

## Curriculum Vitae

### PERSONAL INFORMATION

Family name, First names: Haase, Martin Frodo

Researcher unique identifier: [orcid.org/0000-0002-1355-151X](https://orcid.org/0000-0002-1355-151X)

Date of birth: August 26th, 1981

Nationality: German

URL for web sites:

<http://www.martinhaase.com>

[https://academics.rowan.edu/engineering/programs/chemical/people/faculty\\_pages/Haase-Martin.html](https://academics.rowan.edu/engineering/programs/chemical/people/faculty_pages/Haase-Martin.html)



### • SUMMARY OF SCIENTIFIC ACHIEVEMENTS

My most significant scientific achievement was the discovery of Solvent Transfer Induced Phase Separation (STrIPS) to generate hierarchically structured bicontinuous interfacially jammed emulsions (bijels). STrIPS drastically simplifies bijel formation, which was previously only investigated by 2 research groups worldwide. With STrIPS, the strong application potentials of bijels in catalysis and separation membranes, battery materials and tissue engineering scaffolds become tangible. My discovery at the University of Pennsylvania (UPenn) was awarded an international patent and 3 first author publications in leading and multidisciplinary scientific journals (*Advanced Materials*, *ACS Nano*, *Nature Communications*). My work at UPenn was also self-funded based on my successful proposal for a research fellowship from the German Research Foundation (DFG). After the completion of my research fellowship I accepted a tenure track position as Assistant Professor at Rowan University, USA. In my second year as assistant professor, I won the NSF-CAREER award based on my first submission for the competition.

My discovery of nanoparticle arrested bicontinuous emulsions would not have been possible without my prior work as a postdoc at New York University (NYU) and as a PhD student at the Max Planck Institute of Colloids and Interfaces (MPI):

At NYU, I pioneered ternary liquid phase separation for the formation of complex emulsions. This work received a US patent and two publications, one as first author in the leading chemistry journal *Angewandte Chemie International Edition*.

At the MPI, I innovated nanoparticle surface modifications for emulsion stabilization and nanoencapsulation systems. This work has led me to invent a self-healing polymeric coating with corrosion inhibitor filled nanocontainers. My PhD work concluded with a first author publication in the leading journal *Advanced Materials*, 2 additional first author papers (*Langmuir* and *JCCP*) and 2 more second author papers.

During all stages of my career I have been engaged as a teacher and outreach facilitator based on my aim to increase participation of underrepresented groups in natural sciences and engineering. I worked as a science outreach volunteer in high and middle schools in Germany and the United States, as a seminar speaker for advanced training of high school teachers, and as a high school student summer internship supervisor. My research and teaching is continuously exposed to a broad audience via my educational YouTube channel, which currently has more than 24.000 views worldwide with a total of 48.000 watched minutes.

### • EDUCATION

2008 – 2011 PhD in Physical Chemistry, PhD thesis defended on October 25<sup>th</sup>, 2011  
Max Planck Institute of Colloids and Interfaces, Potsdam, Germany  
PhD supervisor: [Prof. Dr. Dr. h.c. Helmuth Möhwald](#),

2004 – 2008 Dipl. Ing. (FH) in Process Engineering, Beuth University, Berlin, Germany

### • CURRENT POSITION

2016 – now Assistant Professor (tenure track position)  
Department of Chemical Engineering, Rowan University, Glassboro NJ, USA

- **PREVIOUS POSITIONS**

- 2014 – 2016 DFG-postdoctoral fellow  
Department of Chemical Engineering, University of Pennsylvania, USA  
[Prof. Kathleen Stebe](#), [Prof. Daeyeon Lee](#)
- 2012 – 2014 Postdoctoral scholar  
Department of Physics, Center of Soft Matter Research, New York University, USA

- **AWARDS**

- 2018 – 2023 **NSF-CAREER award**, CBET division, program “Particulate and Multiphasic processes”, \$500,000.
- 2015 University of Pennsylvania Nano Day, Animation award, [link](#)
- 2015 5th International Colloids Conference, Best poster prize, Amsterdam, Netherlands
- 2014 – 2016 **DFG-Postdoctoral fellowship**, 16 months, 43.000 Euros

- **SUPERVISION OF GRADUATE STUDENT**

- 2016 – now PhD student supervision, Department of Chemical Engineering, Rowan University, USA

- **TEACHING ACTIVITIES**

- 2017 Undergraduate course: Fluid dynamics II, Rowan University, USA
- 2017 Undergraduate course: Principles of Chemical Processes II, Rowan University, USA
- 2017 – 2018 Project assignment and research supervision for 7 undergraduate students in my laboratory
- 2015 Summer program seminar speaker for high school students, [Marylin Huff](#), University of Pennsylvania
- 2014 – 2017 Personal Youtube.com channel: 17 self-made teaching videos about colloid and interface science with more than 24,000 views and 48,000 watched minutes, [link](#)
- 2014 Supervision and project assignment for a 4-month internship of a high school student, New York University
- 2013 – 2014 Mini course lecturer (3 seminars) for high school teachers, Math for America, [Noah Heller](#), New York, [link](#)
- 2014 Seminar speaker for art students, [Prof. Pablo Garcia](#), School of Visual Arts, New York
- 2012 – 2014 Teaching volunteer for K-12 students, [Dr. Ben Dubin Thaler](#), Biobus.org, New York, [link](#)
- 2009 Teaching assistant Physical Chemistry, [Prof. Bechmann](#), University of Potsdam, Germany
- 2007 – 2008 Teaching assistant Thermodynamics, Engineering Mechanics, 4 semesters, [Prof. Seifert](#), [Prof. Kleinschrodt](#), Beuth University Berlin, Germany

- **INSTITUTIONAL RESPONSIBILITIES**

- 2017 – 2018 Faculty member, Department of Chemical Engineering, Rowan University, USA
- 2017 – 2018 Graduate Student Advisor, Department of Chemical Engineering, Rowan University, USA
- 2017 – 2018 Organiser of the Research Seminar, Department of Chemical Engineering, Rowan University, USA

- **JOURNAL PEER REVIEWING**

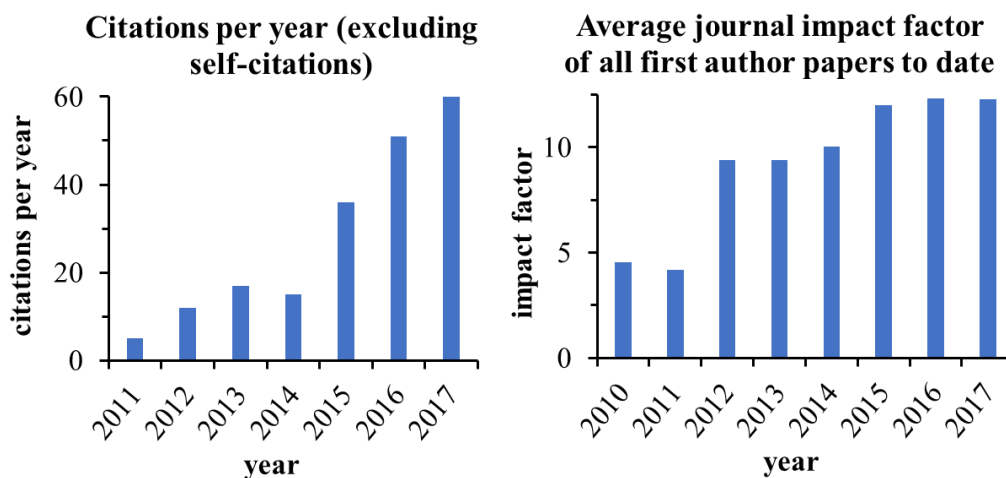
Nature Nanotechnology, ACS Nano, Nature Communications, Angewandte Chemie Int. Ed., Langmuir, ACS Applied Materials & Interfaces, Journal of Materials Science, Soft Matter

- **INDUSTRY INTERNSHIPS**

- 2007 Lurgi GmbH (Air Liquid), Frankfurt/Main, Germany, Harald Koempel, 3 months, Basic engineering for a large scale “Methanol to Propylene” Plant, [link](#)
- 2006 Uhde Inventa Fischer (ThyssenKrupp), Berlin, Germany, Udo Mühlbauer, 2 months, Basic engineering large scale polyester plant and operation of a polylactide pilot plant, [link](#)
- 2005 Silica Verfahrenstechnik, Berlin, Germany, 2 months, Construction of gas adsorption plants, [link](#)
- 2004 HME-Regelungstechnik, Bad Kreuznach, Germany, 2 months, Fine metal processing
- 2002 Umweltamt (Environmental agency), Department of water surveillance, Frankfurt/Main, Germany, 2 months, sample drawing, analytical contaminant determination, [link](#)

- **PUBLICATIONS**

- Average impact factor of key publications 15.5
- All key publications in top journals with impact factors > 12
- Two key publications in journals with impact factor 19.8 (Advanced Materials)
- 4 of 5 key publications without PhD supervisor
- Total of 12 publications (7 as 1<sup>st</sup> author, 4 as 2<sup>nd</sup> author, 1 as 5<sup>th</sup> author)




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Key publications without PhD supervisor

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- 2017 M.F. Haase, H. Jeon, N. Hough, K.J. Hak, K.J. Stebe, D. Lee, *Bijel-derived Multifunctional Nanocomposite Hollow Fiber Membranes*, **Nature Communications**, 1234 (2017), Impact factor (2016): 12.124, [link to article](#)
- 2016 M.F. Haase, N.S. Mood, K.J. Stebe, D. Lee, *In Situ Mechanical Testing of Nanostructured Bijel Fibers*, **ACS Nano**, 10, 6, 6338, Impact factor (2016): 13.942, 3 citations (August 2017), [link to article](#)
- 2015 M.F. Haase, K.J. Stebe, D. Lee, *Continuous Fabrication of Hierarchical and Asymmetric Bijel Microparticles, Fibers and Membranes by Solvent Transfer-induced Phase Separation (STRIPS)*, **Advanced Materials (front cover illustration)**, 27, 44, 7065, Impact factor (2016): 19.791, 21 citations (August 2017), [link to article](#)  
**Article was highlighted in six press releases:**  
 Penn News, Phys.org, Technology.org, Science Daily, Azo Materials, Newswise.com
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- 2014 M.F. Haase, J. Brujic, *Tailoring of High-Order Multiple Emulsions by the Liquid-Liquid Phase Separation of Ternary Mixtures*, **Angewandte Chemie International Edition**, 126, 44, 11987, Impact factor (2016): 11.994, 29 citations (August 2017), [link to article](#)  
 Article was highlighted in the Journal **Science**, [link to article](#)

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Key publication with PhD supervisor (Prof. Dr. Dr. h.c. Helmuth Möhwald)

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- 2012 M.F. Haase, D. Grigoriev, H. Moehwald, D.G. Shchukin, *Development of Nanoparticle Stabilized Polymer Nanocontainers with High Content of the Encapsulated Active Agent and Their Application in Water Borne Anti Corrosive Coatings*, **Advanced Materials**, 24, 18, 2429-2435, Impact factor (2016): 19.791, 50 citations (August 2017), [link to article](#)

- **OTHER PEER REVIEWED JOURNAL PUBLICATIONS**

- 2017 G. Duan, M.F. Haase, K. Stebe, D. Lee, *One-Step Generation Salt-Responsive Polyelectrolyte Microcapsules via Surfactant Organized Interfacial Complexation in Emulsions*, **Langmuir**, DOI: [10.1021/acs.langmuir.7b01526](https://doi.org/10.1021/acs.langmuir.7b01526)

- 2017 L. Tran, M.O. Lavrentovich, G. Durey, A. Darmon, M.F. Haase, D. Lee, K.J. Stebe, R.D. Kamien, T.L.-Leon, *A change in stripes for cholesteric shells via anchoring in moderation*, **PRX**, [7, 041029](#)
- 2013 L.L. Pontani, M.F. Haase, I. Raczowska, J. Brujic, *Immiscible lipids control the morphology of patchy emulsions*, **Soft Matter**, [9, 7150-7157](#)
- 2012 D.O. Grigoriev, M.F. Haase, N. Fandrich, A. Latnikova, D.G. Shchukin, *Emulsion Route in Fabrication of Micro- and Nanocontainers for Biomimetic Self Healing and Self Protecting Functional Coatings*, **Bioinspired, Biomimetic and Nanobiomaterials**, [1, 101-116](#)
- 2012 O. Zech, M.F. Haase, T. Zemb, H. Moehwald, *Froth Flotation via Microparticle Stabilized Foams*, **Colloid Surface A**, [413, 2-6](#)
- 2011 M.F. Haase, D. Grigoriev, H. Moehwald, B. Tiersch, D.G. Shchukin, *Nanoparticle Modification by Weak Polyelectrolytes for pH Responsive Pickering Emulsions*, **Langmuir**, [27\(1\), 74-82](#)
- 2010 M.F. Haase, D. Grigoriev, H. Moehwald, B. Tiersch, D.G. Shchukin, *Encapsulation of Amphoteric Substances in a pH Responsive Pickering Emulsion*, **Journal of Physical Chemistry C**, [114, 17304-17310](#)

#### • PATENTS

- 2016 D. Lee, J. Doh, M. Kim, M.F. Haase, G. Duan *Polyelectrolyte microcapsules and methods of making the same*, Filed 2016, US Provisional Patent: US 15/097,874
- 2016 M.F. Haase, K.J. Stebe, D. Lee, *Bijels and methods of making the same*, Filed 2015, US Provisional Patent: 62/169,295, nonprovisional patent filing in April 2016
- 2015 J. Brujic, M. F. Haase, *Higher Order Multiple Emulsions* - US Patent 20,160,051,954

#### • INVITED PRESENTATIONS

- 2015 M.F. Haase, **University of Edinburgh**, Scotland

#### • ORAL PRESENTATIONS AT MAJOR CONFERENCES

- 2016 M.F. Haase, K. Stebe, D. Lee, *In Situ Mechanical Testing of Bijel Fibers*, AICHE Annual Meeting, San Francisco, USA
- 2016 M.F. Haase, K. Stebe, D. Lee, *Bijel derived, fouling resistant and catalytic ultra-/micro- filtration membranes for advanced water treatment applications*, AICHE Annual Meeting, San Francisco
- 2015 M.F. Haase, K. Stebe, D. Lee, *Tailoring of Bijel fibers and membranes by mass transfer-induced liquid-liquid phase separation of ternary mixtures*, **ECIS Conference**, Bordeaux, France, [link](#)
- 2015 M.F. Haase, K. Stebe, D. Lee, *Tailoring of Bijel fibers and membranes by mass transfer-induced liquid-liquid phase separation of ternary mixtures*, **5th International Colloids Conference**, Amsterdam, Netherlands
- 2015 M.F. Haase, K. Stebe, D. Lee, *Tailoring of Bijel fibers and membranes by mass transfer-induced liquid-liquid phase separation of ternary mixtures*, **ACS Colloids Conference**, Pittsburgh, USA
- 2014 M.F. Haase, J Brujic, *General principles of ternary phase separation into multilayered emulsions facilitate wide applications*, **ACS Colloid and Surface Science Symposium**, Philadelphia, USA
- 2014 M.F. Haase, J Brujic, *Ternary liquid mixtures control the multiplicity, shape and internal structure of emulsion droplets*, **APS March Meeting**, Denver, USA
- 2014 L.L. Pontani, D Bargteil, M.F. Haase, J Brujic, *Liquid domains of lipid monolayers on the surface of oil-in-water emulsions*, **APS March Meeting**, Denver, USA (presenting author)
- 2011 M.F. Haase, *Encapsulation of Active Molecules for Anti-Corrosive Coatings*, **ECIS**, Berlin