

Stanford



Frauke Kracke

Postdoctoral Scholar, Civil and Environmental Engineering

Bio

HONORS AND AWARDS

- 2019 ISMET Discovery Award for Best Scientific Paper, ISMET International Society for Microbial Electrochemistry and Technology (October 2019)
- 2016 Dean's Award for Outstanding Higher Degree by Research Theses, The University of Queensland (2017)
- Best Research Poster Award - GCEP - Global Climate & Energy Project Symposium 2017, Global Climate & Energy Project Stanford University (2017)
- CEMES 2016 outstanding student award, Centre for Microbial Electrochemical Systems, The University of Queensland, QLD, Australia (2016)
- GSITA: UQ Graduate School International Travel award, The University of Queensland, QLD, Australia (2015)
- CEMES Scholarship "living allowance", Centre for Microbial Electrochemical Systems, The University of Queensland, QLD, Australia (2012)
- UQI: UQ International scholarship "fee waiver", The University of Queensland, QLD, Australia (2012)
- DAAD "Program to increase the Mobility of German Students", German Academic Exchange Service (DAAD), Germany (2010-2011)
- DAAD "Travel Allowance", German Academic Exchange Service (DAAD), Germany (2010)

PROFESSIONAL EDUCATION

- Vordiplom, Technische Universitat Dortmund (2008)
- Diplom, Technische Universitat Dortmund (2011)
- Doctor of Philosophy, University Of Queensland (2016)

STANFORD ADVISORS

- Alfred Spormann, Postdoctoral Faculty Sponsor
- Alfred Spormann, Postdoctoral Research Mentor

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I'm passionate about bio-technologies at the nexus of energy, carbon capture, and chemical production.

Publications

PUBLICATIONS

- **Designing a Zn-Ag Catalyst Matrix and Electrolyzer System for CO₂ Conversion to CO and Beyond.** *Advanced materials (Deerfield Beach, Fla.)*
Lamaison, S., Wakerley, D., Kracke, F., Moore, T., Zhou, L., Lee, D. U., Wang, L., Hubert, M. A., Aviles Acosta, J. E., Gregoire, J. M., Duoss, E. B., Baker, S., Beck, et al
2021: e2103963

- **In situ electrochemical H₂ production for efficient and stable power-to-gas electromethanogenesis** *GREEN CHEMISTRY*
Kracke, F., Deutzmann, J. S., Gu, W., Spormann, A. M.
2020; 22 (18): 6194–6203
- **Microbial electron transport and energy conservation - the foundation for optimizing bioelectrochemical systems** *FRONTIERS IN MICROBIOLOGY*
Kracke, F., Vassilev, I., Kroemer, J. O.
2015; 6
- **In situ electrochemical H₂ production for efficient and stable power-to-gas electromethanogenesis (vol 22, pg 6194, 2020)** *GREEN CHEMISTRY*
Kracke, F., Deutzmann, J. S., Gu, W., Spormann, A. M.
2021
- **Efficient Hydrogen Delivery for Microbial Electrosynthesis via 3D-Printed Cathodes.** *Frontiers in microbiology*
Kracke, F., Deutzmann, J. S., Jayathilake, B. S., Pang, S. H., Chandrasekaran, S., Baker, S. E., Spormann, A. M.
2021; 12: 696473
- **Low-Cost Clamp-On Photometers (ClampOD) and Tube Photometers (TubeOD) for Online Cell Density Determination.** *Frontiers in microbiology*
Deutzmann, J. S., Callander, G., Gu, W., Muller, A. L., McCully, A. L., Ahn, J. K., Kracke, F., Spormann, A. M.
1800; 12: 790576
- **Robust and biocompatible catalysts for efficient hydrogen-driven microbial electrosynthesis** *COMMUNICATIONS CHEMISTRY*
Kracke, F., Wong, A., Maegaard, K., Deutzmann, J. S., Hubert, M. A., Hahn, C., Jaramillo, T. F., Spormann, A. M.
2019; 2
- **Microbial electrosynthesis system with dual biocathode arrangement for simultaneous acetogenesis, solventogenesis and carbon chain elongation.** *Chemical communications (Cambridge, England)*
Vassilev, I., Kracke, F., Freguia, S., Keller, J., Kromer, J. O., Ledezma, P., Viridis, B.
2019
- **Metabolic Network Analysis of Microbial Methane Utilization for Biomass Formation and Upgrading to Bio-Fuels** *FRONTIERS IN ENERGY RESEARCH*
Averesch, N. H., Kracke, F.
2018; 6
- **Balancing cellular redox metabolism in microbial electrosynthesis and electro fermentation - A chance for metabolic engineering** *METABOLIC ENGINEERING*
Kracke, F., Lai, B., Yu, S., Kroemer, J. O.
2018; 45: 109–20
- **Predicting and experimental evaluating bio-electrochemical synthesis - A case study with Clostridium kluyveri.** *Bioelectrochemistry (Amsterdam, Netherlands)*
Koch, C., Kuchenbuch, A., Kracke, F., Bernhardt, P. V., Krömer, J., Harnisch, F.
2017; 118: 114-122
- **Quantitative analysis of aromatics for synthetic biology using liquid chromatography** *Biotechnology Journal*
Lai, B., Plan, M. R., Averesch, N. J., Yu, S., Kracke, F., Lekieffre, N., Bydder, S., Hodson, M. P., Winter, G., Krömer, J. O.
2017; 12 (1)
- **Balancing cellular redox metabolism in microbial electrosynthesis and electro fermentation – A chance for metabolic engineering** *Metabolic Engineering*
Kracke, F., Lai, B., Yu, S., Krömer, J. O.
2017
- **Predicting and experimental evaluating bio-electrochemical synthesis — A case study with Clostridium kluyveri** *Bioelectrochemistry*
Koch, C., Kuchenbuch, A., Kracke, F., Krömer, J. O., Harnisch, F.
2017
- **Redox dependent metabolic shift in Clostridium autoethanogenum by extracellular electron supply** *Biotechnology for Biofuels*
Kracke, F., Viridis, V., Bernhardt, P. V., Rabaey, K., Krömer, J. O.
2016; 9 (1): 249
- **Nontoxic, Hydrophilic Cationic Polymers-Identified as Class of Antimicrobial Polymers** *MACROMOLECULAR BIOSCIENCE*

Strassburg, A., Kracke, F., Wenners, J., Jemeljanova, A., Kuepper, J., Petersen, H., Tiller, J. C.

2015; 15 (12): 1710-1723

- **Electrifying white biotechnology: engineering and economic potential of electricity-driven bio-production.** *ChemSusChem*

Harnisch, F., Rosa, L. F., Kracke, F., Virdis, B., Krömer, J. O.

2015; 8 (5): 758-766

- **Identifying target processes for microbial electrosynthesis by elementary mode analysis.** *BMC bioinformatics*

Kracke, F., Krömer, J. O.

2014; 15: 410-?