

Selection of papers in the field of chemical sensors (mainly selected peer reviewed articles and book contributions)

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

T. Wöhrl, J. Kita, R. Moos, G. Hagen:

Capacitive, Highly Selective Zeolite-Based Ammonia Sensor for Flue Gas Applications

open access - free *Chemosensors*, **11**, 413 (2023), doi: [10.3390/chemosensors11070413](https://doi.org/10.3390/chemosensors11070413)

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

Methods to investigate the temperature distribution of heated ceramic gas sensors for high-temperature applications

open access - free *Journal of Sensors and Sensor Systems*, **12**, 205-214 (2023), doi: [10.5194/jsss-12-205-2023](https://doi.org/10.5194/jsss-12-205-2023)

C. Steiner, T. Wöhrl, M. Steiner, J. Kita, A. Müller, H. Eisazadeh, R. Moos, G. Hagen:

Resistive Multi-Gas Sensor for Simultaneously Measuring the Oxygen Stoichiometry (λ) and the NO_x Concentration in Exhausts: Engine Tests under Dynamic Conditions

open access - free *Sensors*, **23**, 5612 (2023), doi: [10.3390/s23125612](https://doi.org/10.3390/s23125612)

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

open access - free *Sensors*, **23**, 3914 (2023), doi: [10.3390/s23083914](https://doi.org/10.3390/s23083914)

G. Hagen, J. Herrmann, X. Zhang, H. Kohler, I. Hartmann, R. Moos:

Application of a Robust Thermoelectric Gas Sensor in Firewood Combustion Exhausts

open access - free *Sensors*, **23**, 2930 (2023), doi: [10.3390/s23062930](https://doi.org/10.3390/s23062930)

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](https://doi.org/10.1149/1945-7111/ac2fc5)

R. Wagner, D. Schönauer-Kamin, W. Bätger, 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](https://doi.org/10.1016/j.snb.2021.130490)

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](https://doi.org/10.1016/j.snb.2021.129646)

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

Influence of Humidity and Different Gases on a Resistive Room Temperature NO₂ Gas Dosimeter Based on Al-Doped ZnO for ppb-Concentration Detection

open access - free *Journal of The Electrochemical Society*, **167**, 167516 (2020), doi: [10.1149/1945-7111/abcb65](https://doi.org/10.1149/1945-7111/abcb65)

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 O₂ gas detection by means of solid electrolyte sensors

open access - free *Journal of Sensors and Sensor Systems*, **9**, 355-362 (2020), doi: [10.5194/jsss-9-355-2020](https://doi.org/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

open access - free *Sensors*, **20**, 6024 (2020), doi: [10.3390/s20216024](https://doi.org/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

open access - free *Journal of Sensors and Sensor Systems*, **9**, 327-335 (2020), doi: [10.5194/jsss-9-327-2020](https://doi.org/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

open access - free *Journal of Sensors and Sensor Systems*, **9**, 293-300 (2020), doi: [10.5194/jsss-9-293-2020](https://doi.org/10.5194/jsss-9-293-2020)

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

Characterization of the sensitive material for a resistive NO_x gas dosimeter by DRIFT spectroscopy

Sensors and Actuators B: Chemical, **320**, 128568 (2020), doi: [10.1016/j.snb.2020.128568](https://doi.org/10.1016/j.snb.2020.128568)

S. Walter, P. Schwanzler, 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

open access - free *Sensors*, **20**, 2659 (2020), doi: [10.3390/s20092659](https://doi.org/10.3390/s20092659)

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

Novel Operation Strategy to Obtain a Fast Gas Sensor for Continuous ppb-Level NO₂ Detection at Room Temperature Using ZnO—A Concept Study with Experimental Proof

open access - free *Sensors*, **19**, 4104 (2019), doi: [10.3390/s19194104](https://doi.org/10.3390/s19194104)

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

On the influence of the NO_x 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](https://doi.org/10.1016/j.snb.2019.126627)

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](https://doi.org/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](https://doi.org/10.1016/j.snb.2019.03.063)

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
open access - free *Sensors*, **19**, 3559 (2019), doi: [10.3390/s19163559](https://doi.org/10.3390/s19163559)

T. Ritter, M. Seibel, F. Hofmann, M. Weibel, R. Moos:
Simulation of a NO_x Sensor for Model-Based Control of Exhaust Aftertreatment Systems
Topics in Catalysis, **62**, 150-156 (2019), doi: [10.1007/s11244-018-1102-3](https://doi.org/10.1007/s11244-018-1102-3)

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](https://doi.org/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 NH₃-SCR monitoring: the role of Cu mobility
ACS Applied Materials & Interfaces, **11**, 8097-8105 (2019), doi: [10.1021/acsami.8b22104](https://doi.org/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
open access - free *ACS Omega*, **4**, 3351-3360 (2019), doi: [10.1021/acsomega.8b02421](https://doi.org/10.1021/acsomega.8b02421)

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Novel radio-frequency-based gas sensor with integrated heater
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Effect of the Heterogeneous Catalytic Activity of Electrodes for Mixed Potential Sensors
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Investigations on the crystal growth mechanism of one-pot-synthesized Al-doped ZnO and its UV-enhanced room temperature NO₂ gas sensing characteristics
Functional Materials Letters, **11**, 1850087 (2018), doi: [10.1142/S179360471850087X](https://doi.org/10.1142/S179360471850087X)

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Sensors and Actuators B: Chemical, **273**, 1564-1571 (2018), doi: [10.1016/j.snb.2018.07.036](https://doi.org/10.1016/j.snb.2018.07.036)

M. Bektas, T. Stöcker, A. Mergner, G. Hagen, R. Moos:
Combined resistive and thermoelectric oxygen sensor with almost temperature-independent characteristics
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A pathway to eliminate the gas flow dependency of a hydrocarbon sensor for automotive exhaust applications
open access - free *Journal of Sensors and Sensor Systems*, **7**, 79-84 (2018), doi: [10.5194/jsss-7-79-2018](https://doi.org/10.5194/jsss-7-79-2018)

Y. Zheng, U. Sauter, R. Moos:
Oxygen transport paths in screen-printed Pt-Al₂O₃ composite model electrodes on YSZ
Solid State Ionics, **316**, 53-58 (2018), doi: [10.1016/j.ssi.2017.12.026](https://doi.org/10.1016/j.ssi.2017.12.026)

T. Ritter, G. Hagen, J. Lattus, R. Moos:
Solid state mixed-potential sensors as direct conversion sensors for automotive catalysts
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T. Ritter, S. Wiegärtner, G. Hagen, R. Moos:
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Journal of Sensors and Sensor Systems, **6**, 395-405 (2017), doi: [10.5194/jsss-6-395-2017](https://doi.org/10.5194/jsss-6-395-2017)

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](https://doi.org/10.3390/s17102422)

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

J. Exner, G. Albrecht, D. Schönauer-Kamin, J. Kita, R. Moos:

Pulsed Polarization-Based NO_x Sensors of YSZ Films Produced by the Aerosol Deposition Method and by Screen-Printing
Sensors, **17**, 1715 (2017), doi: 10.3390/s17081715

I. Marr, R. Moos:

Resistive NO_x dosimeter to detect very low NO_x 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

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

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

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

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

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

Tuning of the electrical conductivity of Sr(Ti,Fe)O₃ oxygen sensing films by aerosol co-deposition with Al₂O₃
Sensors and Actuators B: Chemical, **230**, 427-433 (2016), doi: 10.1016/j.snb.2016.02.033

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

T. Simons, P. Chen, D. Rauch, R. Moos, U. Simon:

Sensing Catalytic Conversion: Simultaneous DRIFT and Impedance Spectroscopy for *in situ* Monitoring of DeNO_x-SCR on Zeolites
Sensors and Actuators B: Chemical, **224**, 492-499 (2016), doi: 10.1016/j.snb.2015.10.069

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
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Sensors, **15**, 28915-28941 (2015), doi: 10.3390/s151128915

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, 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
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Applied Catalysis B: Environmental, **165**, 369-377 (2015), doi: 10.1016/j.apcatb.2014.09.068

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Applied Catalysis B: Environmental, **165**, 36-42 (2015), doi: 10.1016/j.apcatb.2014.09.059

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Sensors and Actuators B: Chemical, **214**, 234-240 (2015), doi: 10.1016/j.snb.2015.02.083

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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

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