

Articles and Theses on Powder Aerosol Deposition Method (PAD), a.k.a. ADM

Progress reports in Advanced Materials

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
open access - free *Advanced Materials*, **36**, 2308294 (2024), doi: [10.1002/adma.202308294](https://doi.org/10.1002/adma.202308294)

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
open access - free *Advanced Materials*, **32**, 1908104 (2020), doi: [10.1002/adma.201908104](https://doi.org/10.1002/adma.201908104)

Overview articles

M. Schubert, D. Hanft, T. Nazarenius, 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
open access - free *Functional Materials Letters*, **12**, 1930005 (2019), doi: [10.1142/S1793604719300056](https://doi.org/10.1142/S1793604719300056)

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
open access - free *Journal of Ceramic Science and Technology*, **6**, 147-182 (2015), doi: [10.4416/JCST2015-00018](https://doi.org/10.4416/JCST2015-00018)

Regular peer-reviewed articles

L. Hennerici, D. Bröse, M. Schamel, S. Lang, P. Ficht, D. Kramer, R. Mönig, M.A. Danzer, R. Moos:
Progress in the Cycling Performance of Oxidic Solid-State Batteries Fabricated at Room Temperature by Powder Aerosol Deposition
open access - free *Journal of The Electrochemical Society*, **173**, 040517 (2026), doi: [10.1149/1945-7111/ae4543](https://doi.org/10.1149/1945-7111/ae4543)

M. Sozak, S. Knies, M. Bianchini, R. Moos:
Room Temperature Fabrication of Binder-Free Na₃V₂(PO₄)₃/C High-Loading Electrode Films via the Powder Aerosol Deposition Method
open access - free *Batteries & Supercaps*, **9**, e202500902 (2026), doi: [10.1002/batt.202500902](https://doi.org/10.1002/batt.202500902)

D. Paulus, M. Linz, A.L. Hansen, S. van Smaalen, R. Moos, A.S. Ulrich, D. Schönauer-Kamin:
Structure matters: A synchrotron study reveals how crystallite structure influences the deposition mechanism for the powder aerosol deposition method
open access - free *Journal of the European Ceramic Society*, **46**, 118127 (2026), doi: [10.1016/j.jeurceramsoc.2026.118127](https://doi.org/10.1016/j.jeurceramsoc.2026.118127)

A. Groß, D. Paulus, T. Scholz, R. Moos, D. Schönauer-Kamin:
Room temperature preparation of Ti₂AlC MAX-phase films using the powder aerosol deposition method
open access - free *Ceramics International*, **51**, 59777-59788 (2025), doi: [10.1016/j.ceramint.2025.10.205](https://doi.org/10.1016/j.ceramint.2025.10.205)

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
open access - free *Advanced Materials Technologies*, **10**, 2400745 (2025), doi: [10.1002/admt.202400745](https://doi.org/10.1002/admt.202400745)

C. Steiner, G. Hagen, R. Moos:
Sulfur poisoning of powder aerosol deposited films of BaFe_{0.74}Al_{0.01}Ta_{0.25}O_{3-δ}: A material for resistive temperature independent oxygen sensors
open access - free *Sensors and Actuators B: Chemical*, **425**, 136984 (2025), doi: [10.1016/j.snb.2024.136984](https://doi.org/10.1016/j.snb.2024.136984)

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
open access - free *Journal of the European Ceramic Society*, **44**, 116717 (2024), doi: [10.1016/j.jeurceramsoc.2024.116717](https://doi.org/10.1016/j.jeurceramsoc.2024.116717)

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
open access - free *Sensors*, **24**, 811 (2024), doi: [10.3390/s24030811](https://doi.org/10.3390/s24030811)

D. Paulus, J. Kita, R. Moos:
Relaxation behavior of intrinsic compressive stress in powder aerosol co-deposited films: Rethinking PAD films as nanomaterials
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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
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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](https://doi.org/10.1142/S1793604723500145)

M. Sozak, T. Nazarenus, J. Exner, J. Kita, R. Moos:

Room temperature manufacture of dense NaSICON solid electrolyte films for all-solid-state-sodium batteries

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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

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T. Nazarenus, K. Schlesier, F. Lebeda, M. Retsch, R. Moos:

Microstrain release decouples electronic and thermal conductivity in powder aerosol deposited films

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From Thermoelectric Powder Directly to Thermoelectric Generators: Flexible Bi₂Te₃ Films on Polymer Sheets Prepared by the Powder Aerosol Deposition Method at Room Temperature

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

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T. Nazarenus, K. Schlesier, S. Biberger, J. Exner, J. Kita, A. Köhler, R. Moos:

Posttreatment of powder aerosol deposited oxide ceramic films by high power LED

open access - free *International Journal of Applied Ceramic Technology*, **19**, 1540-1553 (2022), doi: [10.1111/ijac.13977](https://doi.org/10.1111/ijac.13977)

T. Nazarenus, 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

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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

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M. Linz, J. Exner, J. Kita, F. Bühner, M. Seipenbusch, R. Moos:

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Investigation of the Powder Aerosol Deposition Method Using Shadowgraph Imaging

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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

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

Dense Y-doped ion conducting perovskite films of BaZrO₃, BaSnO₃, and BaCeO₃ for SOFC applications produced by powder aerosol deposition at room temperature

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Investigation of the in situ calcination of aerosol co-deposited NiO-Mn₂O₃ films

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Novel Method for NTC Thermistor Production by Aerosol Co-Deposition and Combined Sintering

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Doctoral Theses

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](https://www.isbn-international.org/product/978-3-8440-9480-0)

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](https://www.isbn-international.org/product/978-3-8440-9142-7)

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](https://www.isbn-international.org/product/978-3-8440-7041-5)

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Aerosolbasierte Kaltabscheidung Lithium-Ionen leitender Festelektrolytschichten mit Granatstruktur
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In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 14, Shaker-Verlag, Düren (2019), ISBN: [978-3-8440-7044-6](https://www.isbn-international.org/product/978-3-8440-7044-6)

M. Schubert:
Die aerosolbasierte Kaltabscheidung von Aluminiumoxid: Verfahren, Hintergründe, Anwendungen
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In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 11, Shaker-Verlag, Aachen (2019), ISBN: [978-3-8440-6725-5](https://www.isbn-international.org/product/978-3-8440-6725-5)

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In: R. Moos, G. Fischerauer (Hrsg.), Bayreuther Beiträge zu Materialien und Prozessen, Bd. 9, Shaker-Verlag, Aachen (2019), ISBN: [978-3-8440-6496-4](https://www.isbn-international.org/product/978-3-8440-6496-4)

J. Exner:
Aerosolbasierte Kaltabscheidung von Funktionskeramiken für neuartige Anwendungen im Bereich der Sensorik und Energiewandlung
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