

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

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

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

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

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

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.-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
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

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
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

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

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

R. Moos:
Applications for Aerosol Deposition in the field of gas sensing
PACRIM 11, The 11th Pacific Rim Conference of Ceramic Societies, Jeju, Korea, 30.8.-4.9.2015, p. 396, WeD2-2

J. Exner, G. Albrecht, P. Fuieler, R. Moos:
NO₂ Detection by Pulsed Polarization of Doped Bismuth Vanadate films prepared by the Aerosol Deposition Method
7th International Conference on Electroceramics (ICE2015), State College, PA, USA, 13.5.-16.5.2015, p. 3-O-02

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

G. Hagen, N. Leupold, S. Wiegärtner, H. Wittmann, R. Moos:
Temperature Modulated Thermoelectric Gas Sensors
Sensor 2015, Proceedings of the 17th International Conference on Sensors and Measurement Technology, 19.-21. May 2015, Nürnberg, p. 704 - 707
doi: 10.5162/sensor2015/E7.2

M. Bektas, D. Hanft, D. Schönauer-Kamin, T. Stöcker, G. Hagen, R. Moos:
Aerosol-deposited BaFe_{0.7}Ta_{0.3}O_{3-δ} 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

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

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

D. Schönauer-Kamin, M. Fleischer, R. Moos:
Influence of the V₂O₅ content of the catalyst layer of a non-Nernstian NH₃ 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

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

M. Bektas, D. Schönauer-Kamin, G. Hagen, A. Mergner, C. Bojer, S. Lippert, W. Milius, J. Breu, R. Moos:

BaFe_{1-x}Ta_xO_{3-δ} - 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

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

A. Groß, D. Hanft, G. Beulertz, I. Marr, D. Kubinski, J. Visser, R. Moos:

The Effect of SO₂ on the Sensitive Layer of a NO_x Dosimeter
Sensors and Actuators B: Chemical, **187**, 153-161 (2013), doi: 10.1016/j.snb.2012.10.039

R. Moos:

Preface to the 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 V₂O₅/WO₃/TiO₂ resistive SO₂ sensing materials
Journal of the Ceramic Society of Japan, **121**, 734-737 (2013), doi: 10.2109/jcersj2.121.734

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

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

A. Groß, S.R. Bishop, D.J. Yang, H.L. Tuller, R. Moos:

The Electrical Properties of NO_x-storing Carbonates during NO_x exposure
Solid State Ionics, **225**, 317-323 (2012), doi: 10.1016/j.ssi.2012.05.009

A. Groß, G. Beulertz, I. Marr, D.J. Kubinski, J.H. Visser, R. Moos:

Dual Mode NO_x Sensor: Measuring Both the Accumulated Amount and Instantaneous Level at Low Concentrations
Sensors, **12**, 2831-2850 (2012), doi: 10.3390/s120302831

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

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. 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

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

N. Izu, G. Hagen, D. Schönauer, U. Röder-Roith, R. Moos:

Application of V₂O₅/WO₃/TiO₂ for resistive-type SO₂ sensors
Sensors, **11**, 2982-2991 (2011), doi: 10.3390/s110302982

G. Hagen, R. Moos:

Planar zeolite-based potentiometric gas sensors
Sensor Letters, **9**, 110-113 (2011), doi:10.1166/sl.2011.1430

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

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

S. Fischer, R. Pohle, B. Farber, R. Proch, J. Kaniuk, M. Fleischer, R. Moos:
Method for detection of NO_x 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

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

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

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

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

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

R. Moos, D. Schönauer:
Recent Developments in the Field of Automotive Exhaust Gas Ammonia Sensing
Sensor Letters, **6**, 821-825 (2008), doi: 10.1166/sl.2008.509

K. Sahner, G. Hagen, D. Schönauer, S. Reiß, R. Moos:
Zeolites - Versatile Materials for Gas Sensors
Solid State Ionics, **179**, 2416-2423 (2008), doi: 10.1016/j.ssi.2008.08.012

F. Rettig, R. Moos:
Morphology dependence of thermopower and conductance in semiconducting oxides with space charge regions
Solid State Ionics, **179**, 2299-2307 (2008), doi: 10.1016/j.ssi.2008.08.006

K. Sahner, A. Schulz, J. Kita, R. Merkle, J. Maier, R. Moos:
CO₂ selective potentiometric sensor in thick film technology
Sensors, **8**, 4774-4785 (2008), doi: 10.3390/s8084774

A. Dubbe, R. Moos:
Potentiometric hydrocarbon gas sensing characteristics of sodium ion conducting zeolite ZSM-5
Sensors and Actuators B: Chemical, **130**, 546-550 (2008), doi: 10.1016/j.snb.2007.09.067

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

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

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).

A. Dubbe, R. Moos:
Solid electrolyte hydrocarbon gas sensor using zeolite as auxiliary 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

R. Moos:
A Brief Overview on Automotive Exhaust Gas Sensors Based on Electroceramics
Int. J. Appl. Ceram. Technol., **2**, 401-413 (2005), doi: 10.1111/j.1744-7402.2005.02041.x

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

F. Rettig, R. Moos, C. Plog:
Poisoning of Temperature Independent Resistive Oxygen Sensors by Sulfur Dioxide
J. Electroceramics, **13**, 733-738 (2004), doi: 10.1007/s10832-004-5184-x

M.E. Franke, U. Simon, R. Moos, A. Knezevic, R. Müller, C. Plog:
Development and Working Principle of an Ammonia Gas Sensor based on a Refined Model for Solvate Supported Proton Transport in Zeolites
Phys. Chem. Chem. Phys., **5**, 5195 - 5198 (2003), doi: 10.1039/b307502h

A. Hürland, C. Plog, R. Moos, U. Simon:
Amperometric measurements with a nitrosyl cation conducting ceramic membrane
Phys. Chem. Chem. Phys., **5**, 5199 - 5202 (2003), doi: 10.1039/b307411k

R. Moos, F. Rettig, A. Hürland, C. Plog:
Temperature-independent resistive oxygen exhaust gas sensor for lean-burn engines in thick-film technology
Sensors and Actuators B: Chemical, **93**, 43-50 (2003), doi: 10.1016/S0925-4005(03)00333-2

F. Rettig, R. Moos, C. Plog:
Sulfur adsorber for thick-film exhaust gas sensors.
Sensors and Actuators B: Chemical, **93**, 36-42 (2003), doi: 10.1016/S0925-4005(03)00334-4

R. Moos, R. Müller, C. Plog, A. Knezevic, H. Leye, E. Irion, T. Braun, K.-J. Marquardt, K. Binder:
Selective Ammonia Exhaust Gas Sensor for Automotive Applications
Sensors and Actuators B: Chemical, **83**, 181-189 (2002), doi: 10.1016/S0925-4005(01)01038-3

R. Moos, W. Menesklou, H.J. Schreiner, K.H. Härdtl:
Materials for temperature independent resistive oxygen sensors for combustion exhaust gas control
Sensors and Actuators B: Chemical, **67**, 178-183 (2000), doi: 10.1016/S0925-4005(00)00421-4