

## *List of Publications Dr. Martin Oschatz 09/2017*

### **Journal Publications**

#### **2017:**

**64.) Confinement Effects for Lithium Borohydride: Comparing Silica and Carbon Scaffolds**

Suwarno, P. Ngene, A. Nale, T. M. Eggenhuisen, M. Oschatz, J. P. Embs, A. Remhof, P. E. de Jongh, *J. Phys. Chem. C*, **2017**, 121, 4197-4205.

**63.) Influence of precursor porosity on sodium and sulfur promoted iron/carbon Fischer–Tropsch catalysts derived from metal–organic frameworks**

M. Oschatz, S. Krause, N. A. Krans, C. Hernández Mejía, S. Kaskel, K. P. de Jong, *Chem. Commun.*, **2017**, 53, 10204-10207.

**62.) Bioinspired carbide-derived carbons with hierarchical pore structure for the adsorptive removal of mercury from aqueous solution**

C. Fischer, M. Oschatz, W. Nickel, D. Leistenschneider, S. Kaskel, E. Brunner, *Chem. Commun.*, **2017**, 53, 4845-4848.

**61.) Effects of Ordered Mesoporous Carbon Support Surface Functionalization on Iron Catalysts for the Fischer-Tropsch Synthesis of Lower Olefins**

M. Oschatz, J. P. Hofmann, T. W. van Deelen, W. S. Lamme, N. A. Krans, E. J. M. Hensen, K. P. de Jong, *ChemCatChem*, **2017**, 9, 620-628.

**60.) A Stable Lithiated Silicon - Chalcogen Battery via Synergetic Chemical Coupling between Silicon and Selenium**

K. Eom, J. T. Lee, M. Oschatz, F. Wu, S. Kaskel, G. Yushin, T. F. Fuller, *Nat. Commun.*, **2017**, 8, 13888.

**59.) Carbide-derived carbon aerogels with tunable pore structure as versatile electrode material in high power supercapacitors**

M. Oschatz, S. Boukhalfa, W. Nickel, J. P. Hofmann, C. Fischer, G. Yushin, S. Kaskel, *Carbon*, **2017**, 113, 283-291.

#### **2016:**

**58.) Systematic variation of the sodium/sulfur promoter content on carbon-supported iron catalysts for the Fischer–Tropsch to olefins reaction**

M. Oschatz, N. Krans, J. Xie, K. P. de Jong, *J. Energy Chem.*, **2016**, 25, 985-993.

**57.) Effects of calcination and activation conditions on ordered mesoporous carbon supported iron catalysts for production of lower olefins from synthesis gas**

M. Oschatz, T. W. van Deelen, J. L. Weber, W. S. Lamme, G. Wang, B. Goderis, O. Verkinderen, A. I. Dugulan and K. P. de Jong, *Catal. Sci. Technol.*, **2016**, 6, 8464-8473.

**56.) Ordered Mesoporous Materials as Supports for Stable Iron Catalysts in the Fischer–Tropsch Synthesis of Lower Olefins**

M. Oschatz, W. S. Lamme, J. Xie, A. I. Dugulan, K. P. de Jong, *ChemCatChem*. **2016**, *8*, 2846-2852.

**55.) Self-Supporting Hierarchical Porous PtAg Alloy Nanotubular Aerogels as Highly Active and Durable Electrocatalysts**

W. Liu, D. Haubold, B. Rutkowski, M. Oschatz, R. Hübner, M. Werheid, C. Ziegler, L. Sonntag, S. Liu, Z. Zheng, A.-K. Herrmann, D. Geiger, B. Terlan, T. Gemming, L. Borchardt, S. Kaskel, A. Czyska-Filemonowicz, A. Eychmüller, *Chem. Mater.* **2016**, *28*, 6477-6483.

**54.) Nanostructure characterization of carbide-derived carbons by morphological analysis of transmission electron microscopy images combined with physisorption and Raman spectroscopy**

M. Oschatz, P. Pré, S. Dörfler, W. Nickel, P. Beaunier, J. N. Rouzaud, C. Fischer, E. Brunner, S. Kaskel, *Carbon* **2016**, *105*, 314-322.

**53.) Carbon materials for lithium sulfur batteries-10 critical questions**

L. Borchardt, M. Oschatz, S. Kaskel, *Chem. Eur. J.* **2016**, *22*, 7324-7351.

**52.) Gold Aerogels: Three-Dimensional Assembly of Nanoparticles and Their Use as Electrocatalytic Interfaces**

D. Wen, W. Liu, D. Haubold, C. Zhu, M. Oschatz, M. Holzschuh, A. Wolf, F. Simon, S. Kaskel, A. Eychmüller, *ACS Nano* **2016**, *10*, 2559-2567.

**51.) ZnPd/ZnO Aerogels as Potential Catalytic Materials**

C. Ziegler, S. Klosz, L. Borchardt, M. Oschatz, S. Kaskel, M. Friedrich, R. Kriegel, T. Keilhauer, M. Armbrüster, A. Eychmüller, *Adv. Funct. Mater.* **2016**, *26*, 1014-1020.

## **2015:**

**50.) Hydrophilic non-precious metal nitrogen-doped carbon electrocatalysts for enhanced efficiency in oxygen reduction reaction**

G.-P. Hao, N. R. Sahraie, P. Strasser, Q. Zhang, S. Krause, M. Oschatz, A. Bachmatiuk, S. Kaskel, *Chem. Commun.* **2015**, *51*, 17285-17288

**49.) Tailoring Commercially Available Raw Materials for Lithium-Sulfur Batteries with Superior Performance and Enhanced Shelf Life**

S. Thieme, M. Oschatz, W. Nickel, J. Brückner, J. Kaspar, H. Althues, S. Kaskel, *Energy Technol.* **2015**, *3*, 1007-1013.

**48.) Synthesis of Ordered Mesoporous Carbon Materials by Dry Etching**

W. Nickel, M. Oschatz, S. Rico-Francés, S. Klosz, T. Biemelt, G. Mondin, A. Eychmüller, J. Silvestre-Albero, S. Kaskel, *Chem. Eur. J.* **2015**, *21*, 14753-14757.

**47.) Effect of Surface Properties on the Microstructure, Thermal, and Colloidal Stability of VB<sub>2</sub> Nanoparticles**

B. Terlan, A. A. Levin, F. Börrnert, F. Simon, M. Oschatz, M. Schmidt, R. Cardoso-Gil, T. Lorenz, I. A. Baburin, J.-O. Joswig, A. Eychmüller, *Chem. Mater.* **2015**, *27*, 5106-5115.

**46.) Emulsion soft templating of carbide-derived carbon nanospheres with controllable porosity for capacitive electrochemical energy storage**

M. Oschatz, M. Zeiger, N. Jäckel, P. Strubel, L. Borchardt, R. Reinhold, W. Nickel, J. Eckert, V. Presser and S. Kaskel, *J. Mater. Chem. A* **2015**, *3*, 17983-17990.

**45.) Nickel cobalt oxide hollow nanospheres as advanced electrocatalysts for the oxygen evolution reaction**

C. Zhu, D. Wen, S. Leubner, M. Oschatz, W. Liu, M. Holzschuh, F. Simon, S. Kaskel, A. Eychmüller, *Chem. Commun.* **2015**, *51*, 7851-7854.

**44.) ZnO Hard Templating for Synthesis of Hierarchical Porous Carbons with Tailored Porosity and High Performance in Lithium-Sulfur Battery**

P. Strubel, S. Thieme, T. Biemelt, A. Helmer, M. Oschatz, J. Brückner, H. Althues, S. Kaskel, *Adv. Funct. Mater.* **2015**, *25*, 287-297.

**43.) Micro- and Mesoporous Carbide-Derived Carbon-Selenium Cathodes for High-Performance Lithium Selenium Batteries**

J. T. Lee, H. Kim, M. Oschatz, D.-C. Lee, F. Wu, H.-T. Lin, B. Zdyrko, W. I. Cho, S. Kaskel, G. Yushin, *Adv. Energy Mater.* **2015**, *5*, 1400981/1-1400981/7.

**42.) Preparation of hierarchical porous biomorphic carbide-derived carbon by polycarbosilane impregnation of wood**

M. Adam, M. Oschatz, W. Nickel, S. Kaskel, *Microporous Mesoporous Mater.* **2015**, *210*, 26-31.

**41.) Advanced Structural Analysis of Nanoporous Materials by Thermal Response Measurements**

M. Oschatz, M. Leister, W. Nickel, S. Kaskel, *Langmuir* **2015**, *31*, 4040-4047.

**40.) Kinetically Controlled Synthesis of PdNi Bimetallic Porous Nanostructures with Enhanced Electrocatalytic Activity**

C. Zhu, D. Wen, M. Oschatz, M. Holzschuh, W. Liu, A.-K. Herrmann, F. Simon, S. Kaskel, A. Eychmüller, *Small* **2015**, *11*, 1430-1434.

**39.) In Situ Formation of Protective Coatings on Sulfur Cathodes in Lithium Batteries with LiFSI-Based Organic Electrolytes**

H. Kim, F. Wu, J. T. Lee, N. Nitta, H.-T. Lin, M. Oschatz, W.-I. Cho, S. Kaskel, O. Borodin, G. Yushin, *Adv. Energy Mater.* **2015**, *5*, 1401792/1-1401792/8.

## **2014:**

**38.) Nanocasting Hierarchical Carbide-Derived Carbons in Nano-structured Opal Assemblies for High Performance Cathodes in Lithium-Sulfur Batteries**

C. Hoffmann, S. Thieme, J. Brückner, M. Oschatz, T. Biemelt, G. Mondin, H. Althues, S. Kaskel, *ACS Nano* **2014**, *8*, 12130-12140.

**37.) Kroll-carbons based on silica and alumina templates as high-rate electrode material in electrochemical double-layer capacitors**

M. Oschatz, S. Boukhalfa, W. Nickel, J. T. Lee, S. Klosz, L. Borchardt, A. Eychmüller, G. Yushin, S. Kaskel, *J. Mater. Chem. A* **2014**, 2, 5131-5139.

**36.) Evolution of Porosity in Carbide-Derived Carbon Aerogels**

M. Oschatz, W. Nickel, M. Thommes, K. A. Cychosz, M. Leistner, M. Adam, G. Mondin, P. Strubel, L. Borchardt, S. Kaskel, *J. Mater. Chem. A* **2014**, 2, 18472-18479.

**35.) Direct Synthesis of Carbide-Derived Carbon Monoliths with Hierarchical Pore Design by Hard-Templating**

W. Nickel, M. Oschatz, M. von der Lehr, M. Leistner, G.-P. Hao, P. Adelhelm, P. Müller, B. M. Smarsly, S. Kaskel, *J. Mater. Chem. A* **2014**, 2, 12703-12707.

**34.) Stretchable and Transparent Conductive Hybrid Hydrogels for Flexible Supercapacitors**

G.-P. Hao, F. Hippauf, M. Oschatz, F. Wisser, J. Deng, A. Leifert, W. Nickel, N. Mohamed Noriega, Z. Zheng, S. Kaskel, *ACS Nano* **2014**, 8, 7138-7146.

**33.) Micro- and Mesoporous Carbide-Derived Carbon Prepared by a Sacrificial Template Method in High Performance Lithium Sulfur Battery Cathodes**

M. Oschatz, J. T. Lee, H. Kim, W. Nickel, L. Borchardt, W. I. Cho, C. Ziegler, S. Kaskel, G. Yushin, *J. Mater. Chem. A* **2014**, 2, 17649-17654.

**32.) Tailoring porosity in carbon materials for supercapacitor applications**

L. Borchardt, M. Oschatz, S. Kaskel, *Mater. Horiz.* **2014**, 1, 157-168.

**31.) Design of Functional Nanostructured Carbons for Advanced Heterogeneous Catalysts: A Review**

G.-P. Hao, M. Oschatz, W. Nickel, M. Adam, S. Kaskel, *Curr. Org. Chem.* **2014**, 18, 1262-1279.

**30.) Silicon oxycarbide-derived carbons from a polyphenylsilsequioxane precursor for supercapacitor applications**

A. Meier, M. Weinberger, K. Pinkert, M. Oschatz, S. Paasch, L. Giebeler, H. Althues, E. Brunner, J. Eckert, S. Kaskel, *Microporous Mesoporous Mater.* **2014**, 188, 140-148.

**29.) Role of Surface Functional Groups in Ordered Mesoporous Carbide-Derived Carbon/Ionic Liquid Electrolyte Double-Layer Capacitor Interfaces**

K. Pinkert, M. Oschatz, L. Borchardt, M. Klose, M. Zier, W. Nickel, L. Giebeler, S. Oswald, S. Kaskel, J. Eckert, *ACS Appl. Mater. Interfaces* **2014**, 6, 2922-2928.

**28.) Hierarchical carbide-derived carbon foams with advanced mesostructure as versatile electrochemical energy storage material**

M. Oschatz, L. Borchardt, K. Pinkert, S. Thieme, M. R. Lohe, C. Hoffmann, M. Benusch, F. M. Wisser, C. Ziegler, L. Giebeler, M. H. Rummeli, J. Eckert, A. Eychmüller, S. Kaskel, *Adv. Energy Mater.* **2014**, 4, 1300645/1-1300645/9.

**27.) A hard-templating route towards ordered mesoporous tungsten carbide and carbide-derived carbons**

L. Borchardt, M. Oschatz, S. Graetz, M. R. Lohe, M. H. Rummeli, S. Kaskel, *Microporous Mesoporous Mater.* **2014**, *186*, 163-167

**26.) Hydrogen production from catalytic decomposition of methane over ordered mesoporous carbons (CMK-3) and carbide-derived carbon (DUT-19)**

V. Shilapuram, N. Ozalp, M. Oschatz, L. Borchardt, S. Kaskel, *Carbon* **2014**, *67*, 377-389.

**25.) Structural Characterization of Micro- and Mesoporous Carbon Materials Using In Situ High Pressure Xe-129 NMR Spectroscopy**

M. Oschatz, H. C. Hoffmann, J. Pallmann, J. Schaber, L. Borchardt, W. Nickel, I. Senkowska, S. Rico-Francés, J. Silvestre-Albero, S. Kaskel, E. Brunner, *Chem. Mater.* **2014**, *26*, 3280-3288.

**24.) Thermogravimetric Analysis of Activated Carbons, Ordered Mesoporous Carbide-Derived Carbons, and Their Deactivation Kinetics of Catalytic Methane Decomposition**

V. Shilapuram, N. Ozalp, M. Oschatz, L. Borchardt, S. Kaskel, R. Lachance, *Ind. Eng. Chem. Res.* **2014**, *53*, 1741-1753.

**23.) In-Depth Investigation of the Carbon Microstructure of Silicon Carbide-Derived Carbons by Wide-Angle X-Ray Scattering**

K. Faber, F. Badaczewski, M. Oschatz, G. Mondin, W. Nickel, S. Kaskel, B. M. Smarsly, *J. Phys. Chem. C* **2014**, *118*, 15705-15715.

## **2013:**

**22.) Sulfur-infiltrated micro- and mesoporous silicon carbide-derived carbon cathode for high-performance lithium sulfur batteries**

J. T. Lee, Y. Zhao, S. Thieme, H. Kim, M. Oschatz, L. Borchardt, A. Magasinski, W. I. Cho, S. Kaskel, G. Yushin, *Adv. Mater.* **2013**, *25*, 4573-4579.

**21.) Direct prediction of the desalination performance of porous carbon electrodes for capacitive deionization**

S. Porada, L. Borchardt, M. Oschatz, M. Bryjak, J. S. Atchison, K. J. Keesman, S. Kaskel, P. M. Biesheuvel, V. Presser, *Energy Environ. Sci.* **2013**, *6*, 3700-3712.

**20.) Enhancing performance of Li-S cells using a Li-Al alloy anode coating**

H. Kim, J. T. Lee, D. Lee, M. Oschatz, W. Cho, S. Kaskel, G. Yushin, *Electrochem. Commun.* **2013**, *36*, 38-41.

**19.) Titanium Carbide and Carbide-Derived Carbon Composite Nanofibers by Electrospinning of Ti-Resin Precursor**

J. R. Martin, L. Borchardt, M. Oschatz, G. Mondin, S. Kaskel, *Chem. Ing. Tech.* **2013**, *85*, 1742-1748.

**18.) Interaction of electrolyte molecules with carbon materials of well-defined porosity: characterization by solid-state NMR spectroscopy**

L. Borchardt, M. Oschatz, S. Paasch, S. Kaskel, E. Brunner, *Phys. Chem. Chem. Phys.* **2013**, *15*, 15177-15184.

**17.) Highly porous nitrogen-doped polyimine-based carbons with adjustable microstructures for CO<sub>2</sub> capture**

J. Wang, I. Senkowska, M. Oschatz, M. R. Lohe, L. Borchardt, A. Heerwig, Q. Liu, S. Kaskel, *J. Mater. Chem. A* **2013**, *1*, 10951-10961.

**16.) Imine-linked polymer-derived nitrogen-doped microporous carbons with excellent CO<sub>2</sub> capture properties**

J. Wang, I. Senkowska, M. Oschatz, M. R. Lohe, L. Borchardt, A. Heerwig, Q. Liu, S. Kaskel, *ACS Appl. Mater. Interfaces* **2013**, *5*, 3160-3167.

**15.) A new route for the preparation of mesoporous carbon materials with high performance in lithium-sulphur battery cathodes**

M. Oschatz, S. Thieme, L. Borchardt, M. R. Lohe, T. Biemelt, J. Brückner, H. Althues, S. Kaskel, *Chem. Commun.* **2013**, *49*, 5832-5834.

**14.) High capacity micro-mesoporous carbon-sulfur nanocomposite cathodes with enhanced cycling stability prepared by a solvent-free procedure**

S. Thieme, J. Brückner, I. Bauer, M. Oschatz, L. Borchardt, H. Althues, S. Kaskel, *J. Mater. Chem. A* **2013**, *1*, 9225-9234.

**13.) Textural characterization of micro- and mesoporous carbons using combined gas adsorption and n-nonane preadsorption**

M. Oschatz, L. Borchardt, S. Rico-Francés, F. Rodríguez-Reinoso, S. Kaskel, J. Silvestre-Albero, *Langmuir* **2013**, *29*, 8133-8139.

**12.) Preparation of cubic ordered mesoporous Silicon carbide monoliths by pressure-assisted Preceramic polymer nanocasting**

J. Wang, M. Oschatz, T. Biemelt, M. R. Lohe, L. Borchardt, S. Kaskel, *Microporous Mesoporous Mater.* **2013**, *168*, 142-147.

**11.) Carbon dioxide activated carbide-derived carbon monoliths as high performance adsorbents**

M. Oschatz, L. Borchardt, I. Senkowska, N. Klein, M. Leistner, S. Kaskel, *Carbon* **2013**, *56*, 139-145.

## **2012:**

**10.) Transition metal loaded silicon carbide-derived carbons with enhanced catalytic properties**

L. Borchardt, F. Hasche, M. R. Lohe, M. Oschatz, F. Schmidt, E. Kockrick, C. Ziegler, T. Lescouet, A. Bachmatiuk, B. Büchner, D. Farrusseng, P. Strasser, S. Kaskel, *Carbon* **2012**, *50*, 1861-1870.

**9.) Preparation and application of cellular and nanoporous carbides**

L. Borchardt, C. Hoffmann, M. Oschatz, L. Mammitzsch, U. Petasch, M. Herrmann, S. Kaskel, *Chem. Soc. Rev.* **2012**, *41*, 5053-5067.

**8.) Fungi-based porous carbons for CO<sub>2</sub> adsorption and separation**

J. Wang, A. Heerwig, M. R. Lohe, M. Oschatz, L. Borchardt, S. Kaskel, *J. Mater. Chem.* **2012**, *22*, 13911-13913.

**7.) Synthesis, characterization, and hydrogen storage capacities of hierarchical porous carbide derived carbon monolith**

J. Wang, M. Oschatz, T. Biemelt, L. Borchardt, I. Senkowska, M. R. Lohe, S. Kaskel, *J. Mater. Chem.* **2012**, 22, 23893-23899.

**6.) Carbide-derived carbon monoliths with hierarchical pore architectures**

M. Oschatz, L. Borchardt, M. Thommes, K. A. Cychoz, I. Senkowska, N. Klein, R. Frind, M. Leistner, V. Presser, Y. Gogotsi, S. Kaskel, *Angew. Chem. Int. Ed.* **2012**, 51, 7577-7580.

**5.) Ordered mesoporous carbide-derived carbons prepared by soft templating**

L. Borchardt, M. Oschatz, M. Lohe, V. Presser, Y. Gogotsi, S. Kaskel, *Carbon* **2012**, 50, 3987-3994.

## **2011:**

**4.) Ceria/silicon carbide core-shell materials prepared by miniemulsion technique**

L. Borchardt, M. Oschatz, R. Frind, E. Kockrick, M. R. Lohe, C. P. Hauser, C. K. Weiss, K. Landfester, B. Büchner, S. Kaskel, *Beilstein J. Nanotechnol.* **2011**, 2, 638-644.

**3.) Polymerization of polycarbosilanes in high internal phase emulsions for the synthesis of macroporous silicon carbide catalysts (polyHIPE-SiC)**

R. Frind, M. Oschatz, S. Kaskel: „Polymerization of polycarbosilanes in high internal phase emulsions for the synthesis of macroporous silicon carbide catalysts (polyHIPE-SiC)” *J. Mater. Chem.* **2011**, 21, 11936-11940.

**2.) Hierarchical micro- and mesoporous carbide-derived carbon as a high-performance electrode material in supercapacitors**

M. Rose, Y. Korenblit, E. Kockrick, L. Borchardt, M. Oschatz, S. Kaskel, G. Yushin, *Small* **2011**, 7, 1108-1117.

## **2010:**

**1.) A cubic ordered, mesoporous carbide-derived carbon for gas and energy storage applications**

M. Oschatz, E. Kockrick, M. Rose, L. Borchardt, N. Klein, I. Senkowska, T. Freudenberg, Y. Korenblit, G. Yushin, S. Kaskel, *Carbon* **2010**, 48, 3987-3992.

## **Book Chapters**

**1.) Nanoporous Carbide-Derived Carbons as Electrode Materials in Electrochemical Double-Layer Capacitors**

M. Oschatz, L. Borchardt, G.-P. Hao, S. Kaskel, in: *Nanocarbons for Advanced Energy Storage, Vol. 1 (Ed: Xinliang Feng)*, Wiley VCH **2015**, pp. 417-444.

**2.) Interactions between Electrolytes and Carbon-Based Materials-NMR Studies on Electrical Double-Layer Capacitors, Lithium-Ion Batteries and Fuel Cells**

M. Oschatz, L. Borchardt, F. Hippauf, W. Nickel, S. Kaskel, E. Brunner, *Annual Reports on NMR Spectroscopy, Vol. 87 (Ed: Graham Webb)*, Oxford: Academic Press **2016**, pp. 237-318.

## **Patent**

**1.) Producing porous carbon material, comprises embedding inorganic nanoparticles into a carbon-containing matrix consisting of natural and synthetic organic materials and then reacting with a halogen gas**

M. Oschatz, L. Borchardt, S. Kaskel, **2015**, *EP2879991-A1*.