

CV of Prof. Stephan Barcikowski

University of Duisburg-Essen (UDE)
Faculty of Chemistry, Chemical Technology I and
Center for Nanointegration Duisburg-Essen (CENIDE)
Universitätsstraße 7, 45141 Essen, Germany
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Position: Tenured professor (W3), Head of Chemical Technology I
Born 23rd December 1970, 2 children



Postgraduate Professional Career

since 2011	Full Professor, Chemical Technology, Faculty of Chemistry, UDE
2010–2011	Head of Department Materials and Processes, with 25 scientific staff, Laser Zentrum Hannover e.V.
2004–2010	Head of Group Nanomaterials, with 12 scientific staff, Laser Zentrum Hannover e.V.
1998–2004	Scientific Employee, Laser Zentrum Hannover e.V.
1998	Scientific Employee, Rofin Sinar Laser AG

Advanced Academic Qualifications

2011	Habilitation and Venia legendi (Chemical Technology, Mentor Prof. T. Scheper), Leibniz University of Hannover
2004	PhD with honors (Dr.-Ing., mit Auszeichnung), Mechanical Engineering, Leibniz University of Hannover, Supervisor: Prof. Dr. Ing. Dr.-Ing. E.h. mult. Dr. med. h.c. H. Haferkamp

Academic Education

1999–2000	Accreditation Studies of Engineering (Promotionszulassungsstudium), Leibniz University of Hannover
1995–1998	Studies of Chemistry (Diplom), Leibniz University of Hannover
1991–1995	Studies of Chemistry (Vordiplom), Technical University of Braunschweig

Research Experience Abroad

2017	Visiting Professor (6 months), Chemistry Department, University of Padua, Italy
2003–2007	Guest Scientist (10 weeks, several visits), Commonwealth Scientific and Industrial Research Organisation (CSIRO), Geochemistry Group, Sydney, Australia

Awards and Recognition (selection)

2020	Berthold Leibinger Innovation Award (Donation postponed to 2021 because of pandemic)
2019	Call for W3 Professorship, Leibniz University Hannover, declined
2013	Best Faculty Teacher (Lehrpreis), Faculty of Chemistry, Universität Duisburg-Essen
2009	1st price of national business plan competition "Medical Technology", Hannover
2006	1st price for scientific work (dissertation), Foundation of Industrial Research

Coordinated Research Programs (selection)

since 2020	Member and Steering Committee, DFG CRC/TRR 247 <i>Hysteresis Design of Magnetic Materials for Efficient Energy Conversion</i>
since 2020	Member and Steering Committee, MERCUR Research Training Group <i>Präzisionsprotonentherapie</i>
since 2018	Coordinator, DFG SPP 2122 <i>New materials for laser-based additive manufacturing</i>
since 2018	Member, DFG CRC/TRR 247 <i>Heterogeneous Oxidation Catalysis in the Liquid Phase</i>
2007–2012	Member, DFG Excellence Cluster <i>From Regenerative Biology to Reconstructive Therapy</i>
2007–2011	Member, DFG CRC/TRR 37 <i>Micro and Nano Systems in Medicine</i>

Technology Transfer

2020 Spin-Off AutoProNano, NRW Start-Up Funds, Mentor & Host
2009 Co-founder of the company Particular GmbH (www.particular.eu)

Service to the Scientific Community

since 2020 Steering committee, PhD Course in Materials Science and Nanotechn., Univ. of Catania, Italy
since 2020 Advisory Board, DFG RTG 2610 *Innovative Retinal Interfaces for Optimized Artificial Vision*
since 2014 Editor, Applied Surface Science [IF = 6.2], Elsevier
since 2011 Guest editorships for J.PhysChemC, J.Coll.Int.Sc, ChemPhysChem, Mat. Des.

Conference Organization:

Chair and Organization, Conference on Laser Ablation and Nanoparticle Generation in Liquids (ANGEL), 2010, Switzerland & 2012, Italy & 2016, Germany // Program Committee ANGEL, since 2014, international // Co-Chair, Jahrestagung Deutsche Gesellschaft für Biomaterialien (DGBM), 2022, Germany // Program Committee & Symposium Organizer, E-MRS Spring Meeting, 2019, France, Symposium Laser interactions with materials: from fundamentals to applications // Program Committee, 8th International Congress on Laser Advanced Materials Processing (LAMP2019), Japan, 2019 // Program Committee, NRW Nano Conference, since 2016, Germany // Program Committee, International Symposium on Laser Precision Microfabrication (LPM), since 2014 // International Scientific Committee, International Conference on Photonic Technologies LANE, since 2018 // Session Chair, Jahrestagung Deutsche Gesellschaft für Biomaterialien (DGBM), Germany, 2016 // Session Chair Nanoscopy Metrology, E-MRS spring meeting, France, 2016 // International Organizing Committee, Conference on Electrophoretic Deposition (EPD), South Korea, USA, etc., since 2017 // Session Chair of Int. Congr. on Laser Adv. Mat. Proc. LAMP, Japan, since 2015 // Program Committee Nanomanufacturing Conference of Int. Conf. on Applications of Lasers and Electro-Optics ICALAO, 2010–2014, USA // etc.

Review Activities for Journals:

Chem Rev. (ACS), Chem. Soc. Rev. (RSC), Advanced Materials (Wiley), Advanced Functional Materials (Wiley), Prog. Materials Science (Elsevier), ACS Nano, Small (Wiley), Nature Communications (Nature Publishing Group), Nano Letters (ACS), Light: Science and Applications (Nature Publishing Group), Nanomedicine (Future Medicine Ltd.), Nanoscale (RSC), Journal of Physical Chemistry (ACS), Langmuir (ACS), Analytical Chemistry (ACS), PCCP (RSC), Journal of Materials Chemistry (RSC), Green Chemistry (RSC), Chemical Physics Letters (Elsevier), etc.

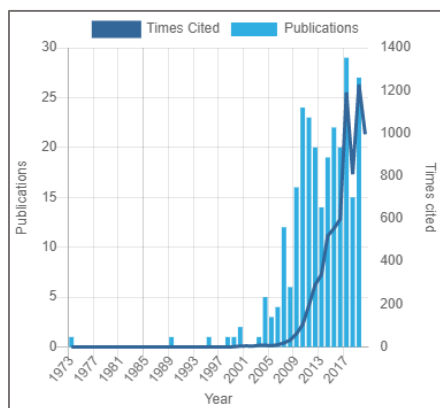
Review Activities for Funding Agencies:

DFG: Program (SPP) and project (Sachbeihilfe) funding // Alexander von Humboldt Stiftung (Stipends), BMBF: PtJ, VDI (projects) // Stiftung Industrieforschung (Stipends) // Dept of Energy, USA, Division of Materials Sciences and Engineering (projects) // l'Agence Nationale de la Recherche (ANR), France (projects) // Fonds National de la Recherche Luxembourg (FNR), Luxembourg (projects) // Foundation of Science and Research (Fundação para a Ciência e a Tecnologia FCT), Portugal (projects) // Czech Science Foundation (projects) // etc.

Activities in Scientific and University Organizations

since 2019 Member, International Max Planck Research School SurMat
since 2019 Head, Senate Commission of Finance and Development Planning, UDE
since 2019 Advisory senate member, UDE
since 2016 Scientific Board Member, Materials Chain, Strategic Research Programme of the University Alliance Ruhr (Bochum, Dortmund, Duisburg-Essen)
2016–2018 Deputy Senate Member, UDE
2015–2018 Scientific Director, Center for Nanointegration Duisburg-Essen (CENIDE), UDE
2014–2015 Deputy Scientific Director, Center for Nanointegration Duisburg-Essen (CENIDE), UDE
2014–2020 Board Member, Center for Nanointegration Duisburg-Essen (CENIDE), UDE
since 2011 Member, Center for Nanointegration Duisburg-Essen (CENIDE), Zentrum für Medizinische Biotechnologie (ZMB), and Zentrum für Wasser- und Umweltforschung (ZWU), UDE

Publication record of Prof. Stephan Barcikowski



Researcher ID: I-4754-2012 (diagram: metrics Dec/2020),

Web of Science citations: 7.076

Web of Science h-index: 45

Peer reviewed publications and patent files: 263;

Books / book chapters / Editorials: 13;

Research Gate, RG Score of 49 (higher than 97.5% of RG members)

Scientific Youtube channel "nanofunction" with > 78,000 viewings

Peer-Reviewed articles, 10 selected

- [1] T. Hupfeld, A. Sommereyns, F. Riahi, C. Doñate-Buendía, S. Gann, M. Schmidt, B. Gökce, and **S. Barcikowski**: Analysis of the nanoparticle dispersion and its effect on the crystalline microstructure in carbon-additivated PA12 feedstock material for laser powder bed fusion. *Materials* 13, 3312 (2020), DOI: [10.3390/ma13153312](https://doi.org/10.3390/ma13153312).
- [2] A. Tymoczko, M. Kamp, O. Prymak, C. Rehbock, J. Jakobi, J. Schuermann, L. Kienle, and **S. Barcikowski**: How the crystal structure and phase segregation of Au-Fe alloy nanoparticles are ruled by the molar fraction and size. *Nanoscale* 10, 16434 (2018), DOI: [10.1039/C8NR03962C](https://doi.org/10.1039/C8NR03962C).
- [3] C.-Y. Shih, R. Streubel, J. Heberle, A. Letzel, M. V. Shugaev, C. Wu, M. Schmidt, B. Gökce, **S. Barcikowski**, L. V. Zhigilei: Two mechanisms of nanoparticle generation in picosecond laser ablation in liquids: The origin of the bimodal size distribution. *Nanoscale* 10, 6900 (2018), DOI: [10.1039/C7NR08614H](https://doi.org/10.1039/C7NR08614H).
- [4] D. Zhang, B. Gökce, and **S. Barcikowski**: Laser Synthesis and Processing of Colloids: Fundamentals and Applications, *Chemical Reviews* 117, 3990 (2017), DOI: [10.1021/acs.chemrev.6b00468](https://doi.org/10.1021/acs.chemrev.6b00468).
- [5] C. Streich, L. Akkari, C. Decker, J. Bormann, C. Rehbock, A. Mueller-Schiffmann, F. C. Niemeyer, L. Nagel-Steger, D. Willbold, B. Sacca, C. Korth, T. Schrader, and **S. Barcikowski**: Characterizing the Effect of Multivalent Conjugates Composed of A β -Specific Ligands and Metal Nanoparticles on Neurotoxic Fibrillar Aggregation, *ACS Nano* 10, 7582 (2016), DOI: [10.1021/acsnano.6b02627](https://doi.org/10.1021/acsnano.6b02627).
- [6] A. Neumeister, J. Jakobi, C. Rehbock, J. Moysig, and **S. Barcikowski**: Monophasic ligand-free alloy nanoparticle synthesis determinants during pulsed laser ablation of bulk alloy and consolidated microparticles in water, *Physical Chemistry Chemical Physics* 16, 23671 (2014), DOI: [10.1039/C4CP03316G](https://doi.org/10.1039/C4CP03316G).
- [7] C. Rehbock, V. Merk, L. Gamrad, R. Streubel, and **S. Barcikowski**: Size control of laser-fabricated surfactant-free gold nanoparticles with highly diluted electrolytes and their subsequent bioconjugation. *Physical Chemistry Chemical Physics* 15, 3057 (2013), DOI: [10.1039/C2CP42641B](https://doi.org/10.1039/C2CP42641B).
- [8] P. Wagener, S. Ibrahimkutty, A. Menzel, A. Plech, and **S. Barcikowski**: Dynamics of silver nanoparticle formation and agglomeration inside the cavitation bubble after pulsed laser ablation in liquid. *Physical Chemistry Chemical Physics* 15, 3068 (2013), DOI: [10.1039/C2CP42592K](https://doi.org/10.1039/C2CP42592K).
- [9] P. Wagener, A. Schwenke, and **S. Barcikowski**: How Citrate Ligands Affect Nanoparticle Adsorption to Microparticle Supports. *Langmuir* 28, 6132 (2012), DOI: [10.1021/la204839m](https://doi.org/10.1021/la204839m).
- [10] S. Petersen, and **S. Barcikowski**: In-situ Bioconjugation - Single Step Approach to Tailored Nanoparticle-Bioconjugates by Ultrashort Pulsed Laser Ablation. *Advanced Functional Materials* 19, 1167 (2009), DOI: [10.1002/adfm.200801526](https://doi.org/10.1002/adfm.200801526).

Patent Applications, 5 selected

- [1] **Barcikowski, S.**, Lau, M., Waag, F.: Kompakte Vorrichtung und Verfahren zur Herstellung von Nanopartikeln in Suspension. WO2020070141 (2020) & DE102018216824. (2018)
- [2] **Barcikowski, S.**; Petersen, S.: Method and device for producing metal-containing organic compounds. US 9097709 B2, PCT/EP2009/059116 (2015)
- [3] **Barcikowski, S.**; Lau, M.: Method for manufacture of pure, carbon free nanoparticles. EP 2735389 & US 0171523 (2014)
- [4] Rath, D. ; Kues, W. ; Taylor, U. ; **Barcikowski, S.** ; Petersen, S.: Method for cell identification and cell sorting. Patent US 8649983 (2014)
- [5] **Barcikowski, S.** ; Wagener, P. ; Schwenke, A.: . Method for producing micro-nano combined active systems (2013). - US 2013/0331257 (2013) & DE 102010063342 (2012)