

as of March 31, 2026

## Functional Materials related papers

(other than sensor papers, ceramic microsystems related papers, battery-related papers, and aerosol deposition papers)

- 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  
**open access - free** *Journal of Materials Chemistry C*, **12**, 6415-6422 (2024), doi: [10.1039/D3TC04361D](https://doi.org/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  
**open access - free** *Sensors*, **24**, 2951 (2024), doi: [10.3390/s24092951](https://doi.org/10.3390/s24092951)
- S. Bresch, P. Stargardt, R. Moos, B. Mieller:  
Co-Fired Multilayer Thermoelectric Generators Based on Textured Calcium Cobaltite  
**open access - free** *Advanced Electronic Materials*, **10**, 2300636 (2024), doi: [10.1002/aelm.202300636](https://doi.org/10.1002/aelm.202300636)
- 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/acsenergylett.3c01878](https://doi.org/10.1021/acsenergylett.3c01878)
- 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  
**open access - free** *Solar RRL*, **7**, 2300261 (2023), doi: [10.1002/solr.202300261](https://doi.org/10.1002/solr.202300261)
- 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](https://doi.org/10.1021/acs.jpcc.2c08968)
- 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  
**open access - free** *European Journal of Inorganic Chemistry*, **26**, e202200736 (2023), doi: [10.1002/ejic.202200736](https://doi.org/10.1002/ejic.202200736)
- C. Steiner, G. Hagen, I. Kogut, H. Fritze, R. Moos:  
Analysis of defect mechanisms in nonstoichiometric ceria-zirconia by the microwave cavity perturbation method  
**open access - free** *Journal of the American Ceramic Society*, **106**, 2875-2892 (2023), doi: [10.1111/jace.18938](https://doi.org/10.1111/jace.18938)
- 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 MAPbI<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](https://doi.org/10.1039/D2TA09069D)
- 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  
**open access - free** *Journal of Materials Science*, **58**, 1481-1504 (2023), doi: [10.1007/s10853-022-07830-4](https://doi.org/10.1007/s10853-022-07830-4)
- 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](https://doi.org/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  
**open access - free** *Journal of Materials Chemistry A*, **10**, 18038-18049 (2022), doi: [10.1039/d2ta04448j](https://doi.org/10.1039/d2ta04448j)
- S. Bresch, B. Mieller, R. Moos, T. Rabe:  
Lowering the sintering temperature of calcium manganate for thermoelectric applications  
**open access - free** *AIP Advances*, **12**, 085116 (2022), doi: [10.1063/5.0098015](https://doi.org/10.1063/5.0098015)
- 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  
**open access - free** *Zeitschrift für Physikalische Chemie*, **236**, 1013-1053 (2022), doi: [10.1515/zpch-2021-3125](https://doi.org/10.1515/zpch-2021-3125)
- S. Bresch, B. Mieller, P. Mrkwitschka, R. Moos, T. Rabe:  
Glass-ceramic composites as insulation material for thermoelectric oxide multilayer generators  
**open access - free** *Journal of the American Ceramic Society*, **105**, 2140-2149 (2022), doi: [10.1111/jace.18235](https://doi.org/10.1111/jace.18235)
- 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  
**open access - free** *Journal of Materials Chemistry C*, **9**, 11827-11837 (2021), doi: [10.1039/D1TC01554K](https://doi.org/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  
**open access - free** *Journal of Materials Science*, **56**, 17191-17204 (2021), doi: [10.1007/s10853-021-06348-5](https://doi.org/10.1007/s10853-021-06348-5)

N. Leupold, A.L. Seibel, R. Moos, F. Panzer:  
Electrical Conductivity of Halide Perovskites Follows Expectations from Classical Defect Chemistry  
**open access - free** *European Journal of Inorganic Chemistry*, **2021**, 2882-2889 (2021), doi: [10.1002/ejic.202100381](https://doi.org/10.1002/ejic.202100381)

N. Leupold, F. Panzer:  
Recent Advances and Perspectives on Powder-Based Halide Perovskite Film Processing  
**open access - free** *Advanced Functional Materials*, **31**, 2007350 (2021), doi: [10.1002/adfm.202007350](https://doi.org/10.1002/adfm.202007350)

R. Wang, R. Moos:  
Electrical conductivity determination of semiconductors by utilizing photography, finite element simulation and resistance measurement  
**open access - free** *Journal of Materials Science*, **56**, 10449-10457 (2021), doi: [10.1007/s10853-021-05949-4](https://doi.org/10.1007/s10853-021-05949-4)

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  
**open access - free** *Materials*, **14**, 748 (2021), doi: [10.3390/ma14040748](https://doi.org/10.3390/ma14040748)

H. Grüninger, 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](https://doi.org/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  
**open access - free** *Journal of the American Ceramic Society*, **104**, 917-927 (2021), doi: [10.1111/jace.17541](https://doi.org/10.1111/jace.17541)

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  
**open access - free** *Electrochemistry Communications*, **121**, 106861 (2020), doi: [10.1016/j.elecom.2020.106861](https://doi.org/10.1016/j.elecom.2020.106861)

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](https://doi.org/10.1021/acsaelm.0c00493)

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](https://doi.org/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](https://doi.org/10.1109/TDEI.2019.008521)

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](https://doi.org/10.1115/1.4045783)

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](https://doi.org/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](https://doi.org/10.1021/acsami.9b09160)

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](https://doi.org/10.1063/1.5107476)

T. Michlik, A. Rosin, T. Gerdes, R. Moos:  
Improved Discharge Capacity of Zinc Batteries by Applying Bismuth-Doped Silica Coating for Zinc-Based Batteries  
*Batteries*, **5**, 32 (2019), doi: [10.3390/batteries5010032](https://doi.org/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](https://doi.org/10.1016/j.matlet.2019.02.094)

P. Nieke, J. Kita, M. Häming, R. Moos:  
Manufacturing Dense Thick Films of Lunar Regolith Simulant EAC-1 at Room Temperature  
**open access - free** *Materials*, **12**, 487 (2019), doi: [10.3390/ma12030487](https://doi.org/10.3390/ma12030487)

M. Streibl, R. Karmazin, R. Moos:  
Materials and Applications of Polymer Films for Power Capacitors with Special Respect to Nanocomposites

**open access - free** *IEEE Transactions on Dielectrics and Electrical Insulation*, **25**, 2429-2442 (2018), doi: [10.1109/TDEI.2018.007392](https://doi.org/10.1109/TDEI.2018.007392)

J. Zimmermann-Ptacek, M. Muggli, S. Wildhack, K. Hintzer, T. Gerdes, M. Willert-Porada, R. Moos:

Thermal, dielectric, and mechanical properties of h-BN-filled PTFE composites

*Journal of Applied Polymer Science*, **135**, 46859 (2018), doi: [10.1002/APP.46859](https://doi.org/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  $\text{CaMnO}_3$

**open access - free** *Journal of Ceramic Science and Technology*, **9**, 289-300 (2018), doi: [10.4416/JCST2018-00017](https://doi.org/10.4416/JCST2018-00017)

T. Stöcker, R. Moos:

Effect of Oxygen Partial Pressure on the Phase Stability of Copper-Iron Delafossites at Elevated Temperatures

**open access - free** *Materials*, **11**, 1888 (2018), doi: [10.3390/ma11101888](https://doi.org/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  $\text{CO}_2$  Reduction at Copper Sheet Electrodes with Enhanced Long-Term Stability by Pulsed Electrolysis

**open access - free** *Journal of the Electrochemical Society*, **165**, J3059-J3068 (2018), doi: [10.1149/2.0091815jes](https://doi.org/10.1149/2.0091815jes)

S. Bresch, B. Mieller, C. Selleng, T. Stöcker, R. Moos, T. Rabe:

Influence of the calcination procedure on the thermoelectric properties of calcium cobaltite  $\text{Ca}_3\text{Co}_4\text{O}_9$

*Journal of Electroceramics*, **40**, 225-234 (2018), doi: [10.1007/s10832-018-0124-3](https://doi.org/10.1007/s10832-018-0124-3)

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On the Electrochemical  $\text{CO}_2$  Reduction at Copper Sheet Electrodes with Enhanced Long-Term Stability by Pulsed Electrolysis

**open access - free** *Journal of the Electrochemical Society*, **165**, J3059-J3068 (2018), doi: [10.1149/2.0091815jes](https://doi.org/10.1149/2.0091815jes)

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

**open access - free** *Batteries*, **4**, 24 (2018), doi: [10.3390/batteries4020024](https://doi.org/10.3390/batteries4020024)

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

**open access - free** *Energies*, **11**, 999 (2018), doi: [10.3390/en11040999](https://doi.org/10.3390/en11040999)

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Mechanical Coating of Zinc Particles with  $\text{Bi}_2\text{O}_3\text{-Li}_2\text{O-ZnO}$  Glasses as Anode Material for Rechargeable Zinc-Based Batteries

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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](https://doi.org/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](https://doi.org/10.1016/j.memsci.2017.10.061)

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

On the defect chemistry of  $\text{BaFe}_{0.89}\text{Al}_{0.01}\text{Ta}_{0.1}\text{O}_{3-\delta}$ , 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](https://doi.org/10.1016/j.ssi.2017.12.017)

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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](https://doi.org/10.1002/zaac.201700265)

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](https://doi.org/10.1016/j.surfcoat.2017.07.002)

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Superconducting properties of thick films on Hastelloy prepared by the Aerosol Deposition Method with ex-situ  $\text{MgB}_2$  powder

*IEEE Transactions on Applied Superconductivity*, **27**, 6200904 (2017), doi: [10.1109/TASC.2017.2669479](https://doi.org/10.1109/TASC.2017.2669479)

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

Improvement of the selectivity of the electrochemical conversion of  $\text{CO}_2$  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](https://doi.org/10.1016/j.electacta.2016.12.059)

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Reversible Laser-Induced Amplified Spontaneous Emission from Coexisting Tetragonal and Orthorhombic Phases in Hybrid Lead Halide Perovskites

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*Journal of Sensors and Sensor Systems*, **5**, 25-32 (2016), doi: 10.5194/jsss-5-25-2016
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*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
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*Journal of Ceramic Science and Technology*, **6**, 63-68 (2015), doi: 10.4416/JCST2014-00047
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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
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