

Veröffentlichungen peer reviewed | Prof. Dr. Volker Knoblauch

2023

D. Meinhard, S. Nester, J. Schanz, T. Pott, H. Riegel, V. Knoblauch, "Hybrid joining of aluminium alloys and thermoplastic CFR-PA12 manufactured by IR-irradiation: Influence of pre-treatment and aging on the mechanical properties", *Materials and Corrosion* (2023) 1-16, doi.org/10.1002/maco.202213697

J. Sandherr, M.-J. Kleefoot, S. Nester, C. Weisenberger, D. K. Harrison, A. DeSilva, D. Michel, S. Reeb, M. Fingerle, H. Riegel, V. Knoblauch, "Micro embossing of graphite-based anodes for lithium-ion batteries to improve cell performance", *Journal of Energy Storage* (accepted)

C. Weisenberger, C. Zhou, D. Harrison, V. Knoblauch, "Revealing the effects of microstructural changes of graphite anodes during cycling on their lithium intercalation kinetics utilizing operando XRD", *Electrochimica Acta* (submitted)

M. Flügel, M. Bolsinger, M. Marinaro, V. Knoblauch, M. Hölzle, M. Wohlfahrt-Mehrens, T. Waldmann, "Onset shift of Li plating on Si/graphite anodes with increasing Si content", *Journal of The Electrochemical Society* (submitted)

R. Kroll, Z. Henderson, B. Spencer, P. Kaya, V. Knoblauch, D. Engelberg, "Exploring the Influence of Mott-Schottky Acquisition Parameters on the Semiconduction Behaviour of Modified Native Aluminium Oxide Films", *Journal of Electroanalytical Chemistry* (submitted)

2022

J. Schanz, D. Meinhard, S. Nester, I. Dostal, A. K. M. De Silva, D. K. Harrison, H. Riegel, V. Knoblauch, "Laser surface treatment of carbon fiber reinforced polymer using near-infrared laser wavelength with varied process parameters", *Journal of Laser Applications* (2022) 1-15, [10.2351/7.0000554](https://doi.org/10.2351/7.0000554)

MJ. Kleefoot, S. Enderle, J. Sandherr, M. Bolsinger, T. Maischik, N. Simon, J. Martan, R. Ruck, V. Knoblauch, H. Riegel, "Enhancement of the wettability of graphite-based lithium-ion battery anodes by selective laser surface modification using low energy nanosecond pulses", *The international Journal of Advanced Manufacturing Technology* (2022) 118, pages 1987–1997, <https://doi.org/10.1007/s00170-021-08004-3>

M. Ademmer, B. Prifling, M. Weller, A. Hilger, M. Osenberg, I. Manke, V. Knoblauch, V. Schmidt, "Investigating the influence of the calendering process on the 3D microstructure of single-layer and two-layer cathodes in lithium-ion batteries using synchrotron tomography", *Journal of Power Sources*, Volume 548 (2022) 231960, <https://doi.org/10.1016/j.jpowsour.2022.231960>

MJ. Kleefoot, J. Martan, C. Beltrami, J. Sandherr, M. Honner, S. Ruck, V. Knoblauch, H. Riegel, J. Andherr, "Process Temperature Measurement during Nanosecond Pulse Laser Micromachining of Li-Ion Battery Electrodes" *Procedia CIRP*, Volume 111 (2022) 806-809, <https://doi.org/10.1016/j.procir.2022.08.133>

M.J. Kleefoot, J. Sandherr, M. Sailer, S. Nester, J. Martan, V. Knoblauch, M. Kumkar, H. Riegel, "Investigation on the Parameter Dependency of the Perforation Process of Graphite based Lithium-Ion Battery Electrodes using Ultrashort Laser Pulses", *Journal of Laser Applications* 34, 042003 (2022), <https://doi.org/10.2351/7.0000757>

J. Sandherr, S. Nester, M.J. Kleefoot, M. Bolsinger, C. Weisenberger, A. Haghipour, D.K. Harrison, S. Ruck, H. Riegel, V. Knoblauch, "Improving the ionic transport properties of

graphite anodes for lithium ion batteries by surface modification using nanosecond laser”, J. of Power Sources 549 (2022) 232077, <https://doi.org/10.1016/j.jpowsour.2022.232077>

M. Mutz, M. Perovic, P. Gümbel, V. Steinbauer, A. Taranovskyy, Y. Li, L. Beran, T. Käfer, K. Dröder, V. Knoblauch, A. Kwade, V. Presser, D. Werth, T. Kraus, „Toward a Li-Ion Battery Ontology Covering Production and Material Structure”, Energy Technology (2022) 2200681, <https://doi.org/10.1002/ente.202200681>

2021

D. Meinhard, A. Haeger, V. Knoblauch, “Drilling induced defects on carbon fiber-reinforced thermoplastic polyamide and their effect on mechanical properties” Composite Structures, 256 (2021) 113138, 8 pages, DOI: <https://doi.org/10.1016/j.compstruct.2020.113138>

C. Weisenberger, B. Meir, S. Röhler, D.K. Harrison, V. Knoblauch, “A post-mortem study of commercial 18650 lithium ion cells with $\text{LiNi}_{0.5}\text{Co}_{0.2}\text{Mn}_{0.3}\text{O}_2$ //Graphite chemistry after prolonged cycling (> 7000 cycles) with low C-rates”, Electrochimica Acta. 379C (2021) 138145. <https://doi.org/10.1016/j.electacta.2021.138145>

J. Schanz, D. Meinhard, I. Dostal, H. Riegel, A. K. M. De Silva, D. Harrison, V. Knoblauch, “Comprehensive study on the influence of different pretreatment methods and structural adhesives on the shear strength of hybrid CFRP/aluminum joints”, Journal Of Adhesion (2021) <https://doi.org/10.1080/00218464.2021.1938004>

J. Schanz, S. Nester, D. Meinhard, T. Pott, H. Riegel, A. K. M. De Silva, D. K. Harrison, V. Knoblauch, “Adhesively bonded CFRP/Al joints: Influence of the surface pretreatment on corrosion during salt spray test”, Materials and Corrosion (2021) Pg. 1-13, <https://doi.org/10.1002/maco.202112752>

2020

S. Enderle, M. Bolsinger, S. Ruck, V. Knoblauch, H. Riegel “Thermophysical modeling of selective laser ablation processing of lithium-ion battery cathodes” Journal of Laser Applications 32, 042008 (2020), 13 pages, DOI: <https://doi.org/10.2351/7.0000200>

C. Weisenberger, D.K. Harrison, T. Bernthaler, G. Schneider, V. Knoblauch, “Evaluation of Material Analysis Methods for the Determination of the Composition of Blended Cathodes in Lithium-Ion Batteries”, PM. Practical Metallography 57 (2020) 3, 176–198. DOI: <https://doi.org/10.3139/147.110621>.

M. Bolsinger, M. Weller, S. Ruck, P.Kaya, H. Riegel, V. Knoblauch „Selective surface treatment by means of IR-laser – a new approach to enhance the rate capability of cathodes for Li-ion batteries” Electrochimica Acta, 330 (2020) 135163, 13 pages, DOI: DOI: [10.1016/j.electacta.2019.135163](https://doi.org/10.1016/j.electacta.2019.135163)

J. Schanz, S. Kambach, D. Meinhard, A. De Silva, D.K. Harrison, H. Riegel, V. Knoblauch “Study on hygrothermal ageing behaviour of hybrid CFRP/Al joints – Influence of pre-treatment, adhesive composition and ageing process” 4th International Conference - Hybrid 2020 – Materials and Structures (2020), peer reviewed conference proceeding, 11 pages

2019

A. Häger, M. Grudenik, M. Hoffmann, V. Knoblauch: “Effect of drilling-induced damage on the open hole flexural fatigue of carbon/epoxy composites” Composite Structures 215 (2019) 238-248, <https://doi.org/10.1016/j.compstruct.2019.02.025>

B. Prifling, D. Westhoff, D. Schmidt, H. Markötter, I. Manke, V. Knoblauch, V. Schmidt: "Parametric microstructure modeling of compressed cathode materials for Li-ion batteries" Computational Materials Science 169 (2019) 109083, 22 Seiten, <https://doi.org/10.1016/j.commatsci.2019.109083>

2018

F. Lissek, A. Haeger, V. Knoblauch, S. Hloch, F. Pudee, M. Kaufeld: „Acoustic emission for interlaminar toughness testing of CFRP: Evaluation of the crack growth due to burst analysis" Composites: Part B 136 (2018) 55–62, DOI: <https://doi.org/10.1016/j.compositesb.2017.10.012>

D. Schmidt, M. Kamlah, V. Knoblauch: „Highly densified NCM-cathodes for high energy Li-ion batteries: Microstructural evolution during densification and its influence on the performance of the electrodes" Journal of Energy Storage 17 (2018) 213 – 223, DOI: [10.1016/j.est.2018.03.002](https://doi.org/10.1016/j.est.2018.03.002)

K. Kuchler, B. Prifling, D. Schmidt, H. Markötter, I. Manke, T. Bernthaler, V. Knoblauch, V. Schmidt: "Analysis of the 3D microstructure of experimental cathode films for lithium-ion batteries under increasing compaction" Journal of Microscopy 272, Issue 2 (2018) 96-110, DOI: [10.1111/jmi.12749](https://doi.org/10.1111/jmi.12749)

D. Schmidt, M. Kleinbach, M. Kamlah, V. Knoblauch: „Investigations on the Microstructure-Property Relationship of NCM-Based Electrodes for Lithium-Ion Batteries" Journal of Practical Metallography 55 (2018) 11, 741-761, DOI: [10.3139/147.110528](https://doi.org/10.3139/147.110528)

2017

M. Schweizer, D. Meinhard, S. Ruck, H. Riegel, V. Knoblauch „Adhesive Bonding of CFRP: A comparison of different surface pre-treatment strategies and their effect on the bonding shear strength" Journal of Adhesion Science and Technology 31:23 (2017) 2581-2591, DOI: [10.1080/01694243.2017.1310695](https://doi.org/10.1080/01694243.2017.1310695)

V. Reitz, D. Meinhard, S. Ruck, H. Riegel, V. Knoblauch „A comparison of IR- and UV-laser pretreatment to increase the bonding strength of adhesively joined Aluminum/CFRP components", Composites Part A: Applied Science and Manufacturing, Volume 96, May 2017, 18-27, <https://doi.org/10.1016/j.compositesa.2017.02.014>

2016

S. Gaugel, P. Sripathy, A. Haeger, D. Meinhard, T. Bernthaler, F. Lissek, M. Kaufeld, V. Knoblauch, G. Schneider: "A comparative study on tool wear and laminate damage in drilling of carbon-fiber reinforced polymers (CFRP)", Composite Structures, Vol. 155, S. 173-183 (2016), DOI: <http://dx.doi.org/10.1016/j.compstruct.2016.08.004>

A. Haeger, D. Meinhard, F. Lissek, M. Kaufeld, M. J. Hoffmann, G. Schneider, V. Knoblauch: "Interaction between laminate quality, drilling-Induced delamination and mechanical properties in machining of CFRP", Mat. Sci. Eng. Technol., Vol. 47, Issue 11, S. 997-1014 (2016), DOI: [10.1002/mawe.201600626](https://doi.org/10.1002/mawe.201600626)

2015

C. Weisenberger, A. Kopp, T. Bernthaler, V. Knoblauch, G. Schneider, H. Stegmann, H. Blank, A. Orchowski, F. Perez-Willard „Multi-scale characterization of lithium ion battery cathode material by correlative X-ray and FIB-SEM microscopy“, *Microscopy and Analysis*, 20, 17-19 (2015), ISSN: 2019-4424

2014

C. Weisenberger, G. Guth, T. Bernthaler, V. Knoblauch „New Quality Evaluation Approaches for Lithium Ion Batteries Using the Interference Layer Metallography in Combination with Quantitative Structural Analysis“ *Practical Metallography* 51 (2014) 5-31

T. Waldmann, S. Gorse, T. Samtleben, G. Schneider, V. Knoblauch, M. Wohlfahrt-Mehrens „A Mechanical Ageing Mechanism in Lithium-Ion Batteries“, *Journal of the Electrochemical Society* 161:10 (2014) A1742-A1747

S. Gorse, B. Kugler, T. Samtleben, T. Waldmann, M. Wohlfahrt-Mehrens, G. Schneider, V. Knoblauch „An Explanation of the Ageing Mechanism of Li-Ion Batteries by Metallographic and Material Analysis“ *Practical Metallography* 51 (2014) 829-848

2013

J. Maier, T. Bernthaler, V. Knoblauch „Preparation and Microstructural Characterisation of Metal Injection Moulded Powder Metallurgical Components (MIM) in the Green and Sintered Conditions“ *Practical Metallography* 50 (2013) 677-692

2012

C. Hafner, T. Bernthaler, V. Knoblauch, G. Schneider „The Materialographic Preparation and Microstructure Characterization of Lithium Ion Accumulators“ *Practical Metallography* 49 (2012) 75-85

2005

M. Selten, V. Knoblauch, G.A. Schneider, R.M. McMeeking „On the Evolution of the Linear Material Properties of PZT during Loading History – an Experimental Study“, *International Journal of Solids and Structures* 42 (2005) 3953–3966

F. Felten, G.A. Schneider, V. Knoblauch „In situ investigation of subcritical crack growth in lead zirconate titanate ceramics using atomic force microscopy“, *Acta Materialia* 53 (2005) 4051–4056

2003

A. Haug, V. Knoblauch, R.M. McMeeking „Combined Isotropic and Kinematic Hardening in Phenomenological Switching Models for Ferroelectric Ceramics“, *International Journal of Engineering Science* 41 (2003) 887-901

R. Müller-Fiedler, V. Knoblauch „Reliability Aspects of Microsensors and Micromechatronic Actuators for Automotive Applications“, *Microelectronics Reliability* 43 (2003) 1085-1097 (invited)

2002

B. Clausen, R.C. Rogan, E. Üstündag, M. R. Daymond, V. Knoblauch „Ferroelastic Behavior of PZT-Based Ferroelectric Ceramics“, Material Science Forum 404-7 (2002) 413-418

2000

V. Knoblauch, G.A. Schneider, G. Schneider, H. Böder „Evaluation of the Thermal Shock Behaviour of Tape Cast Ceramic Substrates by Means of Lamp Irradiation“, Journal of the European Ceramic Society 20 (2000) 57-66