. Kremling, I. Marr, D.J. Kubinski, J.H. Visser, H.L. Tuller, R. Moos:

Dosimeter-type NO<sub>x</sub> sensing properties of KMnO<sub>4</sub> and its electrical conductivity during temperature programmed desorption  
*Sensors*, **13**, 4428-4449 (2013), doi: 10.3390/s130404428

## Year 2013

D. Rauch, P. Fremerey, A. Jess, R. Moos:  
In situ detection of coke deposits on fixed-bed catalysts by a radio frequency-based method  
*Sensors and Actuators B: Chemical*, **181**, 681-689 (2013), doi: 10.1016/j.snb.2013.01.022

## Invited Talks

22. Diskussionstagung Anorganisch-Technische Chemie, 28.2.-1.3. 2013, Frankfurt  
R. Moos: *ZrO<sub>2</sub>-basierte Gassensoren für Anwendungen im Abgas*

## Book Contributions

F. Rettig, R. Moos:  
Semiconducting direct thermoelectric gas sensors  
In: R. Jaaniso, O.K. Tan (eds.), *Semiconductor gas sensors*, Woodhead Publishing Ltd., Cambridge, UK (2013), p. 261-296,  
ISBN 978-0-85709-236-6 (print), ISBN 978-0-85709-866-5 (online), doi: 10.1533/9780857098665.2.261

## Published Conference Contributions

S. Fischer, D. Schönauer-Kamin, R. Pohle, E. Magori, M. Fleischer, R. Moos:  
NO<sub>x</sub>-Detektion mittels Spannungs-Puls-Messung am System Pt | YSZ  
G. Gerlach, A. Schütze (Hrsg.), *11. Dresdner Sensor-Symposium*, 9.-11. Dezember 2013, Dresden, p. 28-33, doi: 10.5162/11dss2013/2.1

M. Feulner, A. Müller, R. Stöber, G. Fischerauer, R. Moos:  
Messungen zum Einfluss von Wasser auf die Beladungserkennung von Dieselpartikelfiltern mit Mikrowellentechnik  
G. Gerlach, A. Schütze (Hrsg.), *11. Dresdner Sensor-Symposium*, 9.-11. Dezember 2013, Dresden, p. 239-242, doi: 10.5162/11dss2013/B8

A. Brandenburg, J. Kita, E. Wappler, R. Moos:  
Optimierung eines miniaturisierten dynamischen Wärmestromdifferenzkalorimeters in LTCC-Technologie  
G. Gerlach, A. Schütze (Hrsg.), *11. Dresdner Sensor-Symposium*, 9.-11. Dezember 2013, Dresden, p. 300-303, doi: 10.5162/11dss2013/E9

P. Fremerey, A. Jess, R. Moos:  
Sensor für die In-situ-Bestimmung der Schwefelbeladung auf Festbettkatalysatoren  
G. Gerlach, A. Schütze (Hrsg.), *11. Dresdner Sensor-Symposium*, 9.-11. Dezember 2013, Dresden, p. 308-312, doi: 10.5162/11dss2013/F1

G. Hagen, J. Kita, D. Schönauer-Kamin, R. Moos:  
Planarer Vierleiter-Transducer für impedanzspektroskopische Material- und Sensorcharakterisierung  
G. Gerlach, A. Schütze (Hrsg.), *11. Dresdner Sensor-Symposium*, 9.-11. Dezember 2013, Dresden, p. 313-316, doi: 10.5162/11dss2013/F2

I. Marr, T. Stöcker, R. Moos:  
Resistives Gasdosimeter auf Basis von PEDOT:PSS zur Detektion von NO und NO<sub>2</sub>  
G. Gerlach, A. Schütze (Hrsg.), *11. Dresdner Sensor-Symposium*, 9.-11. Dezember 2013, Dresden, p. 317-320, doi: 10.5162/11dss2013/F3

Y. Zheng, U. Sauter, C. Dormann, G. Oehler, M. Streeb, K. Sahner, L. Kunz, U. Glanz, R. Moos:  
Investigation of Oxygen Reactions in a Screen-printed Pt/YSZ-Model Electrode System  
*ECS Transactions*, **58**, 37-43 (2014), doi: 10.1149/05822.0037ecst

Y. Zheng, U. Sauter, L. Kunz, M. Streeb, G. Oehler, K. Sahner, R. Moos:  
Investigation of Oxygen Reactions in a Screen-printed Pt/YSZ-Model Electrode System  
*224<sup>th</sup> ECS Meeting*, October 27 - November 1, 2013, San Francisco, USA, Abstract 2705

I. Marr, A. Groß, R. Moos:  
Conductometric Gas Dosimeter for NO<sub>2</sub> Detection  
*COST Action TD1105 EuNetAir, European Environment Agency (EEA)*, Copenhagen, 3 - 4 October 2013  
*International Meeting on New Sensing Technologies and Methods for Air-Pollution Monitoring*, Copenhagen

A. Brandenburg, J. Kita, E. Wappler, R. Moos:  
Optimization of a miniaturized ceramic differential scanning calorimeter device  
*37<sup>th</sup> International Microelectronics and Packaging IMAPS Conference, Kraków*, Poland 22. - 25.09.2013, p. 102

I. Marr:  
Das integrierende Messverfahren – Beispiele für Gasdosimeter  
4. Doktorandentreffen der Gassensorik/Gasmesstechnik, 19.9.-20.9.2013, Tübingen

I. Pricha, U. Liepold, M. Ahlstedt, W. Rossner, R. Moos:  
Processing of luminescent multilayer converter ceramics for light emitting diodes  
*13<sup>th</sup> International Conference of the European Ceramic Society*, June 23-26, 2013, Limoges, France

D. Chen, A. Groß, D.C. Bono, R. Moos, H.L. Tuller:

## Year 2013

Electrical conductivity relaxation measurements: Application of low thermal mass heater stick  
*Solid State Ionics* 19, June 2-7, 2013, Kyoto, Japan, Abstracts, p. 20

D. Schönauer-Kamin, M. Fleischer, R. Moos:  
Influence of  $V_2O_5$  content of the catalyst layer of a non-Nernstian  $NH_3$  sensor  
*Solid State Ionics* 19, June 2-7, 2013, Kyoto, Japan, Abstracts, p. 38

S. Fischer, R. Pohle, E. Magori, M. Fleischer, R. Moos:  
Detection of NO by Pulsed Polarization of Pt | YSZ  
*Solid State Ionics* 19, June 2-7, 2013, Kyoto, Japan, Abstracts, p. 100

J. Exner, M. Maier, P. Fuierer, R. Moos:  
Aerosol Deposition of Bismuth Vanadates  
*Solid State Ionics* 19, June 2-7, 2013, Kyoto, Japan, Abstracts, p. 132

A. Groß, I. Marr, R. Moos:  
Overview on solid-state dosimeter-type gas sensors  
*Sensor 2013*, Proceedings of the 16<sup>th</sup> International Conference on Sensors and Measurement Science, 14.-16. May 2013, Nürnberg, p. 650 - 655  
doi: 10.5162/sensor2013/E6.3

S. Wiegärtner, G. Hagen, J. Kita, R. Moos, E. Glaser, J. Spallek, A. Bolz, C. Schmaus, A. Kießig:  
A solid-state potentiometric  $CO_2$ -sensor in thick film technology for breath analysis  
*Sensor 2013*, Proceedings of the 16<sup>th</sup> International Conference on Sensors and Measurement Science, 14.-16. May 2013, Nürnberg, p. 717 - 719  
doi: 10.5162/sensor2013/P2.3

S. Fischer, R. Pohle, E. Magori, B. Farber, M. Fleischer, R. Moos:  
Pulsed polarization of lambda probes – evaluation of the polarization current  
*Sensor 2013*, Proceedings of the 16<sup>th</sup> International Conference on Sensors and Measurement Science, 14.-16. May 2013, Nürnberg, p. 732 - 735  
doi: 10.5162/sensor2013/P2.7

M. Feulner, A. Müller, G. Hagen, D. Brüggemann, R. Moos:  
Microwave-Based Diesel Particulate Filter Monitoring – Soot Load Determination and Influencing Parameters  
*Sensor 2013*, Proceedings of the 16<sup>th</sup> International Conference on Sensors and Measurement Science, 14.-16. May 2013, Nürnberg, p. 753 - 756  
doi: 10.5162/sensor2013/P4.1

P. Fremerey, D. Rauch, A. Jess, R. Moos:  
In operando detection of coke deposits on a fixed-bed catalyst by a contactless microwave method  
*Sensor 2013*, Proceedings of the 16<sup>th</sup> International Conference on Sensors and Measurement Science, 14.-16. May 2013, Nürnberg, p. 761 - 765  
doi: 10.5162/sensor2013/P4.3

T. Stöcker, R. Moos, R. Rüger:  
Defect chemistry and thermoelectric properties of doped Delafossite-type oxide  $CuFeO_2$   
*2<sup>nd</sup> International Conference on Materials for Energy*, EnMat II, Karlsruhe, Germany, May 12-16, 2013, 1.02-04

P. Fremerey, D. Rauch, A. Jess, R. Moos:  
Direkte Bestimmung der Koksbeladung von Festbettkatalysatoren mit einem Mikrowellenmessverfahren  
*Jahrestreffen Reaktionstechnik 2013*, 6.-8. Mai 2013, Würzburg, P13

J. Kita, A. Brandenburg, R. Moos:  
Application of Cylindrical Pipe-Type LTCC Substrates as a Platform for Multi-Array Gas Sensors  
*IMAPS/ACerS 9<sup>th</sup> International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT 2013)*, Orlando, Florida, April 23-25, 2013, p. 288-292, doi: 10.4071/CICMT-THA46

D. Ortolino, J. Kita, R. Moos, R. Wurm, A. Pletsch, K. Beart:  
Modeling the Failure Mechanism of Electrical Vias Manufactured in Thick-Film Technology  
*IMAPS/ACerS 9<sup>th</sup> International Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT 2013)*, Orlando, Florida, April 23-25, 2013, p. 149-154, doi: 10.4071/CICMT-2013-WP23

M. Hämmerle, K. Hilgert, R. Moos:  
Papierbasierter enzymatischer Gassensor  
*8. Deutsches Biosensor Symposium 2013*, 10.-13. März 2013, Wildau, P29

I. Marr, G. Hagen, R. Moos:  
Sensing the zeolites' functionalities and zeolites for sensing applications - an overview  
Proceedings 25. *Deutsche Zeolith-Tagung*, March, 6.-8. 2013, Hamburg, P019, p. 104-105

## Year 2012

### Peer Reviewed Journals

G. Beulertz, A. Groß, R. Moos, D.J. Kubinski, J.H. Visser:

Determining the Total Amount of NO<sub>x</sub> in a Gas Stream - Advances in the Accumulating Gas Sensor Principle  
*Sensors and Actuators B: Chemical*, **175**, 157-162 (2012), doi: 10.1016/j.snb.2012.02.017

S. Fischer, R. Pohle, E. Magori, D. Schönauer-Kamin, M. Fleischer, R. Moos:

Pulsed Polarization of Platinum Electrodes on YSZ  
*Solid State Ionics*, **225**, 371-375 (2012), doi: 10.1016/j.ssi.2012.03.020

A. Groß, S.R. Bishop, D.J. Yang, H.L. Tuller, R. Moos:

The Electrical Properties of NO<sub>x</sub>-storing Carbonates during NO<sub>x</sub> exposure  
*Solid State Ionics*, **225**, 317-323 (2012), doi: 10.1016/j.ssi.2012.05.009

C. Schlangen, M. Hämmerle, R. Moos:

Amperometric enzyme electrodes for the determination of volatile alcohols in the headspace above fruit and vegetable juices  
*Microchimica Acta*, **179**, 115-121 (2012), doi: 10.1007/s00604-012-0867-5

A. Groß, M. Richter, D.J. Kubinski, J.H. Visser, R. Moos:

The Effect of the Thickness of the Sensitive Layer on the Performance of the Accumulating NO<sub>x</sub> Sensor  
*Sensors*, **12**, 12329-12346 (2012), doi: 10.3390/s120912329

S. Denneler, C. Schuh, K. Benkert, R. Moos:

Influence of sintering conditions on doped PZT ceramics for base-metal electrode multilayer actuators  
*Functional Materials Letters*, **5**, 1250022 (2012), doi: 10.1142/S1793604712500221

W. Missal, J. Kita, E. Wappler, F. Bechtold, R. Moos:

Calorimetric Sensitivity and Thermal Resolution of a Novel Miniaturized Ceramic DSC Chip in LTCC Technology  
*Thermochimica Acta*, **543**, 142-149 (2012), doi: 10.1016/j.tca.2012.05.019

T. Stöcker, A. Köhler, R. Moos:

Why does the electrical conductivity in PEDOT: PSS decrease with PSS content? A study combining thermoelectric measurements with impedance spectroscopy  
*Journal of Polymer Science Part B: Polymer Physics*, **50**, 976-983 (2012), doi: 10.1002/polb.23089

A. Groß, G. Beulertz, I. Marr, D.J. Kubinski, J.H. Visser, R. Moos:

Dual Mode NO<sub>x</sub> Sensor: Measuring Both the Accumulated Amount and Instantaneous Level at Low Concentrations  
*Sensors*, **12**, 2831-2850 (2012), doi: 10.3390/s120302831

### Book Contributions

R. Moos:

New approaches for exhaust gas sensing.

In: M. Lehmann, M. Fleischer (eds.), *Solid State Gas Sensors: Industrial Application*, Springer, Berlin (2012), p. 173-188, ISBN 978-3-642-28092-4, doi: 10.1007/5346\_2011\_6

### Invited Talks

European Network on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability - EuNetAir, Rome, Italy, 4 - 6 Dec. 2012  
Daniela Schönauer-Kamin: *Examples of applications of SCR-catalyst materials for exhaust gas monitoring in Germany*

E-COSM'12, IFAC Workshop on Engine and Powertrain Control, Simulation and Modeling, Rueil-Malmaison, France, October 23-25, 2012  
R. Moos: *Overview of the status of the automotive catalyst state diagnosis using microwave-based techniques*

CAPOC9, 9<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, August 29 - 31, 2012

R. Moos, G. Beulertz, S. Reiß, G. Hagen, G. Fischerauer, M. Votsmeier, J. Gieshoff: *Status of the microwave-based automotive catalyst state diagnosis*

DGM Fortbildungsseminar Hochtemperatursensorik, Goslar, 23.2.-24.2.2012

R. Moos: *Gas- und Zustandssensoren für den Automobilbereich*

36<sup>th</sup> Intl. Conference on Advanced Ceramics and Composites, Daytona Beach, Florida, 22.-27.1.2012

R. Moos: *Sensors and Catalysts in Automotive Exhaust Gas Aftertreatment - an Overview on recent developments and research trends*

### Published Conference Contributions

R. Moos:

Overview of the status of the automotive catalyst state diagnosis using microwave-based techniques

*E-COSM'12, IFAC Workshop on Engine and Powertrain Control, Simulation and Modeling*, Rueil-Malmaison, France, October 23-25, 2012, p. 409-414

## Year 2012

I. Marr:

Integrierendes Messprinzip am Beispiel eines NO<sub>x</sub>-Speichermaterials  
2. Doktorandentreffen der Gassensorik/Gasmesstechnik, 8.10.- 9.10.2012, Saarbrücken

P. Fremerey:

Katalysatorüberwachung mittels Hochfrequenztechnik am Beispiel der Koksbelastung von Festbettkatalysatoren  
2. Doktorandentreffen der Gassensorik/Gasmesstechnik, 8.10.- 9.10.2012, Saarbrücken

J. Kita, A. Brandenburg, A. Groß, R. Moos:

Novel tube-type LTCC transducers with buried heaters and inner electrodes for high-temperatures gas sensors  
*Eurosensors XXVI*, September 9 - 12, 2012, Cracow, Poland, *Procedia Engineering*, **47**, 60-63 (2012), doi: 10.1016/j.proeng.2012.09.084

R. Moos, G. Beulertz, S. Reiß, G. Hagen, G. Fischerauer, M. Votsmeier, J. Gieshoff:

Status of the microwave-based automotive catalyst state diagnosis  
*CAPOC9 - 9<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control*, Brussels, Belgium, Aug. 29 - 31, 2012, Vol. 1, p. 33-44

G. Beulertz, M. Fritsch, G. Fischerauer, F. Herbst, J. Gieshoff, M. Votsmeier, G. Hagen, R. Moos:

In-situ three-way-catalyst characterization for a laboratory test bench  
*CAPOC9 - 9<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control*, Brussels, Belgium, Aug. 29 - 31, 2012, Vol. 3, p. 321-329

M. Feulner, G. Hagen, A. Piontkowski, A. Müller, G. Fischerauer, D. Brüggemann, R. Moos:

In-operation monitoring of the soot load of diesel particulate filters - initial tests  
*CAPOC9 - 9<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control*, Brussels, Belgium, Aug. 29 - 31, 2012, Vol. 3, p. 431-439

K. Grimm, D. Otte, E. Glaser, S. Wiegärtner, G. Hagen, J. Kita, C. Schmaus, A. Kießig, R. Moos, A. Bolz:

Praktifizierung eines neuartigen Kapnometriesensors für die Fehlintonationserkennung  
26. *Treffpunkt Medizintechnik*, Charité - Universitätsmedizin Berlin, 7. Juni 2012

P. Fremerey, D. Rauch, R. Moos, A. Jess

Detection of coke loading on fixed bed catalyst by a contactless microwave-based method  
*15<sup>th</sup> International Congress on Catalysis 2012*, Munich, Germany, July 01 - 06, 2012, P1.01\_6875

D. Rauch, P. Fremerey, A. Jess, R. Moos:

Detection of coke deposits on a fixed-bed catalyst by a contactless microwave method: first measurements  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 76-79, doi: 10.5162/IMCS2012/1.1.5

M. Z. Ahmad, A.Z. Sadek, K. Latham, J. Kita, R. Moos, W. Wlodarski:

Chemically synthesized one-dimensional zinc oxide nanorods for ethanol sensing  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 283-286, doi: 10.5162/IMCS2012/3.3.3

D. Schönauer-Kamin, R. Moos:

SCR-Catalyst Materials for Exhaust Gas Detection  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 387-390, doi: 10.5162/IMCS2012/4.4.4

A. Groß, D. Hanft, M. Richter, G. Beulertz, D. Kubinski, J. Visser, R. Moos:

The influence of SO<sub>2</sub> and the thickness of the sensitive layer on the performance of the Integrating NO<sub>x</sub> Sensor  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 436-439, doi: 10.5162/IMCS2012/5.2.2

S. Fischer, D. Schönauer-Kamin, R. Pohle, E. Magori, B. Farber, M. Fleischer, R. Moos:

NO<sub>x</sub>-detection by pulsed polarization of lambda probes  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1050-1053, doi: 10.5162/IMCS2012/P1.6.4

M.Z. Ahmad, J. Chang, A.Z. Sadek, J. Kita, E.R. Waclawik, R. Moos, W. Wlodarski:

Non-aqueous synthesis of In<sub>2</sub>O<sub>3</sub> nanoparticles and its NO<sub>2</sub> gas sensing properties  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1060-1063, doi: 10.5162/IMCS2012/P1.7.3

P. Fremerey, A. Jess, R. Moos:

Direct in-situ detection of sulfur loading on fixed bed catalysts  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1209-1212, doi: 10.5162/IMCS2012/P1.9.17

P.J. Smith, L. Cavanagh, R. Binions, G. Hagen, S. Wiegärtner:

A Feasibility Study on a Two-Component Metal Oxide Sensor for Engine NO<sub>x</sub> Detection  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1308-1311, doi: 10.5162/IMCS2012/P2.0.15

C. Schlangen, M. Hämmerle, K. Hilgert, R. Moos:

Determination of Volatile Alcohols in Fruit and Vegetable Juices by an Amperometric Enzyme Electrode Measuring in the Headpace above the Liquid  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1397-1398, doi: 10.5162/IMCS2012/P2.1.23

M. Feulner, G. Hagen, A. Müller, D. Brüggemann, R. Moos:

In-Operation Monitoring of the Soot Load of Diesel Particulate Filters with a Microwave Method  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14*, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1422-1425, doi: 10.5162/IMCS2012/P2.2.6

## Year 2012

G. Beulertz, M. Votsmeier, F. Herbst, R. Moos:

Replacing the lambda probe by radio frequency-based in-operando three-way catalyst oxygen loading detection  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1426-1428, doi: 10.5162/IMCS2012/P2.2.7*

D. Schönauer-Kamin, M. Fleischer, R. Moos:

Half-cell characterization of a novel NH<sub>3</sub> gas sensor  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1601-1604, doi: 10.5162/IMCS2012/P2.6.5*

I. Marr, A. Nützel, D. Schönauer-Kamin, R. Moos:

Sensing of NO, NO<sub>2</sub>, and NH<sub>3</sub> with Zeolite-Based Impedimetric Gas Sensors  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1660-1663, doi: 10.5162/IMCS2012/P2.8.5*

A. Groß, T. Weller, H.L. Tuller, R. Moos:

Study of the electrical conductivities of the NO<sub>x</sub> trap materials BaCO<sub>3</sub> and K<sub>2</sub>CO<sub>3</sub>/La-Al<sub>2</sub>O<sub>3</sub> during NO<sub>x</sub> exposure as sensitive layers or for in-situ characterization of catalyst systems  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1664-1667, doi: 10.5162/IMCS2012/P2.8.6*

G. Hagen, J. Kita, N. Izu, U. Röder-Roith, D. Schönauer-Kamin, R. Moos:

Temperature-controlled sensor transducer for planar four-wire impedance spectroscopy  
*The 14<sup>th</sup> International Meeting on Chemical Sensors, IMCS 14, Nuremberg, Germany, 20<sup>th</sup> -23<sup>rd</sup> May 2012, p. 1735-1736, doi: 10.5162/IMCS2012/P2.9.13*

G. Beulertz, S. Reiß, G. Hagen, G. Fischerauer, M. Votsmeier, J. Gieshoff, R. Moos:

In situ Katalysator-Charakterisierung mittels Hochfrequenzmesstechnik  
*45. Jahrestreffen Deutscher Katalytiker, Weimar, 14. - 16. März 2012*

A. Groß:

Integrierende Gassensoren  
1. Doktorandentreffen der Gassensorik/Gasmesstechnik, 9.4.-10.4.2014, Hannover

I. Marr, D. Schönauer-Kamin, A. Nützel, M. Schwidder, R. Moos:

Detection of NO<sub>x</sub> and NH<sub>3</sub> by an impedimetric sensor based on Fe-ZSM-5 and Fe-SAPO-5  
24. Deutsche Zeolith-Tagung, Magdeburg, 7.-9.3.2012, p. 275-276

R. Moos:

Sensors and Catalysts in Automotive Exhaust Gas Aftertreatment - an Overview on recent developments and research trends  
Abstracts of the 36<sup>th</sup> International Conference on Advanced Ceramics and Composites, Daytona Beach, Florida, January 22-27, 2012, p. 146

## Doctoral Theses

U. Röder-Roith:

Elektrochemische Entstickung von Abgasen und direkte thermoelektrische Gassensoren: Beispiele für neuartige Anwendungen von Feststoff-Ionenleitern  
(Electrochemical Removal of NO<sub>x</sub> from Exhausts and Direct Thermoelectric Gas Sensors: Examples for Novel Applications of Solid Ion Conductors)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 3, Shaker-Verlag, Aachen (2012), ISBN: 978-3-8440-1003-9

S. Reiß:

Direkte Zustandssensorik von Automobilabgaskatalysatoren  
(Direct diagnosis of automotive exhaust gas catalysts)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 9, Shaker-Verlag, Aachen (2012), ISBN: 978-3-8440-0841-8

S. Denneler:

Piezoelektrische Vielschichtaktoren mit kupferbasierten Innenelektroden  
(Piezoelectric multilayer actuators with copper-based internal electrodes)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 2, Shaker-Verlag, Aachen (2012), ISBN: 978-3-8440-0747-3, doi: 10.2370/9783844007473

## Year 2011

### Peer Reviewed Journals

- W. Missal, J. Kita, E. Wappler, F. Gora, A. Kipka, T. Bartnitzek, F. Bechtold, D. Schabbel, B. Pawlowski, R. Moos:  
Miniaturized Ceramic Differential Scanning Calorimeter with Integrated Oven and Crucible in LTCC Technology  
*Sensors and Actuators A: Physical*, **172**, 21-26 (2011), doi: 10.1016/j.sna.2011.01.025
- N. Izu, G. Hagen, D. Schönauer, U. Röder-Roith, R. Moos:  
Planar potentiometric SO<sub>2</sub> gas sensor for high temperatures using NASICON electrolyte combined with V<sub>2</sub>O<sub>5</sub>/WO<sub>3</sub>/TiO<sub>2</sub> + Au or Pt electrode  
*Journal of the Ceramic Society of Japan*, **119**, 687-691 (2011), doi: 10.2109/jcersj2.119.687
- P. Fremerey, S. Reiß, A. Geupel, G. Fischerauer, R. Moos:  
Determination of the NO<sub>x</sub> Loading of an Automotive Lean NO<sub>x</sub> Trap by Directly Monitoring the Electrical Properties of the Catalyst Material Itself  
*Sensors*, **11**, 8261-8280 (2011), doi: 10.3390/s110908261
- N. Müller, S. Reiß, P. Fremerey, A. Jess, R. Moos:  
Initial tests to detect quantitatively the coke loading of reforming catalysts by a contactless microwave method  
*Chemical Engineering and Processing*, **50**, 729-731 (2011), doi: 10.1016/j.cep.2011.07.002
- I. Marr, S. Reiß, G. Hagen, R. Moos:  
Planar Zeolite Film-Based Potentiometric Gas Sensors Manufactured by a Combined Thick-Film and Electroplating Technique  
*Sensors*, **11**, 7736-7748 (2011), doi: 10.3390/s110807736
- M. Hämmerle, K. Hilgert, M.A. Horn, R. Moos:  
Analysis of volatile alcohols in apple juices by an electrochemical biosensor measuring in the headspace above the liquid  
*Sensors and Actuators B: Chemical*, **158**, 313-318 (2011), doi: 10.1016/j.snb.2011.06.026
- D. Schönauer, T. Nieder, K. Wiesner, M. Fleischer, R. Moos:  
Investigation of the Electrode Effects in Mixed Potential Type Ammonia Exhaust Gas Sensors  
*Solid State Ionics*, **192**, 38-41 (2011), doi: 10.1016/j.ssi.2010.03.028
- U. Röder-Roith, F. Rettig, K. Sahner, T. Röder, J. Janek, R. Moos:  
Perovskite-Type Proton Conductor for Novel Direct Ionic Thermoelectric Hydrogen Sensor  
*Solid State Ionics*, **192**, 101-104 (2011), doi: 10.1016/j.ssi.2010.05.044
- D. Ortolino, J. Kita, R. Wurm, E. Blum, K. Beart, R. Moos:  
Investigation of the short-time high-current behavior of vias manufactured in hybrid thick-film technology  
*Microelectronics Reliability*, **34**, 1257-263 (2011), doi: 10.1016/j.microrel.2011.02.025
- P.A. Fuierer, R. Maier, U. Röder-Roith, R. Moos:  
Processing Issues Related to the Bi-dimensional Ionic Conductivity of BIMEVOX Ceramics  
*Journal of Materials Science*, **46**, 5447-545 (2011), doi: 10.1007/s10853-011-5486-8
- D. Schönauer, I. Sichert, R. Moos:  
Vanadia doped tungsten-titania SCR catalysts as functional materials for exhaust gas sensor applications  
*Sensors and Actuators B: Chemical*, **155**, 199-205 (2011), doi: 10.1016/j.snb.2010.11.046
- S. Reiß, D. Schönauer, G. Hagen, G. Fischerauer, R. Moos:  
Monitoring the ammonia loading of zeolite-based ammonia SCR catalysts by a microwave method  
*Chemical Engineering and Technology*, **34**, 791-796 (2011), doi: 10.1002/ceat.201000546
- R. Moos, N. Izu, F. Rettig, S. Reiß, W. Shin, I. Matsubara:  
Resistive Oxygen Gas Sensors for Harsh Environments  
*Sensors*, **11**, 3439-3465 (2011), doi: 10.3390/s110403439
- D. Biskupski, B. Herbig, G. Schottner, R. Moos:  
Nanosized titania derived from a novel sol-gel process for ammonia gas sensor applications  
*Sensors and Actuators B: Chemical*, **153**, 329-334 (2011), doi: 10.1016/j.snb.2010.10.029
- G. Hagen, I. Marr, R. Moos:  
Potentiometric CO<sub>2</sub> gas sensor based on zeolites  
*Sensor Letters*, **9**, 902-906 (2011), doi: 10.1166/sl.2011.1640
- N. Izu, G. Hagen, D. Schönauer, U. Röder-Roith, R. Moos:  
Application of V<sub>2</sub>O<sub>5</sub>/WO<sub>3</sub>/TiO<sub>2</sub> for resistive-type SO<sub>2</sub> sensors  
*Sensors*, **11**, 2982-2991 (2011), doi: 10.3390/s110302982
- S. Reiß, M. Wedemann, M. Spörl, G. Fischerauer, R. Moos:  
Effects of H<sub>2</sub>O, CO<sub>2</sub>, CO, and Flow Rates on the RF-Based Monitoring of Three-Way Catalysts  
*Sensor Letters*, **9**, 316-320 (2011), doi: 10.1166/sl.2011.1472
- A. Geupel, D.J. Kubinski, S. Mulla, T.H. Ballinger, H.Y. Chen, J.H. Visser, R. Moos:  
Integrating NO<sub>x</sub> Sensor for Automotive Exhausts - a Novel Concept

## Year 2011

*Sensor Letters*, **9**, 311-315 (2011), doi: 10.1166/sl.2011.1471

G. Hagen, R. Moos:  
Planar zeolite-based potentiometric gas sensors  
*Sensor Letters*, **9**, 110-113 (2011), doi: 10.1166/sl.2011.1430

A. Fischerauer, G. Fischerauer, G. Hagen, R. Moos:  
Integrated impedance based hydro-carbon gas sensors with Na-zeolite/Cr<sub>2</sub>O<sub>3</sub> thin-film interfaces: From physical modeling to devices  
*physica status solidi (a)*, **208**, 404-415 (2011), doi: 10.1002/pssa.201026606

S. Reiß, M. Spörl, G. Hagen, G. Fischerauer, R. Moos:  
Combination of Wirebound and Microwave Measurements for In Situ Characterization of Automotive Three-Way Catalysts  
*IEEE Sensors Journal* **11**, 434-438 (2011), doi: 10.1109/JSEN.2010.2058798

## Invited Talks

Kolloquium Chemie- und Bioingenieurwesen der Technischen Fakultät der Universität Erlangen, 15.12.2011, Erlangen  
R. Moos: *Katalysatoren als Sensoren - ein neuer Ansatz in der Autoabgasnachbehandlung*

10. Dresdner Sensor-Symposium, 5.-7. Dezember 2011, Dresden  
R. Moos: *Hochtemperaturgassensoren: Neue Prinzipien, neue Materialien*

Int'l AIST Workshop, Nagoya, Japan, Nov., 18<sup>th</sup>, 2011  
R. Moos: *High Temperature Gas Sensors - Novel Approaches from the Bayreuth FM-Lab*

3<sup>rd</sup> International Workshop "Novel Developments and Applications in Sensor Technology", 14.-16.9. 2011, Coburg.  
R. Moos: *Sensors in the Automotive Exhaust - Status and Future Trends*

4. Internationales CTI Forum Emissionsrelevante Sensorik, Nürnberg, 12.-13.7.2011  
R. Moos: *Catalyst Diagnosis Using Microwaves / Katalysatordiagnose mit Mikrowellen*

Sensor 2011, 15<sup>th</sup> International Conference on Sensors and Measurement Science, Nürnberg, 7.-9.6.2011  
N. Izu, G. Hagen, D. Schönauer, U. Röder-Roith, R. Moos: *Potential-type sulfur dioxide planar gas sensor for high temperature application*

## Published Conference Contributions

S. Wiegärtner, G. Hagen, J. Kita, M. Seufert, E. Glaser, K. Grimm, C. Schmaus, A. Kießig, A. Bolz, R. Moos:  
Potentiometrischer CO<sub>2</sub>-Sensor in Dickschichttechnologie zur Atemgasanalyse  
G. Gerlach, A. Schütze (Hrsg.), *10. Dresdner Sensor-Symposium*, 5.-7. Dezember 2011, Dresden, p. 343 - 346, doi: 10.5162/10dss2011/17.2

S. Reiß, C. Bodensteiner, C. Hitzke, T. Lorösch, D. Schönauer, R. Moos:  
Kontaktlose hochfrequenzbasierte Qualitätsanalyse von Harnstoff-Wasser-Lösungen für SCR-Anwendungen  
G. Gerlach, A. Schütze (Hrsg.), *10. Dresdner Sensor-Symposium*, 5.-7. Dezember 2011, Dresden, p. 257 - 260, doi: 10.5162/10dss2011/12.15

G. Beulertz, A. Geupel, I. Marr, D.J. Kubinski, J.H. Visser R. Moos:  
Das akkumulierende Messprinzip in der Gassensorik, vom konzentrations- zum mengenintegrierenden Verhalten  
G. Gerlach, A. Schütze (Hrsg.), *10. Dresdner Sensor-Symposium*, 5.-7. Dezember 2011, Dresden, p. 203 - 206, doi: 10.5162/10dss2011/12.2

G. Hagen, A. Piontkowski, A. Müller, D. Brüggemann, R. Moos:  
Ortsaufgelöste in-situ Beladungsdiagnose von Diesel-Partikelfiltern  
G. Gerlach, A. Schütze (Hrsg.), *10. Dresdner Sensor-Symposium*, 5.-7. Dezember 2011, Dresden, p. 199 - 202, doi: 10.5162/10dss2011/12.1

S. Fischer, R. Moos, R. Pohle, E. Magori, M. Fleischer, B. Farber:  
NO<sub>x</sub> - Detektion an YSZ-Sensoren mittels Spannungspulsen  
G. Gerlach, A. Schütze (Hrsg.), *10. Dresdner Sensor-Symposium*, 5.-7. Dezember 2011, Dresden, p. 185 - 188, doi: 10.5162/10dss2011/11.4

I. Marr, G. Hagen, R. Moos:  
Potentiometrischer Sensor für reduzierende Gase auf Basis von Zeolithen  
G. Gerlach, A. Schütze (Hrsg.), *10. Dresdner Sensor-Symposium*, 5.-7. Dezember 2011, Dresden, p. 181 - 184, doi: 10.5162/10dss2011/11.3

D. Schönauer-Kamin, I. Sichert, D. Forberg, M. Schwidder, R. Moos:  
Impedimetrische Gassensoren auf Basis von Fe-Zeolithen und Fe-SAPO zur NH<sub>3</sub>- oder NO<sub>x</sub>-Detektion  
G. Gerlach, A. Schütze (Hrsg.), *10. Dresdner Sensor-Symposium*, 5.-7. Dezember 2011, Dresden, p. 177 - 180, doi: 10.5162/10dss2011/11.2

P. Fremerey, A. Düsel, R. Moos, A. Jess:  
Sensorbasierte direkte Bestimmung von Schwefeldepositen auf festen Katalysatoren – erste Versuche  
G. Gerlach, A. Schütze (Hrsg.), *10. Dresdner Sensor-Symposium*, 5.-7. Dezember 2011, Dresden, p. 159 - 162, doi: 10.5162/10dss2011/10.2

S. Fischer, S. Achmann, D. Schönauer, R. Moos:  
Detection of the Dynamics of Lambda Probes by Cyclic Voltammetry  
*9<sup>th</sup> Asian Conference on Chemical Sensors*, 14-17 November 2011, Taipei, Taiwan, p. 169

## Year 2011

- S. Fischer, R. Pohle, B. Farber, M. Fleischer, R. Moos:  
Pulsed Polarization of YSZ-Sensors for Gas Detection  
*9<sup>th</sup> Asian Conference on Chemical Sensors*, 14-17 November 2011, Taipei, Taiwan, p. 168
- G. Hagen, A. Piontkowski, A. Müller, D. Brüggemann, R. Moos:  
Locally resolved in-situ detection of the soot loading in diesel particulate filters  
*IEEE SENSORS 2011 Conference*, October 28-31, 2011, Limerick, Ireland, p. 1021-1023, doi: 10.1109/ICSENS.2011.6126979
- S. Wiegärtner, G. Hagen, J. Kita, R. Moos, M. Seufert, K. Grimm, A. Bolz, C. Schmaus, A. Kießig:  
Solid-state potentiometric CO<sub>2</sub>-sensor in thick film technology for breath analysis  
*IEEE SENSORS 2011 Conference*, October 28-31, 2011, Limerick, Ireland, p. 1014-1016, doi: 10.1109/ICSENS.2011.6126959
- J. Kita, R. Moos, W. Missal, T. Bartnitzek, F. Bechtold, F. Gora, A. Kipka, D. Schabbel, B. Pawlowski, E. Wappler:  
Einweg-DSC-Chip in der LTCC-Technologie  
*IMAPS Herbstkonferenz 2011*, München, 18.10.-19.10.2011
- A. Düsel, P. Fremerey, N. Müller, R. Moos, A. Jess:  
Direct detection of sulfur deposits on fixed bed catalysts by electrical sensors  
*8<sup>th</sup> European Congress of Chemical Engineering*, September 25-29, 2011, Berlin, Germany, P 19.16
- S.J. Aschauer, F. Pöhlmann, L. Schilder, D. Schönauer, R. Moos, A. Jess:  
Solubility of 1-olefins, 2-olefins, n-paraffins and iso-paraffins in Lewis acidic chloroaluminate ionic liquids (BMIM-AlCl<sub>4</sub>)  
*8<sup>th</sup> European Congress of Chemical Engineering*, September 25-29, 2011, Berlin, Germany, P 17.05
- J. Kita, F. Leweling, R. Moos:  
Cylindrical LTCC Substrates for Gas Sensors - First Steps  
*35<sup>th</sup> International Microelectronics and Packaging IMAPS Conference*, Gdansk, Poland 21. - 24.09.2011, p. 139-142
- D. Ortolino, J. Kita, R. Wurm, E. Blum, K. Beart, R. Moos:  
Investigation of non-symmetric contacting and voids in electrical vias produced in hybrid thick-film technology  
*35<sup>th</sup> International Microelectronics and Packaging IMAPS Conference*, Gdansk, Poland 21. - 24.09.2011, p. 289-292
- G. Beulertz, A. Geupel, R. Moos, D.J. Kubinski, J.H. Visser:  
Accumulating gas sensor principle - how to come from concentration integration to real amount measurements  
*EuroSensors XXV*, September 4 - 7, 2011, Athens, Greece, *Procedia Engineering*, **25**, 1109-1112 (2011), doi: 10.1016/j.proeng.2011.12.273
- A. Geupel, S.R. Bishop, D.J. Yang, H.L. Tuller, R. Moos:  
The electrical properties of carbonate-based NO<sub>x</sub>-storage materials for in-situ characterization of catalyst systems  
*Solid State Ionics 18*, July 3-8, 2011, Warsaw, Poland, Oral abstracts, p. 41
- S. Fischer, R. Pohle, M. Fleischer, R. Moos:  
Cyclic Voltammetry of Pt Electrodes on YSZ  
*Solid State Ionics 18*, July 3-8, 2011, Warsaw, Poland, Oral abstracts, p. 248
- S. Fischer, R. Pohle, M. Fleischer, R. Moos:  
Pulsed Polarisation of Pt Electrodes on YSZ  
*Solid State Ionics 18*, July 3-8, 2011, Warsaw, Poland, Poster abstracts, p. 256
- A. Geupel, G. Beulertz, D.J. Kubinski, J.H. Visser, R. Moos:  
A novel sensor principle for the detection of low levels of NO and NO<sub>2</sub>  
*Solid State Ionics 18*, July 3-8, 2011, Warsaw, Poland, Poster abstracts, p. 260
- S. Fischer, R. Pohle, U. Guth, B. Farber, M. Fleischer, R. Moos:  
Pulsed-potential method for NO<sub>x</sub> detection using standard zirconia-based lambda sensors  
*Sensor 2011*, Proceedings of the 15<sup>th</sup> International Conference on Sensors and Measurement Science, 7.-9. June 2011, Nürnberg, p. 538-542, doi: 10.5162/sensor11/d3.4
- N. Izu, G. Hagen, D. Schönauer, U. Röder-Roith, R. Moos:  
Potential-type sulfur dioxide planar gas sensor for high temperature application  
*Sensor 2011*, Proceedings of the 15<sup>th</sup> International Conference on Sensors and Measurement Science, 7.-9. June 2011, Nürnberg, p. 568-573, doi: 10.5162/sensor11/d2.1
- S. Reiß, G. Fischerauer, R. Moos:  
Radio frequency-based determination of the oxygen loading of automotive three-way catalysts  
*Sensor 2011*, Proceedings of the 15<sup>th</sup> International Conference on Sensors and Measurement Science, 7.-9. June 2011, Nürnberg, p. 574-577, doi: 10.5162/sensor11/d4.1
- A. Geupel, R. Moos, D.J. Kubinski, J.H. Visser:  
Integrating NO<sub>x</sub> Gas Sensor: Concept, Sensitivity to NO/NO<sub>2</sub> and Benefits of the Integrating Sensing Principle  
*Sensor 2011*, Proceedings of the 15<sup>th</sup> International Conference on Sensors and Measurement Science, 7.-9. June 2011, Nürnberg, p. 578-582, doi: 10.5162/sensor11/d4.2

## Year 2011

S. Wiegärtner, G. Hagen, D. Biskupski, J. Kita, R. Moos, M. Seufert, T. Carlson, N. Jörns, A. Bolz, C. Schmaus, A. Kießig:

Solid-state potentiometric CO<sub>2</sub>-Sensor in thick-film technology

*Sensor 2011*, Proceedings of the 15<sup>th</sup> International Conference on Sensors and Measurement Science, 7.-9. June 2011, Nürnberg, p. 650-653, doi: 10.5162/sensor11/d7.3

R. Moos, W. Missal, J. Kita, E. Wappler, F. Gora, A. Kipka, T. Bartnitzek, F. Bechtold, D. Schabbel, B. Pawlowski:

Einweg-DSC-Chip

*Sensor 2011*, fms-Sondersession 2011, Workshop Sensorforschung für Medizin und Technik. Ergebnisse aus der industriellen Gemeinschaftsforschung, im Rahmen der Sensor + Test 2011, 9. Juni 2011, Nürnberg, p. 4-9

A. Geupel, G. Beulertz, D.J. Kubinski, J.H. Visser, R. Moos:

Cumulative Measurement Principle for the Detection of Small Amounts of Gaseous Species

*ISOEN 2011 - International Symposium on Olfaction and Electronic Nose*, New York City, USA, May 2 - 5, 2011, p. 209-210, doi: 10.1063/1.3626362

J. Kita, W. Missal, E. Wappler, T. Bartnitzek, B. Pawlowski, A. Kipka, R. Moos:

Development of a Novel LTCC-Chip for Fast DSC-Analysis

IMAPS/ACerS 7th Int'l Conference and Exhibition on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT 2011), San Diego, California, 5.4-7.4.2011

S. Reiß, D. Schönauer, G. Fischerauer, R. Moos:

Ammoniak-Beladungserkennung bei SCR-Katalysatoren

*Sensoren im Automobil*, 5.4.-6.4.2011, München, Germany, in: T. Tille et al.: *Sensoren im Automobil IV*, expert Verlag 2011, p. 113-126, ISBN 978-3-8169-3066-2

C. Schlangen, M. Hämmerle, R. Moos:

Bestimmung von flüchtigen Alkoholen in Frucht und Gemüsesäften mit einer amperometrischen Enzymelektrode durch Analyse des Gasraums über der Probe

*7. Deutsches Biosensor Symposium 2011*, 3.-6. April 2011, Heilbad Heiligenstadt

N. Izu, G. Hagen, D. Schönauer, U. Röder-Roith, R. Moos:

Resistive-type SO<sub>2</sub> sensors based on V<sub>2</sub>O<sub>5</sub>/WO<sub>3</sub>/TiO<sub>2</sub>

Proceedings of the *51st Chemical Sensor Symposium*, Kanagawa, March 29-31, 2011.

*Chemical Sensors*, **27**, Suppl. A, 154-157 (2011)

## Book Contributions

G. Fischerauer, A. Gollwitzer, A. Nerowski, M. Spörl, S. Reiß, R. Moos:

Monitoring of Electrochemical Processes in Catalysts by Microwave Methods.

In: S. Lindenmeier, R. Weigel (eds.), *Electromagnetics and Network Theory and their Microwave Technology Applications*, Springer, Berlin (2011), p. 119-132, ISBN: 978-3-642-18374-4, doi: 10.1007/978-3-642-18375-1\_9

R. Moos, K. Sahner:

Chemical sensors based on zeolites.

In: J. Schwank, G. Korotcenkov (eds.), *Chemical sensors: fundamentals of sensing materials, Volume 2: nanostructured materials*, Chapter 7, J. Watson, Series *Comprehensive Sensors Technology*, Momentum Press, LLC, New York (2011), p. 311-334, ISBN: 978-1-60650-106-1

## Doctoral Theses

N. Müller:

Direkte Bestimmung von Koksdepositen auf Festbettkatalysatoren durch elektrische Sensoren

(Direct determination of coke deposits on fixed bed catalysts by electrical sensors)

In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 8, Shaker-Verlag, Aachen (2011), ISBN: 978-3-8322-9931-6

D. Biskupski:

Plattform zur Eliminierung der Sauerstoffabhängigkeit von Hochtemperaturgassensoren

(Platform for the elimination of the oxygen dependency of high temperature gas sensors)

In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 7, Shaker-Verlag, Aachen (2011), ISBN: 978-3-8322-9870-8

## Year 2010

### Peer Reviewed Journals

R. Moos:

Catalysts as Sensors - A Promising Novel Approach in Automotive Exhaust Gas Aftertreatment  
*Sensors*, **10**, 6773-6787 (2010), doi: 10.3390/s100706773

G. Fischerauer, M. Spörl, S. Reiß, R. Moos:

Mikrowellengestützte Aufklärung elektrochemischer Vorgänge in Katalysatoren und verwandten Systemen  
Microwave-Based Investigation of Electrochemical Processes in Catalysts and Related Systems  
*Technisches Messen*, **77**, 419-427 (2010), doi: 10.1524/teme.2010.0066

D. Schönauer, R. Moos:

Detection of water droplets on exhaust gas sensors  
*Sensors and Actuators B: Chemical*, **148**, 624-629 (2010), doi: 10.1016/j.snb.2010.05.060

N. Müller, C. Kern, R. Moos, A. Jess:

Direct detection of coking and regeneration of single particles and fixed bed reactors by electrical sensors  
*Applied Catalysis A: General*, **382**, 254-262 (2010), doi: 10.1016/j.apcata.2010.05.001

S. Fischer, R. Pohle, B. Farber, R. Proch, J. Kaniuk, M. Fleischer, R. Moos:

Method for detection of NO<sub>x</sub> in exhaust gases by pulsed discharge measurements using standard zirconia-based lambda sensors  
*Sensors and Actuators B: Chemical*, **147**, 780-785 (2010), doi: 10.1016/j.snb.2010.03.092

A. Geupel, D. Schönauer, U. Röder-Roith, D.J. Kubinski, S. Mulla, T.H. Ballinger, H.-Y. Chen, J.H. Visser, R. Moos:

Integrating nitrogen oxide sensor: a novel concept for measuring low concentrations in the exhaust gas  
*Sensors and Actuators B: Chemical*, **145**, 756-761 (2010), doi: 10.1016/j.snb.2010.01.036

F. Rettig, R. Moos:

α-iron oxide: an intrinsically semiconducting oxide material for direct thermoelectric oxygen sensors  
*Sensors and Actuators B: Chemical*, **145**, 685-690 (2010), doi: 10.1016/j.snb.2010.01.023

G. Hagen, C. Feistkorn, S. Wiegärtner, A. Heinrich, D. Brüggemann, R. Moos:

Conductometric Soot Sensor for Automotive Exhausts: Initial Studies  
*Sensors*, **10**, 1589-1598 (2010), doi: 10.3390/s100301589

G. Fischerauer, M. Förster, R. Moos:

Sensing the Soot Load in Automotive Diesel Particulate Filters by Microwave Methods  
*Measurement Science and Technology*, **21**, 035108 (2010), doi: 10.1088/0957-0233/21/3/035108

N. Müller, A. Jess, R. Moos:

Direct detection of coke deposits on fixed bed catalysts by electrical sensors  
*Sensors and Actuators B: Chemical*, **144**, 437-442 (2010), doi: 10.1016/j.snb.2009.03.008

S. Achmann, G. Hagen, M. Hämmerle, I.M. Malkowsky, C. Kiener, R. Moos:

Sulfur Removal from Low-Sulfur Gasoline and Diesel Fuel by Metal-Organic Frameworks  
*Chemical Engineering and Technology*, **33**, 275-280 (2010), doi: 10.1002/ceat.200900426

M. Hämmerle, K. Hilgert, S. Achmann, R. Moos:

Direct Monitoring of organic vapours with amperometric enzyme gas sensors  
*Biosensors and Bioelectronics*, **25**, 1521-1525 (2010), doi: 10.1016/j.bios.2009.10.022

N. Müller, R. Moos, A. Jess:

In situ Monitoring of Coke Deposits during Coking and Regeneration of Solid Catalysts by Electrical Impedance-based Sensors  
*Chemical Engineering and Technology*, **33**, 103-112 (2010), doi: 10.1002/ceat.200900380

### Invited Talks

The Jožef Stefan Institute, Ljubljana, Slovenia, 19.10.2010

R. Moos: *Inorganic Materials - from Sensors and Catalysts*

Conference SEMTO 2010 / Sensors and Actuators, Ljubljana, Slovenia, 20.-21.10.2010

R. Moos: *Sensors in the automotive exhaust – technology, status and future trends*

The 13<sup>th</sup> International Meeting on Chemical Sensors, IMCS 13, Perth, Australia, 11<sup>th</sup> - 14<sup>th</sup> July, 2010, plenary talk

R. Moos: *Automotive exhaust gas aftertreatment: Is the catalyst itself the best sensor ?*

Internationales CTI Forum Emissionsrelevante Sensorik, Stuttgart, 8.7.2010

R. Moos: *Exhaust gas sensor technology: trends from a research point of view / Trends in der Abgassensorik aus Forschungssicht*

### Published Conference Contributions

R. Moos:

Sensors in the automotive exhaust – technology, status and future trends

Conference SEMTO 2010 / Sensors and Actuators, Ljubljana, Slovenia, 20.-21.10.2010

## Year 2010

M. Hämmerle, T. Falkner, K. Hilgert, A. Lauterbach, R. Moos:

Kapillarelektrophorese auf einem Chip mit elektrochemischer Detektion in LTCC- Technologie  
*15. Heiligenstädter Kolloquium, „Technische Systeme für die Lebenswissenschaften“, 27.-29.09.2010, Heiligenstadt, Germany, P 39*

J. Kita, W. Missal, E. Wappler, R. Moos:

DSC-Chip in LTCC Technology – Feasibility Study  
*34<sup>th</sup> International Microelectronics and Packaging IMAPS Conference, Wrocław, Poland 22. - 25.09.2010, p. 182*

D. Ortolino, J. Kita, R. Wurm, E. Blum, K. Beart, R. Moos:

Measurement and modeling of the high-current resistance behavior of vias in thick-film technology  
*34<sup>th</sup> International Microelectronics and Packaging IMAPS Conference, Wrocław, Poland 22. - 25.09.2010, p. 218*

M. Herling, G. Hagen, R. Moos, J. Breu:

Gas sensitivity of pillared and non-pillared layered silicates  
*15. Vortragsstagung der GdCh-Fachgruppe Festkörperchemie und Materialforschung, Berlin, 20.-22.9.2010, P126, Z. Anorg. Allg. Chem. 2010, p. 2112, doi: 10.1002/zaac.201009128*

W. Missal, J. Kita, E. Wappler, F. Gora, A. Kipka, T. Bartnitzek, F. Bechtold, D. Schabbel, B. Pawlowski, R. Moos:

Miniaturized Ceramic Differential Scanning Calorimeter with Integrated Oven and Crucible in LTCC Technology  
*Eurosensors XXIV, September 5 - 8, 2010, Linz, Austria, Procedia Engineering, 5, 940-943 (2010), doi: 10.1016/j.proeng.2010.09.263*

A. Geupel, R. Moos:

Review: Lean NO<sub>x</sub> Trap Materials as Sensitive Elements for NO<sub>x</sub> Sensors  
*MSE 2010 - Materials Science and Engineering, 24.08.-26.08.2010, Darmstadt, Germany*

R. Moos:

Automotive exhaust gas aftertreatment: Is the catalyst itself the best sensor ?  
*The 13<sup>th</sup> International Meeting on Chemical Sensors, IMCS 13, Perth, Australia, 11<sup>th</sup> -14<sup>th</sup> July, 2010*

S. Reiß, M. Spörl, G. Fischerauer, M. Rösch, R. Moos:

In situ characterization of three-way catalysts: Combination of conductivity and radio frequency measurements  
*The 13<sup>th</sup> International Meeting on Chemical Sensors, IMCS 13, Perth, Australia, 11<sup>th</sup> -14<sup>th</sup> July, 2010, p. 92*

G. Hagen, I. Marr, R. Moos:

Solid-state CO<sub>2</sub> gas sensor based on zeolites:  
*The 13<sup>th</sup> International Meeting on Chemical Sensors, IMCS 13, Perth, Australia, 11<sup>th</sup> -14<sup>th</sup> July, 2010, p. 98*

G. Hagen, C. Feistkorn, S. Wiegärtner, A. Heinrich, D. Brüggemann, R. Moos:

Soot detection in automotive exhausts  
*The 13<sup>th</sup> International Meeting on Chemical Sensors, IMCS 13, Perth, Australia, 11<sup>th</sup> -14<sup>th</sup> July, 2010, p. 252*

R. Moos:

Exhaust gas sensor technology: trends from a research point of view / Trends in der Abgassensorik aus Forschungssicht (with simultaneous translation)  
*Internationales CTI Forum Emissionsrelevante Sensorik, Stuttgart, 8.7.2010*

S. Denneler, C. Schuh, K. Benkert, R. Moos:

Piezoelectric ceramic compositions for oxygen poor sintering conditions  
*Electroceramics XII, June 13-16, 2010, Trondheim, Norway*

M. Hämmerle, T. Falkner, K. Hilgert, S. Achmann, R. Moos:

Sensitivity and long-term stability of an amperometric enzyme gas sensor for formaldehyde  
*Biosensors 2010, 20<sup>th</sup> Anniversary World Congress on Biosensors, 26-28 May, 2010, Glasgow, UK, P3.2.021*

N. Müller, A. Jess, R. Moos:

Online in-situ Sensorik des Koks- und Schwefelgehaltes von heterogenen Festbettkatalysatoren mittels Impedanzspektroskopie  
*Sensoren und Messsysteme 2010, 18.-20.5.2010, Nürnberg, ISBN 978-3-8007-3260-9*

W. Missal, J. Kita, E. Wappler, R. Moos:

Neuartige DSC-Messzelle mit integriertem Ofen und Tiegel in LTCC-Technologie  
*Sensoren und Messsysteme 2010, 18.-20.5.2010, Nürnberg, ISBN 978-3-8007-3260-9*

I. Marr, G. Hagen, R. Moos:

Planar potentiometric zeolite-based gas sensors  
*22. Deutsche Zeolith-Tagung, München, 3. -5. März 2010, p. 150-151*

## Miscellaneous

R. Werthschützky, V. Großer, D. Heydenbluth, R. Moos, D. Rein, J. Sauerer, T. Simmons, W. Sinn, J. Wilde:

*Sensor-Trends 2014 - Trends in zukunftsorientierten Sensortechnologien*, Hrsg.: Wissenschaftsrat des AMA-Fachverbandes für Sensorik e.V., Berlin 2010  
*Sensor-Trends 2014 - Trends in Future-Oriented Sensor Technologies*, Hrsg.: Wissenschaftsrat des AMA-Fachverbandes für Sensorik e.V., Berlin 2010

## Year 2009

### Peer Reviewed Journals

- R. Moos, M. Wedemann, M. Spörl, S. Reiß, G. Fischerauer:  
Direct Catalyst Monitoring by Electrical Means: An Overview on Promising Novel Principles  
*Topics in Catalysis*, **52**, 2035-2040 (2009), doi: 10.1007/s11244-009-9399-6
- S. Reiß, M. Wedemann, R. Moos, M. Rösch:  
Electrical In Situ Characterization of Three-Way Catalyst Coatings  
*Topics in Catalysis*, **52**, 1898-1902 (2009), doi: 10.1007/s11244-009-9366-2
- D. Biskupski, A. Geupel, K. Wiesner, M. Fleischer, R. Moos:  
Platform for a hydrocarbon exhaust gas sensor utilizing a pumping cell and a conductometric sensor  
*Sensors*, **9**, 7498-7508 (2009), doi: 10.3390/s90907498
- D. Schönauer, K. Wiesner, M. Fleischer, R. Moos:  
Selective Mixed Potential Ammonia Exhaust Gas Sensor  
*Sensors and Actuators B: Chemical*, **140**, 585-590 (2009), doi: 10.1016/j.snb.2009.04.064
- R. Moos, K. Sahner, M. Fleischer, U. Guth, N. Barsan, U. Weimar:  
Solid State Gas Sensor Research in Germany - a Status Report  
*Sensors*, **9**, 4323-4365 (2009), doi: 10.3390/s90604323
- M. Hrovat, D. Belavič, J. Kita, J. Holc, J. Cilenšek, S. Drnovšek:  
Thick-film NTC thermistors and LTCC materials: The dependence of the electrical and microstructural characteristics on the firing temperature  
*Journal of the European Ceramic Society*, **29**, 3265-3271 (2009), doi: 10.1016/j.jeurceramsoc.2009.05.019
- K. Sahner, M. Kaspar, R. Moos:  
Assessment of the novel aerosol deposition method for room temperature preparation of metal oxide gas sensor films  
*Sensors and Actuators B: Chemical*, **139**, 394-399 (2009), doi: 10.1016/j.snb.2009.03.011
- D. Nowak, E. Miš, A. Dziedzic, J. Kita:  
Fabrication and electrical properties of laser-shaped thick-film and LTCC microresistors  
*Microelectronics Reliability*, **49**, 600-606 (2009), doi: 10.1016/j.microrel.2009.02.019
- F. Rettig, R. Moos:  
Temperature-modulated direct thermoelectric gas sensors: thermal modeling and results for fast hydrocarbon sensors  
*Measurement Science and Technology*, **20**, 065205 (2009), doi: 10.1088/0957-0233/20/6/065205
- T. Richter, C. Schuh, E. Suvaci, R. Moos:  
Single crystal growth in PMN-PT and PMN-PZT  
*Journal of Materials Science*, **44**, 1757-1763 (2009), doi: 10.1007/s10853-009-3286-1
- S. Achmann, G. Hagen, J. Kita, I.M. Malkowsky, C. Kiener, R. Moos:  
Metal-Organic Frameworks for Sensing Applications in the Gas Phase  
*Sensors*, **9**, 1574-1589 (2009), doi: 10.3390/s90301574  
Received the Best Paper Award 2013: Details: *Sensors*, **13**, 2113-2116 (2013), doi: 10.3390/s130202113
- U. Röder-Roith, F. Rettig, T. Röder, J. Janek, R. Moos, K. Sahner:  
Thick-film solid electrolyte oxygen sensors using the direct ionic thermoelectric effect  
*Sensors and Actuators B: Chemical*, **136**, 530-535 (2009), doi: 10.1016/j.snb.2008.12.024

### Book Contributions

- R. Moos:  
Kap. 2.5 Elektrische Eigenschaften.  
In W. Kollenberg (Hrsg.): *Technische Keramik*, Vulkan-Verlag GmbH, Essen (2009), 121-135, 2. Auflage, ISBN 978-3-8027-2953-9
- R. Moos:  
Kap. 5.3 Anwendungen keramischer Werkstoffe in der Technik: Elektronik.  
In W. Kollenberg (Hrsg.): *Technische Keramik*, Vulkan-Verlag GmbH, Essen (2009), 605-609, 2. Auflage, ISBN 978-3-8027-2953-9

### Doctoral Theses

- G. Hagen:  
Impedimetrische Gassensoren auf Zeolith-Basis (Impedimetric zeolite-based gas sensors)  
In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 5, Shaker-Verlag, Aachen (2009), ISBN: 978-3-8322-8410-7
- S. Achmann:  
Enzymbasierter Gassensor zur selektiven, direkten und kontinuierlichen Detektion von Formaldehyd  
(Enzyme-based gas sensor for the selective, direct and continuous detection of formaldehyde)  
In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 4, Shaker-Verlag, Aachen (2009), ISBN: 978-3-8322-8378-1

## Year 2009

### Invited Talks

Motortechnisches Seminar 2009/2010, Lehrstuhl für Verbrennungskraftmaschinen, RWTH Aachen, 14.12.2009  
R. Moos: *Abgasnachbehandlung im Automobil: Ist der Katalysator selbst der beste Sensor ?*

9. Dresdner Sensor-Symposium, 7.-9. Dezember 2009, Dresden  
R. Moos: *Neue Ansätze bei der Automobil-Abgassensorik*

IMAPS Poland, Gliwice – Pszczyna, September 21-24, 2009  
J. Kita, R. Moos: *Properties and Applications of Zero-Shrinkage LTCC*

2<sup>nd</sup> MacroNano-Colloquium on Ceramic Microsystems, Ilmenau University of Technology, 9.-10.9.2009,  
J. Kita: *Advanced Processing of LTCC-Materials - Possibilities and Limitations*

Sensor 2009, 14th International Conference on Sensors, Technologies, Electronics and Applications, Nürnberg, 26.-28.5.2009  
R. Moos: *Recent Developments in Automotive Exhaust Gas Sensing*

3. Gassensor-Workshop - Neue Technologien und Anwendungen, 19.3.2009, Freiburg  
R. Moos: *Zeolithe in der Gassensorik - ein Überblick*

CAPOC8, 8<sup>th</sup> International Congress on Catalysis and Automotive Pollution Control, Brussels, Belgium, April 15 - 17, 2009  
R. Moos, M. Wedemann, M. Spörl, S. Reiß, G. Fischerauer: *Direct Catalyst Monitoring by Electrical Means - an Overview on Promising Novel Principles*

### Miscellaneous

R. Moos, G. Hagen:  
Neue Wege in der Abgasnachbehandlung  
*Powerworld*, 03/2009, p. 6 - p. 9

R. Moos:  
Modellierung bei konduktometrischen Gassensoren  
*Workshop im Rahmen des SPP 1296* vom 13.-14.10.2009, Bayreuth

### Published Conference Contributions

R. Moos:  
Neue Ansätze bei der Automobil-Abgassensorik  
G. Gerlach, P. Hauptmann (Hrsg.), *9. Dresdner Sensor-Symposium*, 7.-9. Dezember 2009, Dresden, p. 21-27

A. Geupel, D.J. Kubinski, S. Mulla, T. Ballinger, H.Y. Chen, J.H. Visser, R. Moos:  
Integrierender NO<sub>x</sub> Sensor für Automobilabgas. Ein neuartiges Konzept  
G. Gerlach, P. Hauptmann (Hrsg.), *9. Dresdner Sensor-Symposium*, 7.-9. Dezember 2009, Dresden, p. 33-36

S. Achmann, M. Hämmerle, P. Gouma, R. Moos:  
Elektrospinnen reaktiver Polymere als Immobilisationsmatrix in enzymbasierten Gassensoren  
G. Gerlach, P. Hauptmann (Hrsg.), *9. Dresdner Sensor-Symposium*, 7.-9. Dezember 2009, Dresden, p. 145-148

A. Ernstberger, M. Hämmerle, S. Achmann, R. Moos:  
Biosensor für gasförmiges Formaldehyd: kovalente Enzymimmobilisierung an einer Membran  
G. Gerlach, P. Hauptmann (Hrsg.), *9. Dresdner Sensor-Symposium*, 7.-9. Dezember 2009, Dresden, p. 177-180

S. Reiß, M. Spörl, G. Fischerauer, R. Moos:  
Realabgastauglichkeit einer HF-gestützten Automobilabgasdiagnose  
G. Gerlach, P. Hauptmann (Hrsg.), *9. Dresdner Sensor-Symposium*, 7.-9. Dezember 2009, Dresden, p. 263-266

D. Schönauer, K. Wiesner, M. Fleischer, R. Moos:  
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## Invited Talks

44<sup>th</sup> International Conference on Microelectronics, Devices and Materials, Fiesca - Slovenia, 17.-19. September 2008  
J. Kita, R. Moos: *Development of LTCC-Materials and Their Applications – an Overview*

The 12<sup>th</sup> International Meeting on Chemical Sensors, IMCS 12, Columbus, Ohio, 13th-16th July 2008  
F. Rettig, R. Moos: *Direct Thermoelectric Gas Sensors - An Overview on a Very Promising Principle*

2nd International cti-Forum, Frankfurt, 1.4.-2.4.2008  
R. Moos: *Neue Trends in der Abgassensorik aus Forschungssicht / New trends in exhaust gas technology from a research point of view* (with simultaneous translation)

5. Internationales Forum Abgas- und Partikelemissionen, Ludwigsburg, 19.-20.2.2008  
R. Moos: *Abgassensoren für NO<sub>x</sub>-Speicherkatalysatoren und Ammoniak-SCR-Systeme / Exhaust Gas Sensors for NO<sub>x</sub> Storage Catalysts and Ammonia-SCR Systems* (with simultaneous translation)

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Potentiometric CO<sub>2</sub> Sensor In Thick Film Technology  
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*2008 SAE World Congress*, April 14-17, Detroit, Michigan, USA, *SAE paper* 2008-01-0447 (2008)

R. Moos:

Exhaust Gas Sensors for NOx Storage Catalysts and Ammonia-SCR Systems / Abgassensoren für NOx-Speicherkatalysatoren und Ammoniak-SCR-Systeme / (in German and English)  
*Beiträge, 5. Internationales Forum Abgas- und Partikelemissionen / Proceedings, 5th International Exhaust Gas and Particulate Emissions Forum*, Ludwigsburg, Germany, 19.-20.2.2008, ISBN 978-3-00-022058-6, p. 71-82

## Year 2007

### Peer Reviewed Journals

G. Hagen, A. Schulz, M. Knörr, R. Moos:

Four-Wire Impedance Spectroscopy on Planar Zeolite/Chromium Oxide Based Hydrocarbon Gas Sensors  
*Sensors*, **7**, 2681-2692 (2007), doi: 10.3390/s7112681

F. Rettig, R. Moos:

Direct thermoelectric hydrocarbon gas sensors based on SnO<sub>2</sub>  
*IEEE Sensors Journal*, **7**, 1490-1496 (2007), doi: 10.1109/JSEN.2007.906887

R. Mariychuk, A. Baumgartner, F. E. Wagner, A. Lerf, A. Dubbe, R. Moos, J. Brey:

Synthesis, Structure, and Electric Conductivity of Ferrous Tainiolite and its Oxidative Conversion into Coarse-Grained Swellable Smectite  
*Chemistry of Materials*, **19**, 5377-5387 (2007), doi: 10.1021/cm0713778

K. Sahner, P. Gouma, R. Moos:

Electrodeposited and sol-gel precipitated p-type SrTi<sub>1-x</sub>Fe<sub>x</sub>O<sub>3-δ</sub> semiconductors for gas sensing  
*Sensors*, **7**, 1871-1886 (2007), doi: 10.3390/s7091871

K. Sahner, R. Moos:

Modeling of hydrocarbon sensors based on p-type semiconducting perovskites  
*Phys. Chem. Chem. Phys.*, **9**, 635-642 (2007), doi: 10.1039/b612965j

F. Rettig, R. Moos:

Direct thermoelectric gas sensors: Design aspects and first gas sensors  
*Sensors and Actuators B: Chemical*, **123**, 413-419 (2007), doi: 10.1016/j.snb.2006.09.002

### Doctoral Thesis

C. Zimmermann:

Neuartiger Sensor zur Bestimmung des Zustandes eines NO<sub>x</sub>-Speicherkatalysators (Novel sensor for determining the state of a NO<sub>x</sub> storage catalyst)  
In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zur Sensorik und Messtechnik, Bd. 2, Shaker-Verlag, Aachen (2007), ISBN: 978-3-8322-6084-2

### Invited Talks

The 7th East Asian Conference on Chemical Sensors (EACCS 7), Singapore, 3.-5.12.2007

R. Moos: *Recent developments in the field of automotive exhaust sensing*

XXXI International Conference of International Microelectronics and Packaging Society, Krasiczyn, Poland, 23.-26.9.2007

R. Moos, J. Kita: *Ceramic Multilayer Gas Sensors - an Overview*

31st Intl. Conference on Advanced Ceramics and Composites, Cocoa Beach, Florida, 21.-26.1.2007

R. Moos: *Recent Developments in the Field of Ceramic Automotive Exhaust Gas Sensors*

### Published Conference Contributions

D. Biskupski, R. Moos, K. Wiesner, M. Fleischer:

Elektrochemische Zelle mit integriertem Kohlenwasserstoffsensoren für das Automobilabgas  
G. Gerlach, P. Hauptmann (Hrsg.), *8. Dresdner Sensor-Symposium*, 10.-12. Dezember 2007, Dresden, p. 145 -148

S. Achmann, J. Kita, M. Hämmerle, R. Moos:

Multilayer LTCC-Biosensor zur direkten Detektion der Formaldehydkonzentration aus der Gasphase  
G. Gerlach, P. Hauptmann (Hrsg.), *8. Dresdner Sensor-Symposium*, 10.-12. Dezember 2007, Dresden, p. 179 -182

D. Schönauer, R. Moos, K. Wiesner, M. Fleischer:

Selektiver Ammoniakabgassensoren auf Mischpotentialbasis  
G. Gerlach, P. Hauptmann (Hrsg.), *8. Dresdner Sensor-Symposium*, 10.-12. Dezember 2007, Dresden, p. 11 -14

J. Kita, A. Schulz, K. Sahner, R. Merkle, J. Maier:

Sauerstoffunabhängiger potentiometrischer CO<sub>2</sub>-Sensor in Dickschichttechnik  
G. Gerlach, P. Hauptmann (Hrsg.), *8. Dresdner Sensor-Symposium*, 10.-12. Dezember 2007, Dresden, p. 295 -298

F. Rettig, F. Thalmayr, R. Moos:

Schnelle Temperaturmodulation von direkten thermoelektrischen Gassensoren  
G. Gerlach, P. Hauptmann (Hrsg.), *8. Dresdner Sensor-Symposium*, 10.-12. Dezember 2007, Dresden, p. 153 -156

A. Fischerauer, A. Gollwitzer, F. Thalmayr, G. Hagen, R. Moos, G. Fischerauer:

Modellierung des Impedanzspektrums eines Kohlenwasserstoffsensors mit einer Zeolith-Cr<sub>2</sub>O<sub>3</sub>-Grenzfläche  
G. Gerlach, P. Hauptmann (Hrsg.), *8. Dresdner Sensor-Symposium*, 10.-12. Dezember 2007, Dresden, p. 165 -168

K. Sahner, R. Moos:

## Year 2007

P-Type Semiconducting Hydrocarbon Sensors: Mechanistic Model

*The 7th East Asian Conference on Chemical Sensors (EACCS 7)*, Singapore, 3.-5.12.2007, p. 80

R. Moos:

Recent developments in the field of automotive exhaust sensing

*The 7th East Asian Conference on Chemical Sensors (EACCS 7)*, Singapore, 3.-5.12.2007, p. 26

D. Biskupski, K. Wiesner, R. Moos, M. Fleischer:

Hydrocarbon sensor for automotive exhaust gases with integrated electrochemical cell to adjust oxygen partial pressure

*The 7th East Asian Conference on Chemical Sensors (EACCS 7)*, Singapore, 3.-5.12.2007, p. 27

A. Fischerauer, A. Gollwitzer, F. Thalmayr, G. Hagen, R. Moos, G. Fischerauer:

An initial physics-based model for the impedance spectrum of a hydrocarbon sensor with a zeolite/Cr<sub>2</sub>O<sub>3</sub> interface

*The 7th East Asian Conference on Chemical Sensors (EACCS 7)*, Singapore, 3.-5.12.2007, p. 22

S.A. Meiss, M. Rohnke, F. Rettig, R. Moos, J. Janek:

Ion-Conducting Probes for Low Temperature Plasmas

*6. Doktoranden-Workshop Physikalische Festkörperchemie*, 8.-9. Oktober 2007, Braunschweig, Germany

R. Moos, J. Kita:

Ceramic Multilayer Gas Sensors - an Overview

*XXXI Int'l Conference of International Microelectronics and Packaging Society*, Krasiczyn, Poland, 23.-26.9.2007, ISBN 978-83-917701-4-6, p. 75-82

E. Miś, A. Dziedzic, T. Piasecki, J. Kita, R. Moos:

Thick-Film and LTCC Microcapacitors

*XXXI Int'l Conference of International Microelectronics and Packaging Society*, Krasiczyn, Poland, 23.-26.9.2007, ISBN 978-83-917701-4-6, p. 401-404

K. Sahner, R. Moos:

Mechanistic model of p-type semiconducting hydrocarbon sensors

*International Conference on Electroceramics 2007*, Arusha, Tanzania, Jul 31 - Aug 3, 2007, ABS-090

S.A. Meiss, M. Rohnke, F. Rettig, R. Moos, J. Janek:

Ion-Conducting Probes for Low Temperature Plasmas

*7th International Workshop on Electrical Probes in Magnetized Plasmas*, July 22-25, 2007, Prague, Czech Republic, ISBN 978-80-7378-010-4, p.46

S.A. Meiss, S.O. Steinmüller, M. Rohnke, F. Rettig, R. Moos, J. Janek:

Ion-conducting electrodes and probes for low temperature plasmas

*28th ICPIG*, July 15-20, 2007, Prague, Czech Republic, p. 295-298

A. Dubbe, R. Moos:

Material Influence on Characteristics of Zeolite Based Hydrocarbon Gas Sensor

*Solid State Ionics 16*, July 1-6, 2007, Shanghai, China, P 508

T. Richter, C. Schuh, S. Denneler, E. Suvaci, R. Moos:

Grain oriented PMN-PT and PMN-PZT

*10<sup>th</sup> International Conference and Exhibition of the European Ceramic Society*, June 17 - 21, 2007, Berlin

J. Kita, R. Moos:

Application of Metallo-organic Pastes on LTCC Substrates

*European Microelectronics and Packaging Conference EMPC 2007*, June 17-20, 2007, Oulu, Finland, p. 364-368

K. Sahner, R. Moos:

P-Type Semiconducting Hydrocarbon Sensors: Mechanistic Model

*1<sup>st</sup> GOSPEL Workshop on Low Dimensional and Nanostructured Oxides: Bridging Surface Science and Sensor Science*, June 15 - 16, 2007, Tübingen

A. Dubbe, R. Moos:

Zeolites as solid state ion-conducting materials in micro gas sensors

*2<sup>nd</sup> Workshop on Integrated Electroceramic Functional Structures*, 14. - 15.6. 2007, Berchtesgaden, Germany, p. 84-86

F. Rettig, R. Moos:

Direct thermoelectric gas sensors: Sensitivity enhancement with intrinsically semiconducting oxides

*Sensor 2007*, Proceedings of the 13<sup>th</sup> International Conference, 22.-24. May 2007 in Nürnberg, Vol. I, p. 103-108

G. Hagen, A. Dubbe, R. Moos:

Role of Pt in Impedance Based Zeolite Gas Sensors

*Sensor 2007*, Proceedings of the 13<sup>th</sup> International Conference, 22.-24. May 2007 in Nürnberg, Vol. I, p. 157-161

J. Kita, R. Moos:

Heaters for LTCC-Sensors Made of Resinate Pastes

*Proc. of 2007 IMAPS/ACerS, 3<sup>rd</sup> International Conference on Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT)*, Denver, Colorado, 23.4-26.4.2007

## Year 2007

J. Kita, E. Gollner, R. Moos:

Anwendung eines frequenzverdreifachten Nd:YAG Lasers zur Bearbeitung gebrannter Keramiken  
*Symposium Hochleistungskeramik*, Dresden, 20. - 21. März 2007

S. Achmann, M. Hermann, V. Jérôme, M. Hämmerle, R. Freitag, R. Moos:

NAD-unabhängige Formaldehyddehydrogenase aus *H. zavarzinii*: Einsatz im Biosensor  
*5. Deutsches Biosensor Symposium 2007*, Bochum, 18. - 21. März 2007, p. 65

A. Dubbe, R. Moos:

H<sup>+</sup>/Na<sup>+</sup> ion equilibria of ZSM-5 with respect to surface composition  
*19. Deutsche Zeolith-Tagung*, Leipzig, 7. -9. März 2007, p. 150-151

R. Moos:

Automotive Exhaust Gas Sensors Based on Electroceramics. An overview.  
*Proceedings of the 31st International Conference on Advanced Ceramics and Composites*, Cocoa Beach, Florida, January 21-26, 2007

## Miscellaneous

R. Moos:

Neue Entwicklungen in der Autoabgassensorik - eine knappe Übersicht  
*Sensorik aktuell*, Ausgabe II/2007, p.8-9

R. Moos:

Die Zeit des Drei-Wege-Katalysators ist vorbei  
*Produktion*, Ausgabe 18, 3. Mai 2007, p. 16

R. Moos:

Bewährte und neue Abgasnachbehandlungsverfahren - vom geregelten Drei-Wege-Katalysator zum Harnstoff-SCR-Verfahren  
Öffentlicher Vortrag im *Deutschen Museum Verkehrszentrum*, München, 8.3.2007

F. Rettig:

Oxidische Halbleiter für thermoelektrische Gassensoren: Simulation und Messungen  
*Festkörperseminar des Physikalisch-Chemischen Instituts*, Justus-Liebig Universität Gießen, 6.3.2007

## Year 2006

### Peer Reviewed Journals

R. Moos, K. Sahner, G. Hagen, A. Dubbe:

Zeolites for Sensors for Reducing Gases  
*Rare Metal Materials And Engineering*, **35**, Suppl. 3, 447-451 (2006)

A. Dubbe, G. Hagen, R. Moos:

Impedance Spectroscopy of Na<sup>+</sup> conducting zeolite ZSM-5  
*Solid State Ionics*, **177**, 2321-2323 (2006), doi: 10.1016/j.ssi.2006.04.006

(\* ) G. Hagen, A. Dubbe, F. Rettig, A. Jerger, T. Birkhofer, R. Müller, C. Plog, R. Moos:

Selective impedance based gas sensors for hydrocarbons using ZSM-5 zeolite films with chromium(III)oxide interface  
*Sensors and Actuators B: Chemical*, **119**, 441-448 (2006), doi: 10.1016/j.snb.2005.12.052

(\* ) R. Moos, B. Reetmeyer, A. Hürland, C. Plog:

Sensor for directly determining the exhaust gas recirculation rate - EGR sensor  
*Sensors and Actuators B: Chemical*, **119**, 57-63 (2006), doi: 10.1016/j.snb.2005.11.055

G. Hagen, A. Dubbe, G. Fischerauer, R. Moos:

Thick-film impedance based hydrocarbon detection based on chromium(III) oxide / zeolite interfaces  
*Sensors and Actuators B: Chemical*, **118**, 73-77 (2006), doi: 10.1016/j.snb.2006.04.005

K. Sahner, D. Schönauer, R. Moos, M. Matam, M.L. Post:

Effect of electrodes and zeolite cover layer on hydrocarbon sensing with p-type perovskite SrTi<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3-δ</sub> thick and thin films  
*Journal of Materials Science*, **41**, 5828-5835 (2006), doi: 10.1007/s10853-006-0299-x

S. Srinath, M. Mahesh Kumar, K. Sahner, M.L. Post, M. Wickles, R. Moos, H. Srikanth:

Magnetization in insulating phases of Ti<sup>4+</sup> doped SrFeO<sub>3-δ</sub>  
*J. Appl. Phys.*, **99**, 08S904 (2006), doi: 10.1063/1.2167050

K. Sahner, J. Straub, R. Moos:

Cuprate-ferrate compositions for temperature independent resistive oxygen sensors  
*J. Electroceramics*, **16**, 179-186 (2006), doi: 10.1007/s10832-006-6203-x

R. Moos:

Automotive Exhaust Gas Sensors  
In: C. A. Grimes, E. C. Dickey, M. V. Pishko (Eds.) *Encyclopedia of Sensors*, Vol. 1, p. 295 - 312, American Scientific Publishers (2006).

K. Sahner, M. Fleischer, E. Magori, H. Meixner, J. Deerberg, R. Moos:

HC-sensor for exhaust gases based on semiconducting doped SrTiO<sub>3</sub> for On-Board Diagnosis  
*Sensors and Actuators B: Chemical*, **114**, 861-868 (2006), doi: 10.1016/j.snb.2005.08.005

A. Dubbe, R. Moos:

Solid Electrolyte Hydrocarbon Gas Sensor Using Zeolite as the Sensitive Phase  
*Electrochemical and Solid-State Letters*, **9**, H31-H34 (2006), doi: 10.1149/1.2181292

K. Sahner, R. Moos, N. Izu, W. Shin, N. Murayama:

Response kinetics of temperature independent resistive oxygen sensor formulations: a comparative study  
*Sensors and Actuators B: Chemical*, **113**, 112-119 (2006), doi: 10.1016/j.snb.2005.02.035

### Doctoral Thesis

K. Sahner:

Modeling of p-type semiconducting perovskites for gas sensor applications.  
In: R. Moos, G. Fischerauer (Hrsg.), *Bayreuther Beiträge zur Sensorik und Messtechnik*, Bd. 1, Shaker-Verlag, Aachen (2006) ISBN: 978-3-8322-5538-1

### Invited Talks

Anwendungen der keramischen Mehrlagentechologie in der Gassensorik - eine Übersicht.

R. Moos, J. Kita: *Materialica-Kongress „Von funktionskeramischen Materialien zu innovativen Produkten“*, München, 10.10.-11.10.2006

Zeolithe für Gassensoren

R. Moos: *GdCh-Jahrestagung 2006 der Fachgruppe Angewandte Elektrochemie, "Festkörper-Elektrochemie und -Elektrolyte"*, 9. - 11.10.2006, Bayreuth

NH<sub>3</sub>-Abgassensoren: Eine Übersicht über die neuesten Entwicklungen

R. Moos, D. Schönauer, M. Fleischer: *Sensoren im Automobil*, München, 12.9.-13.9.2006.

Potentiometric hydrocarbon gas sensing characteristics of Na<sup>+</sup> ion conducting zeolite

A. Dubbe, R. Moos: *The 11th International Meeting on Chemical Sensors*, IMCS 11, Brescia, Italy, 16th-19th July 2006, TO 2.2.4

## Year 2006

### Published Conference Contributions

R. Moos:

Zeolithe für Gassensoren

*GdCh-Jahrestagung 2006 der Fachgruppe Angewandte Elektrochemie, "Festkörper-Elektrochemie und -Elektrolyte"*, 9. - 11.10.2006, Bayreuth, p. 31

G. Hagen, A. Dubbe, R. Moos:

Einfluss von Pt in Cr<sub>2</sub>O<sub>3</sub> / Pt-ZSM-5 – Kohlenwasserstoff-Gassensoren

*GdCh-Jahrestagung 2006 der Fachgruppe Angewandte Elektrochemie, "Festkörper-Elektrochemie und -Elektrolyte"*, 9. - 11.10.2006, Bayreuth, p. 50

A. Dubbe, R. Moos:

Untersuchungen zu Mechanismen von Kohlenwasserstoff-Gassensoren auf der Basis von ionenleitenden Zeolithen

*GdCh-Jahrestagung 2006 der Fachgruppe Angewandte Elektrochemie, "Festkörper-Elektrochemie und -Elektrolyte"*, 9. - 11.10.2006, Bayreuth, p. 51

A. Baumgartner, R. Mariychuk, F.E. Wagner, A. Lerf, A. Dubbe, R. Moos, J. Breu:

Fe(II)-Täniolith: Synthese, physikalische Eigenschaften und oxidativer Ionenaustausch

*GdCh-Jahrestagung 2006 der Fachgruppe Angewandte Elektrochemie, "Festkörper-Elektrochemie und -Elektrolyte"*, 9. - 11.10.2006, Bayreuth, p. 53, und *Z. Anorg. Allg. Chem.* 2006, 632, p. 2139

E. Gollner, J. Kita, R. Moos:

Frequency-tripled Nd:YAG-laser in thick-film and LTCC applications

*Proceedings of XXX International Conference of International Microelectronics and Packaging Society, Krakow, Poland, 24.-27.9.2006*, p. 147-152

F. Rettig, R. Moos:

Direct thermoelectric gas sensors: modeling of microstructure sensitivity relationships

*Proceedings Eurosenors XX, Göteborg, 17th-20th September 2006*, T2B-P14

D. Schönauer, R. Moos, M. Fleischer:

NH<sub>3</sub>-Abgassensoren: Eine Übersicht über die neuesten Entwicklungen

*Sensoren im Automobil*, München, 12.9.-13.9.2006, in: T. Tille et al.: *Sensoren im Automobil I*, expert Verlag 2006, p. 29 - 48

F. Rettig, R. Moos:

Thermoelectric gas sensors: Proof of reproducibility and geometry independency

*The 11th International Meeting on Chemical Sensors, IMCS 11, Brescia, Italy, 16th-19th July 2006*, TP 01

G. Hagen, A. Schulz, M. Knörr, R. Moos:

Four-wire impedance spectroscopy on planar zeolite covered gas sensors

*The 11th International Meeting on Chemical Sensors, IMCS 11, Brescia, Italy, 16th-19th July 2006*, WO 4.1.4

D. Biskupski, K. Wiesner, K. Sahner, R. Moos, M. Fleischer:

Hydrocarbon sensor for exhaust gases based on semiconducting Ga<sub>2</sub>O<sub>3</sub>

*The 11th International Meeting on Chemical Sensors, IMCS 11, Brescia, Italy, 16th-19th July 2006*, WO 1.2.2

(\*) R. Moos, A. Hürland, B. Reetmeyer, C. Plog:

Exhaust gas recirculation rate sensor

*The 11th International Meeting on Chemical Sensors, IMCS 11, Brescia, Italy, 16th-19th July 2006*, TO 1.4.4

K. Sahner, R. Moos:

Mechanistic model for p-type hydrocarbon sensors

*The 11th International Meeting on Chemical Sensors, IMCS 11, Brescia, Italy, 16th-19th July 2006*, TP 12

K. Sahner, P. Gouma, R. Moos:

Selectivity enhancement of p-type gas sensors by electrodeposition

*The 11th International Meeting on Chemical Sensors, IMCS 11, Brescia, Italy, 16th-19th July 2006*, MP 42

D. Schönauer, K. Sahner, M. Wickles, M. Matam, M. Post, R. Moos:

Selectivity enhancement of p-type gas sensors using sol precipitated nano-powders

*The 11th International Meeting on Chemical Sensors, IMCS 11, Brescia, Italy, 16th-19th July 2006*, TO 4.3.4

S. Achmann, M. Hämmerle, R. Moos:

A novel enzyme-biosensor for direct detection of formaldehyde from the gas phase: Dependence of the sensor-signal from buffer composition

*The 11th International Meeting on Chemical Sensors, IMCS 11, Brescia, Italy, 16th-19th July 2006*, TO 4.1.2

J. Kita, F. Rettig, R. Moos:

Integration of Fired Ceramics on LTCC Structures - Feasibility Study

*EMPS 2006, 4th European Microelectronics and Packaging Symposium, Terme Catez, Slovenia, May 21 - 24, 2006*, p.51-55

M. Hämmerle, S. Achmann, R. Moos:

Amperometric enzyme gas sensor for phenol vapour

*The Ninth World Congress on Biosensors, Toronto, 10-12 May 2006*, P146

## Year 2006

S. Achmann, M. Hämmerle, R. Moos:

Evaluation of the kinetics of an amperometric enzyme gas sensor

*The Ninth World Congress on Biosensors*, Toronto, 10-12 May 2006, P150

K. Sahner, P. Gouma, R. Moos:

Nanoscaled p-type semiconductors for gas sensing: nanopowders, nanofilms, and nanowires

*2006 MRS Spring Meeting*, April 17-21 2006, San Francisco, R 6.31

F. Rettig, R. Moos:

Thermoelektrische Kohlenwasserstoffsensoren

*Sensoren und Messsysteme 2006*, Freiburg / Breisgau, 13. - 14. März 2006, p. 169-172

A. Dubbe, G. Hagen, R. Moos:

ZSM-5 zeolite as sensitive material in hydrocarbon gas sensors

*18. Deutsche Zeolith-Tagung*, Hannover, 1. -3. März 2006, KVZ11, p.63-64

## Year 2005

### Peer Reviewed Journals

R. Moos:

A Brief Overview on Automotive Exhaust Gas Sensors Based on Electroceramics  
*International Journal of Applied Ceramic Technology*, **2**, 401-413 (2005), doi: 10.1111/j.1744-7402.2005.02041.x

J. Kita, F. Rettig, R. Moos, K.-H. Drüe, H. Thust:

Hot-Plate Gas Sensors - Are Ceramics Better?  
*International Journal of Applied Ceramic Technology*, **2**, 383-389 (2005), doi: 10.1111/j.1744-7402.2005.02037.x

U. Röder, A. Kipka, C. Modes, R. Moos:

Untersuchung der Kompatibilität von Silberleitpasten mit bleifreien LTCC-Folien  
*cfi/Ber. DKG*, **82** (13), 201-204 (2005)

F. Rettig, M. Wickles, J. Kita, R. Moos:

Anwendbarkeit von kommerziellen LTCC-Materialien für Gassensoren  
*cfi/Ber. DKG*, **82** (13), 197-200 (2005)

J. Kita, F. Rettig, R. Moos:

Cofiring von LTCC Strukturen mit gebrannten Keramiken  
*cfi/Ber. DKG*, **82** (13), 193-196 (2005)

K. Sahner, M. Wickles, D. Schönauer, F. Rettig, A. Roosen, R. Moos:

Strontium aluminate: a novel tape material for HTCC gas sensors  
*cfi/Ber. DKG*, **82** (13), 170-173 (2005)

K. Sahner, R. Moos, M. Matam, J.J. Tunney, M. Post:

Hydrocarbon sensing with thick and thin film p-type conducting perovskite materials  
*Sensors and Actuators B: Chemical*, **108**, 102-112 (2005), doi: 10.1016/j.snb.2004.12.104

J. Kita, F. Rettig, R. Moos, K.-H. Drüe, H. Thust:

Laser forming of LTCC Ceramics for Hot-Plate Gas Sensors  
*J. Microelectronics and Electronic Packaging*, **2**, 14-18 (2005), doi: 10.4071/1551-4897-2.1.14

### Invited Talks

The 6th East Asian Conference on Chemical Sensors (EACCS 6), Guilin, China, 6.11.-9.11.2005

R. Moos: *Zeolites for Gas Sensors*

Deutsche IMAPS-Konferenz 2005, München, 10.10.-11.10.2005

J. Kita: *Anwendungen der LTCC-Technologie in der Gassensorik*

International Materials Forum, Bayreuth, 31.7.-2.8.2005

R. Moos: *Functional Materials for Gas Sensors*

29th Intl. Conference on Advanced Ceramics and Composites, Cocoa Beach, Florida, 23.-28.1.2005

R. Moos: *Automotive Exhaust Gas Sensors Based on Electroceramics. An overview*

### Published Conference Contributions

F. Rettig, R. Moos

Thermoelektrischer Gassensor in keramischer Mehrlagentechnologie  
G. Gerlach, H. Kaden (Hrsg.), *7. Dresdner Sensor-Symposium*, 12.-14. Dezember 2005, Dresden, p. 29 -32

S. Achmann, M. Hämmerle, R. Moos

Langzeitstabilität eines amperometrischen Enzymgassensors  
G. Gerlach, H. Kaden (Hrsg.), *7. Dresdner Sensor-Symposium*, 12.-14. Dezember 2005, Dresden, p. 177 -180

G. Hagen, A. Dubbe, G. Fischerauer, R. Moos

Zeolith-Cr<sub>2</sub>O<sub>3</sub>-Grenzflächen als Kohlenwasserstoff-Gassensoren  
G. Gerlach, H. Kaden (Hrsg.), *7. Dresdner Sensor-Symposium*, 12.-14. Dezember 2005, Dresden, p. 295 -298

R. Moos, A. Dubbe, G. Hagen, K. Sahner

Zeolites for Resistive Gas Sensors - a Brief Overview  
*The 6<sup>th</sup> East Asian Conference on Chemical Sensors (EACCS 6)*, Guilin, China, 2005, p. 108-109

G. Hagen, A. Dubbe, R. Moos, T. Raps, G. Fischerauer:

Thick-Film Impedance Based Gas Sensor for Hydrocarbon Detection Utilizing Chromium(III)Oxide and Zeolites  
Proceedings *Eurosensors XIX*, Barcelona, 2005, p. WPa75

## Year 2005

K. Sahner, J. Straub, R. Moos:

Temperature-independent materials for resistive lean oxygen sensing  
Proceedings *Eurosensors XIX*, Barcelona, 2005, p. WPa24

M. Hämmerle, S. Achmann, A. Lauterbach, R. Moos:

Numerical simulation of amperometric enzyme gas sensors  
Proceedings *Eurosensors XIX*, Barcelona, 2005, p. TA18

F. Rettig, R. Moos:

Novel Thermoelectric Gas Sensors  
Proceedings *Eurosensors XIX*, Barcelona, 2005, p. MA9

T. Raps, G. Fischerauer, A. Dubbe, G. Hagen, R. Moos:

On the modeling of integrated ceramic hydrocarbon sensors based on zeolites  
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(\*) Work was conducted (mostly between 1995 and 2001) at DaimlerChrysler AG, Research and Technology, Friedrichshafen, Germany

(\*\*) Work was conducted between 1990 and 1995 at Institut für Technologie der Elektrotechnik (head: Prof. K.H. Härdtl; now Institut für Werkstoffe der Elektrotechnik, head Prof. Ellen Ivers-Tiffée), Universität Karlsruhe (TH), Germany