

# List of Publication Dr. Thomas Lunkenbein

## 2009

[1] **Shaping Colloidal Rutile into Thermally Stable and Porous Mesoscopic Titania Balls**

R. S. Yelamanchili, Y. Lu, T. Lunkenbein, N. Miyajima, L. T. Yan, M. Ballauff, J. Breu.  
*Small* **2009**, 5, 1326-1333.

[2] **Deformation Measurements on Thin Clay Tactoids**

D. A. Kunz, E. Max, R. Weinkamer, T. Lunkenbein, J. Breu, A. Fery.  
*Small* **2009**, 5, 1816-1820.

[3] **Template-Directed Synthesis of Hybrid Titania Nanowires within Core-Shell Bishydrophilic Cylindrical Polymer Brushes**

J. Yuan, Y. Lu, F. Schacher, T. Lunkenbein, S. Weiss, H. Schmalz, A. H. E. Müller.  
*Chemistry of Materials* **2009**, 21, 4146-4154.

## 2010

[4] **Tailoring Shear-Stiff, Mica-like Nanoplatelets**

M. W. Möller, U. A. Handge, D. A. Kunz, T. Lunkenbein, V. Altstädt, J. Breu.  
*ACS Nano* **2010**, 4, 717-724.

[5] **Composites of Metal Nanoparticles and TiO<sub>2</sub> Immobilized in Spherical Polyelectrolyte Brushes**

Y. Lu, T. Lunkenbein, J. Preussner, S. Proch, J. Breu, R. Kempe, M. Ballauff.  
*Langmuir* **2010**, 26, 4176-4183.

[6] **Barrier Properties of Synthetic Clay with a Kilo-Aspect Ratio**

M. W. Möller, T. Lunkenbein, H. Kalo, M. Schieder, D. A. Kunz, J. Breu.  
*Advanced Materials* **2010**, 22, 5245-5249.

[7] **Kilo Aspect Ratio Clay Platelets**

M. W. Möller, T. Lunkenbein, D. A. Kunz, H. Kalo, M. Schieder, J. Breu.  
*Zeitschrift für Anorganische und Allgemeine Chemie* **2010**, 636, 2113.

## 2011

[8] **Shear Stiff, Surface Modified, Mica-like Nanoplatelets: a Novel Filler for Polymer Nanocomposites**

M. R. Schütz, H. Kalo, T. Lunkenbein, A. H. Gröschel, A. H. E. Müller, C. A. Wilkie, J. Breu.  
*Journal of Materials Chemistry* **2011**, 21, 12110-12116.

[9] **Intumescent-like Behavior of Polystyrene Synthetic Clay Nanocomposites**

M. R. Schütz, H. Kalo, T. Lunkenbein, J. Breu, C. A. Wilkie.  
*Polymer* **2011**, 52, 3288-3294.

**2012**

[10] **Particle Nanosomes with Tailored Silhouettes**

C. S. Wagner, A. Fortini, E. Hofmann, T. Lunkenbein, M. Schmidt, A. Wittemann.  
*Soft Matter* **2012**, *8*, 1928-1933.

[11] **Catalytic activity of nanoalloys from gold and palladium**

J. Kaiser, L. Leppert, H. Welz, F. Polzer, S. Wunder, N. Wanderka, M. Albrecht, T. Lunkenbein, J. Breu, S. Kümmel, Y. Lu, M. Ballauff.  
*Physical Chemistry Chemical Physics* **2012**, *14*, 6487-6495.

[12] **UV-Cured, Flexible, and Transparent Nanocomposite-Coating with Remarkable Oxygen Barrier**

M. W. Möller, D. A. Kunz, T. Lunkenbein, S. Sommer, A. Nennemann, J. Breu.  
*Advanced Materials* **2012**, *24*, 2142-2147.

[13] **Template-Directed Synthesis of Hollow Silica Nanowires and Nanotubes from Cylindrical Core-Shell Polymer Brushes**

M. Müllner, T. Lunkenbein, J. Breu, F. Caruso, A. H. E. Müller.  
*Chemistry of Materials* **2012**, *24*, 1802-1810.

[14] **A Facile Polymer Templating Route Towards High Aspect Ratio Crystalline Titania Nanostructures**

M. Müllner, T. Lunkenbein, N. Miyajima, J. Breu, A. H. E. Müller.  
*Small* **2012**, *8*, 2636-2640.

[15] **Template-Directed Mild Synthesis of Anatase Nanotubes within Cylindrical Core-Shell-Corona Polymer Brushes**

M. Müllner, T. Lunkenbein, M. Schieder, N. Miyajima, M. Förtsch, J. Breu, F. Caruso, A.H.E. Müller.  
*Macromolecules*, **2012**, *45*, 6981-6988.

[16] **Direct Synthesis of Inverse Hexagonally Ordered Diblock Copolymer/Polyoxometalate Nanocomposite Films**

T. Lunkenbein, M. Kamperman, Z. Li, H. Sai, C. Bojer, S. Förster, U. Wiesner, A.H.E. Müller, J. Breu.  
*Journal of the American Chemical Society* **2012**, *134*, 12685-12692.

[17] **Packing of Cylindrical Keggin-Type Polyoxometalate Hybrid Micelles as a Function of Aspect Ratio**

T. Lunkenbein, M. Schieder, C. Bojer, A. H. E. Müller, J. Breu.  
*Zeitschrift für Physikalische Chemie* **2012**, *226*, 815-826.

[18] **Access to Ordered Porous Molybdenum Oxycarbide/Carbon Nanocomposites**

T. Lunkenbein, D. Rosenthal, F. Girgsdies, T. Otremba, Z. Li, H. Sai, C. Bojer, U. Wiesner, J. Breu.  
*Angewandte Chemie* **2012**, *124*, 13066-13070; *Angewandte Chemie- International Edition* **2012**, *51*, 12892-12896.

## 2013

[19] **Controlled Preparation of Highly Crystalline Tungsten Oxide Nanotubes**

M. Schieder, T. Lunkenbein, T. Martin, W. Milius, J. Breu.

*Journal of Materials Chemistry A* **2013**, *1*, 381-387.

[20] **Towards Mesoporous Keggin-Type Polyoxometalate –Systematic Removal of Organic Templates**

T. Lunkenbein, M. Kamperman, M. Schieder, S. With, Z. Li, H. Sai, S. Förster, U. Wiesner, J. Breu.

*Journal of Materials Chemistry A* **2013**, *1*, 6238-6248.

[21] **63<sup>rd</sup> Meeting of the Nobel-Prize Winners in Lindau**

T. Lunkenbein

*Chemie in unserer Zeit* **2013**, *47*, 209.

## 2014

[22] **Electrocatalytic Oxygen Evolution on Iridium Oxide: Uncovering Catalyst-Substrate Interactions and Active Iridium Oxide Species**

T. Reier, D. Teschner, T. Lunkenbein, A. Bergmann, S. Selve, R. Krähnert, R. Schlögl, P. Strasser

*Journal of the Electrochemical Society* **2014**, *161*, F876-F882.

[23] **Facile large-scale synthetic route to monodisperse ZnO nanocrystals**

S. Ehlert, T. Lunkenbein, J. Breu, S. Förster

*Colloids and Surfaces A- Physicochemical and Engineering Aspects* **2014**, *444*, 76-80.

[24] **Trendberichte zur Festkörperchemie**

M. Behrens, T. Lunkenbein, R. Wehreich

*Nachrichten der Chemie* **2014**, *62*, 251-263.

[25] **Synthesis and Characterisation of a Highly Active Cu/ZnO:Al Catalyst**

J. Schumann, T. Lunkenbein, A. Tarasov, N. Thomas, R. Schlögl, M. Behrens

*ChemCatChem* **2014**, *6*, 2889-2897.

[26] **Decomposition synthesis of tuneable, macroporous carbon foams from crystalline precursors via in situ templating**

D. Ressnig, T. Corbiere, T. Lunkenbein, U. Braun, M. G. Willinger, M. Antonietti

*Journal of Materials Chemistry A* **2014**, *2*, 18076-18081.

**2015**

**[27] Direct Observation of Graphene Growth and Associated Copper Substrate Dynamics by in Situ Scanning Electron Microscopy**

Z. J. Wang, G. Weinberg, Q. Zhang, T. Lunkenbein, A. Klein-Hoffmann, M. Kurnatowska, M. Plodinec, Q. Li, L. Chi, R. Schlögl, M. G. Willinger  
*ACS Nano*, **2015**, *9*, 1506-1519.

**[28] Formation of a ZnO Overlayer in Industrial Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> Catalysts Induced by Strong Metal-Support Interactions**

T. Lunkenbein, J. Schumann, M. Behrens, R. Schlögl, M. G. Willinger  
*Angewandte Chemie-International Edition* **2015**, *54*, 4544-4548.

**[29] Direct Imaging of Octahedral Distortion in a Complex Molybdenum Vanadium Mixed Oxide**

T. Lunkenbein, F. Girgsdies, A. Wernbacher, J. Noack, G. Auffermann, A. Yasuhara, A. Klein-Hoffmann, W. Ueda, M. Eichelbaum, A. Trunschke, R. Schlögl, M. G. Willinger  
*Angewandte Chemie International Edition* **2015**, *54*, 6828-6831.

**[30] Promoting Strong Metal Support Interaction: Doping ZnO for Enhanced Activity of Cu/ZnO: M (M= Al, Ga, Mg) Catalysts**

J. Schumann, M. Eichelbaum, T. Lunkenbein, N. Thomas, M. C. Alvarez-Galvan, R. Schlögl, M. Behrens  
*ACS Catalysis* **2015**, *5*, 3260–3270.

**[31] Selective Template Removal by Thermal Depolymerization to Obtain Mesostructured Molybdenum Oxycarbide**

M. Schieder, T. Lunkenbein, C. Bojer, M. Dulle, J. vom Stein, G. Auffermann, T. Löbbling, J. Schöbel, H. Schmalz, J. Breu  
*Zeitschrift für anorganische und allgemeine Chemie* **2015**, *641*, 1829-1834.

**[32] CO oxidation as a test reaction for strong metal–support interaction in nanostructured Pd/FeO x powder catalysts**

P. Kast, M. Friedrich, D. Teschner, F. Girgsdies, T. Lunkenbein, R. Naumann d'Alnoncourt, M. Behrens, R. Schlögl  
*Applied Catalysis A: General* **2015**, *502*, 8-17.

**[33] Structure sensitivity of the oxidative activation of methane over MgO model catalysts: II. Nature of active sites and reaction mechanism**

P. Schwach, N. Hamilton, M. Eichelbaum, L. Thum, T. Lunkenbein, R. Schlögl, A. Trunschke  
*Journal of Catalysis* **2015**, *329*, 574-587.

**2016**

[34] **Selective Alkane Oxidation by Manganese Oxide: Site Isolation of MnO<sub>x</sub> Chains at the Surface of MnWO<sub>4</sub> Nanorods**

X. Li, T. Lunkenbein, V. Pfeifer, M. Jastak, P. Kjaer-Nielsen, F. Girgsdies, A. Knop-Gericke, F. Rosowski, R. Schlögl, A. Trunschke

*Angewandte Chemie International Edition* **2016**, *55*, 4092-4096.

[35] **Strong metal-support interaction and alloying in Pd/ZnO catalysts for CO oxidation**

P. Kast, M. Friedrich, F. Girgsdies, J. Kröhnert, D. Teschner, T. Lunkenbein, M. Behrens, R. Schlögl

*Catalysis Today* **2016**, *260*, 21-31.

[36] **Is Nanostructuring Sufficient to Get Catalytically Active Au?**

A. Y. Klyushin, M. T. Greiner, X. Huang, T. Lunkenbein, X. Li, O. Timpe, M. Friedrich, M. Hävecker, A. Knop-Gericke, R. Schlögl

*ACS Catalysis* **2016**, *6*, 3372-3380.

[37] **Hydrothermal synthesis of bi-functional nanostructured manganese tungstate catalysts for selective oxidation**

X. Li, T. Lunkenbein, J. Kröhnert, V. Pfeifer, F. Girgsdies, F. Rosowski, R. Schlögl, A. Trunschke

*Faraday Discussions* **2016**, *188*, 99-113.

[38] **Promotion Mechanisms of Iron Oxide-Based High Temperature Water–Gas Shift Catalysts by Chromium and Copper**

M. Zhu, T. C. R. Rocha, T. Lunkenbein, A. Knop-Gericke, R. Schlögl, I. E. Wachs

*ACS Catalysis* **2016**, *6*, 4455-4464.

[39] **Room-temperature CO oxidation catalyst: low temperature metal-support interaction between platinum nanoparticles and nanosized Ceria**

S. Gatla, D. Aubert, G. Agostini, O. Mathon, S. Pascarelli, T. Lunkenbein, M. G. Willinger, H. Kaper

*ACS Catalysis* **2016**, *6*, 6151-6155.

[40] **Bridging the time gap: Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> methanol synthesis catalyst studied under industrial relevant conditions and time scales**

T. Lunkenbein, F. Girgsdies, T. Kandemir, N. Thomas, M. Behrens, R. Schlögl, E. Frei

*Angewandte Chemie International Edition* **2016**, *55*, 12708-12712.

[41] **High-temperature stable Ni nanoparticles for the dry reforming of methane**

K. Mette, S. Köhl, A. Tarasov, M. G. Willinger, J. Kröhnert, S. Wrabetz, A. Trunschke, M. Scherzer, F. Girgsdies, H. Düdder, K. Kähler, K. Friedel-Ortega, M. Muhler, R. Schlögl, M. Behrens, T. Lunkenbein

*ACS Catalysis* **2016**, *6*, 7238-7248.

## 2017

[42] **Template Removal via Boudouard Equilibrium Allows for Synthesis of Mesostructured Molybdenum Compounds**

M. Schieder, C. Bojer, J. vom Stein, S. Koch, T. Martin, H. Schmalz, J. Breu, T. Lunkenbein  
*Angewandte Chemie International Edition* **2017**, *56*, 13968–13972.

[43] **Methanol Synthesis from Industrial CO<sub>2</sub> Sources: A Contribution to Chemical Energy Conversion**

M. Bukhtiyarova, T. Lunkenbein, K. Kähler, R. Schlögl  
*Catalysis Letters* **2017**, *147*, 416-427.

[44] **Role of Composition and Size of Cobalt Ferrite Nanocrystals in the Oxygen Evolution Reaction**

K. Chakrapani, G. Bendt, H. Hajiyani, I. Schwarzrock, T. Lunkenbein, S. Salamon, J. Landers, H. Wende, R. Schlögl, R. Pentcheva, M. Behrens, S. Schulz  
*ChemCatChem* **2017**, *9*, 2988-2995.

[45] **The Impact of the Bulk Structure on Surface Dynamics of Complex Mo-V-based Oxide Catalysts**

A. Trunschke, J. Noack, S. Trojanov, F. Girgsdies, T. Lunkenbein, V. Pfeifer, M. Hävecker, P. Kube, C. Sprung, F. Rosowski, R. Schlögl  
*ACS Catalysis* **2017**, *7*, 3061-3071.

[46] **Topotactic Synthesis of Porous Cobalt Ferrite Platelets from a Layered Double Hydroxide Precursor and their Application in Oxidation Catalysis**

K. Friedel-Ortega, S. Anke, S. Salamon, F. Özcan, J. Heese, C. Andronesco, J. Anders, H. Wende, W. Schuhmann, M. Muhler, T. Lunkenbein, M. Behrens  
*Chemistry- A European Journal* **2017**, *23*, 12443–12449.

[47] **Structural Complexity in Heterogeneous Catalysis: Cataloging Local Nanostructures**

L. Masliuk, M. Heggen, J. Noack, F. Girgsdies, A. Trunschke, K. Hermann, M. G. Willinger, R. Schlögl, T. Lunkenbein  
*The Journal of Physical Chemistry C*, **2017**, *121* (43), 24093-24103.

[48] **Mesostructured ZnO/Au Nanoparticle Composites with Enhanced Photocatalytic Activity**

C. Bojer, J. Schöbel, T. Martin, T. Lunkenbein, D. Wagner, A. Greiner, J. Breu, H. Schmalz  
*Polymer* **2017**, *128*, 65-70.

## 2018

[49] **The Role of Composition and Highly Dispersed Cobalt Vanadium Iron Spinel Nanocrystals for Oxygen Electrocatalysis**

K. Chakrapani, G. Bendt, H. Hajiyani, T. Lunkenbein, M. Greiner, L. Masliuk, S. Salamon, J. Landers, H. Wende, R. Pentcheva, S. Schulz, M. Behrens  
*ACS Catalysis* **2018**, *8*, 1259-1267.

[50] **Festkörperchemie 2017**

C. Birkel, W. Zeier, T. Lunkenbein, V. Hlukhyy  
*Nachrichten aus der Chemie* **2018**, *66*, 240-248.

[51] **Strong Metal Support Interaction as a key factor of Au activation in CO oxidation**

A.Y. Klyushin, T.E. Jones, T. Lunkenbein, P. Kube, X. Li, M. Hävecker, A. Knop-Gericke, R. Schlögl  
*ChemCatChem* **10**, 3985-3989.

[52] **Facile synthesis of high-surface area platinum-doped ceria for low temperature CO oxidation**

S. Gatla, D. Aubert, V. Flaud, R. Grosjean, T. Lunkenbein, O. Mathon, S. Pascarelli, H. Kaper  
*Catalysis Today* **2018**, <https://doi.org/10.1016/j.cattod.2018.06.032>.

[53] **A quasi in-situ TEM reactor for decoupling catalytic gas phase reaction and analysis**

L. Masliuk, M. Swoboda, G. Algara-Siller, R. Schlögl, T. Lunkenbein  
*Ultramicroscopy* **2018**, *195*, 121-128.

## 2019

[54] **The role of synthesis conditions for structural defects and lattice strain in  $\beta$ -TaON and their effect on photo-and photoelectrocatalysis**

M. Rohloff, S. Cosgun, C. Massué, T. Lunkenbein, A. Senyshyn, M. Lerch, A. Fischer, M. Behrens  
*Zeitschrift für Naturforschung B* **2019**, *74*, 71-83.

[55] **How to control selectivity in alkane oxidation?**

X. Li, D. Teschner, V. Streibel, T. Lunkenbein, L. Masliuk, T. Fu, Y. Wang, T. Jones, F. Seitz, F. Girgsdies, F. Rosowski, R. Schlögl, A. Trunschke  
*Chemical Science* **2019**, *10*, 2429-2443.

[56] **Activating a Cu/ZnO :Al Catalyst - Much More than Reduction: Decomposition, Self-Doping and Polymorphism**

E. Frei, A. Gaur, H. Lichtenberg, C. Heine, M. Friedrich, M. Greiner, T. Lunkenbein, J.D. Grunwaldt, R. Schlögl  
*ChemCatChem* **2019**, *11*, 1587-1592.

[57] **Electrostatic Attraction of Nanoobjects – A Versatile Strategy Towards Mesostructured Transition Metal Compounds**

Carina Bojer, Holger Schmalz, Josef Breu, Thomas Lunkenbein  
*CrystEngChem* **2019**, *21*, 4840-4850.

[58] **Electrochemical surface oxidation of copper studied by in situ grazing incidence X-ray diffraction**

M. Scherzer, F. Girgsdies, E. Stotz, M.G. Willinger, E. Frei, R. Schlögl, U. Pietsch, T. Lunkenbein  
*The Journal of Physical Chemistry C* **2019**, *123*, 13253-13262.

[59] **Strong Metal-Support Interaction between Copper and Iron Oxide during the High Temperature Water-Gas Shift Reaction**

M. Zhu, P. Tian, R. Kurtz, T. Lunkenbein, J. Xu, R. Schlögl, I. E. Wachs, Y.F. Han  
*Angewandte Chemie International Edition* **2019**, 9083-9087.

**[60] Facile synthesis of high-surface area platinum-doped ceria for low temperature CO oxidation**

S. Gatla, D. Aubert, V. Flaud, R. Grosjean, T. Lunkenbein, O. Mathon, S. Pascarelli, H. Kaper  
*Catalysis Today* **2019**, 333, 105-112.

**[61] Multimodal Operando Electron Microscopy Approach to Study Pt Catalyst During CO Oxidation Reaction**

M. Plodinec, E. Stotz, L. Sandoval-Diaz, R. Schlögl, T. Lunkenbein  
*Microscopy and Microanalysis* **2019**, 25, 1448-1449.

**[62] A Versatile Homebuilt Gas Feeding and Analysis Setup for Operando TEM of Catalysts at Work**

M. Plodinec, H. C. Nerl, R. Farra, M.G. Willinger, E. Stotz, R. Schlögl, T. Lunkenbein  
*Microscopy and Microanalysis* **2019**, submitted.

**[63] Insights into Chemical Dynamics and their Impact on the Reactivity of Pt Nanoparticles during CO Oxidation by Operando TEM**

M. Plodinec, H. C. Nerl, F. Girgsdies, R. Schlögl, T. Lunkenbein  
*ACS Catalysis* **2019**, submitted.