

JULIANE HOPF, DR.

Postdoctoral Research Associate

Biogeochemist/Geomicrobiologist
Civil and Environmental Engineering and Earth Sciences
University of Notre Dame

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PROFESSIONAL PROFILE

Adaptable biogeochemist/geomicrobiologist with interdisciplinary expertise in geochemistry, analytical chemistry, surface characterization, and biomedicine within research and development. More than 15 years of experience in planning, execution, and evaluation of highly diverse biogeochemical, environmental, and biomedical studies. Broad spectrum of technical skills including general microbiology techniques, atomic force microscopy (AFM), electron microscopy (SEM & TEM), X-ray photoelectron spectroscopy (XPS), and 3D confocal microscopy (μ Surf). Skilled in statistical analysis and image processing for high-resolution microscopy. Excellent verbal, written, and visual communication skills as demonstrated through publications/presentations in peer-reviewed journals as well as reports and international conferences. Creative researcher with strong individual and team work ability.

EDUCATION

2011	Doctorate in Natural Sciences Institute of Geosciences, Friedrich Schiller University Jena, Germany
2005	Diploma in Biology Institute of Microbiology, University of Bayreuth, Germany

PROFESSIONAL EMPLOYMENT

2016 – present	Postdoctoral Research Associate, Department of Civil and Environmental Engineering & Earth Sciences, University of Notre Dame, USA
2012 – 2016	Postdoctoral Research Associate, Environmental Sciences Division, Oak Ridge National Laboratory (ORNL), USA Research Areas: Geochemistry – Thermodynamics & Dissolution Kinetics of Glasses, Atomic Force Microscopy
2011	Postdoctoral Research Associate, Bavarian Research Institute of Experimental Geochemistry and Geophysics, University of Bayreuth, Germany Work Area: Planning and Development of a Geomicrobiology Laboratory

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PROFESSIONAL EMPLOYMENT

- 2006 – 2011 Graduate Research Associate, Institute of Geosciences, Friedrich Schiller University Jena and Bavarian Research Institute of Experimental Geochemistry and Geophysics, University of Bayreuth, Germany
Research areas: Microbe-Mineral Interactions, Electron Microscopy, Biomineralization
- 2000 – 2005 Student Assistant, Bavarian Research Institute of Experimental Geochemistry and Geophysics, University of Bayreuth, Germany
Research areas: Climate changes and mass extinction at the K/T boundary; Deformation of minerals and the convection of Earth's mantle
- 1999 – 2005 Undergraduate Scientist, Department of Microbiology, University of Bayreuth, Germany
Research areas: Medical Microbiology, UV/VIS Spectroscopy

PUBLICATIONS

In preparation

- Hopf, J.**, Eskelsen, J.R., Chiu, M., Ievlev, A., Ovchinnikova, O.S., Leonard, D., Pierce, E.M. "Toward an Understanding of Surface Layer Formation, Growth, and Transformation at the Glass-Fluid Interface".
- Hopf, J.**, Etzel, K., Harries, D., Pollok, K., Langenhorst, F., Hochella, M.F. "Surface alteration of pyrrhotite by *Acidithiobacillus ferrooxidans* under acidic conditions".
- Hopf, J.**, Langenhorst, F. "Influence of *Acidithiobacillus ferrooxidans* and *Acidithiobacillus thiooxidans* on surface morphology and dissolution rates of pyrrhotite".

Journal Articles

- Nallathamby, P.D., **Hopf, J.**, Irimata L.E., McGinnity, T.L., Roeder, R.K. (2016) "Preparation of fluorescent Au-SiO₂ core-shell nanoparticles and nanorods with tunable silica shell thickness and surface modification for immunotargeting". *Journal Materials Chemistry B*, 5418-5428. doi: 10.1039/C6TB01659F
- Hopf, J.**, Kerisit, S.N., Angeli, F., Charpentier, T., Icenhower, J.P., McGrail, B.P., Windisch, C.F., Burton, S.D., Pierce, E.M. (2016) "Glass Water Interaction: Effect of High Valence Cations on Glass Structure and Chemical Durability". *Geochimica et Cosmochimica Acta* 181, 54-71. doi: 10.1016/j.gca.2016.02.023
- Hopf, J.**, Pierce, E.M. (2014) "Topography and Mechanical Property Mapping of International Simple Glass Surfaces with Atomic Force Microscopy". *Procedia Materials Science* 7, 216-222. doi: 10.1016/j.mspro.2014.10.028
- Hopf, J.**, Langenhorst, F., Pollok, K., Merten, D., Kothe, E. (2009) "Influence of microorganisms on biotite dissolution: an experimental approach". *Chemie der Erde – Geochemistry* 69 (S2), 45-56. doi: 10.1016/j.chemer.2008.11.001

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PUBLICATIONS

Reports

- Pollok, K., Harries, D., **Hopf, J.**, Etzel, K., Chust, T., Hochella, M.F., Jr., Hellige, K., Peiffer, S., Langenhorst, F. (2010) “Microstructural Controls on Monosulfide Weathering and Heavy Metal Release (MIMOS)”. GEOTECHNOLOGIEN Science Report 16, 182-197. doi: 10.2312/GFZ.gt.16.13
- Pollok, K., Langenhorst, F., **Hopf, J.**, Kothe, E., Geisler, T., Putnis, C.V., Putnis, A. (2008) “Microstructural Controls on Monosulfide Weathering and Heavy Metal Release (MIMOS)”. GEOTECHNOLOGIEN Science Report 12, 79-88.

Thesis

- Hopf, J.** (2011) “Microbial weathering of minerals – case studies on biotite and pyrrhotite”, Doctoral Thesis.
- Hopf, J.** (2005) “Heme degradation for the acquisition of CO as a substrate for chemolithoautotrophic bacteria”, Diploma Thesis.

Conference Abstracts (lead author only)

- Hopf, J.**, Pierce, E.M. (2014) “AFM based mechanical property mapping for glass corrosion studies” 2nd Annual ORNL Postdoc Research Symposium, Oak Ridge TN, USA, talk.
- Hopf, J.**, Pierce, E.M. (2014) “AFM based mechanical property mapping for glass corrosion studies” Goldschmidt Conference, Sacramento CA, USA, poster.
- Hopf, J.**, Pollok, K., Hochella, M.F., Langenhorst F. (2011) “Bacterial oxidation of pyrrhotite and troilite under acidic conditions” Goldschmidt Conference, Prague, Czech Republic, talk.
- Hopf, J.**, Pollok, K., Langenhorst, F. (2010) “Comparison of surface morphology and cell adhesion mechanisms of pyrrhotite in the presence of *Acidithiobacillus ferrooxidans* and *Acidithiobacillus thiooxidans*” 9th Symposium on Remediation Jena, Germany, talk.
- Hopf, J.**, Pollok, K., Harries, D., Langenhorst, F., Kothe, E., Hochella, M.F. (2009) “Oxidative dissolution of pyrrhotite by *Acidithiobacillus ferrooxidans*: a surface approach” GEOTECHNOLOGIEN Status-Seminar Mineral Surfaces – From Atomic Processes to Industrial Application, Bayreuth, Germany, poster.
- Hopf, J.**, Langenhorst, F., Merten, D. (2008) “Influence of microbes on biotite dissolution” Symposium of the Jena School for Microbial Communication (JSMC), Jena, Germany, poster.
- Hopf, J.**, Haferburg, G., Pollok, K., Kothe, E., Langenhorst, F. (2008) “New phosphates and sulphates produced by a *Streptomyces acidiscabies* strain?” 7th Symposium on Remediation, Jena, Germany, talk.
- Hopf, J.**, Haferburg, G., Pollok, K., Kothe, E., Langenhorst, F. (2008) “Bioprecipitation of phosphates and sulfates in experiments with *Streptomyces acidiscabies*” 86th Annual Meeting of the Deutsche Mineralogische Gesellschaft, Berlin, Germany, poster.

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PUBLICATIONS

Conference Abstracts (lead author only)

Hopf, J., Langenhorst, F., Merten, D., Kothe, E. (2007) “Impact of *Bacillus subtilis* on biotite dissolution” 6th Symposium on Remediation Jena, Germany, talk.

Hopf, J., Langenhorst, F., Merten, D. (2007) “TEM Investigations of Bacterial Effects on Biotite Dissolution” Goldschmidt Conference, Cologne, Germany, poster.

TEACHING AND MENTORING EXPERIENCE

- 2014 – 2015 Research Mentor for two undergraduate students under the Department of Energy’s (DOE) Higher Education Research Experiences (HERE) internship program at ORNL, USA
- 2008 Undergraduate Teaching Associate “Biom mineralogy”, Full lectures and literature seminar at the Institute of Geosciences, Friedrich Schiller University Jena, Germany

FELLOWSHIPS

- 2009 Visiting Research Fellowship in the group NanoBioEarth at Virginia Tech, USA
Advisor: Michael F. Hochella, Jr., PhD
Research area: Surface alteration of pyrrhotite by *Acidithiobacillus ferrooxidans* under acidic conditions

OTHER WORK EXPERIENCES & VOLUNTEERING WORK

- 2017 External reviewer for the NSF-funded Interdisciplinary Teaching about Earth for a Sustainable Future (InTeGrate) project, operated by the Science Education Resource Center (SERC) at Carleton College in Northfield, MN, USA
- 2013 – 2014 Chair of International Committee & Secretary of the Oak Ridge Postdoctoral Association, ORNL, USA
- since 2012 Manuscript reviewer for Environmental Engineering Science, Applied Geochemistry, Geochimica et Cosmochimica Acta, Frontiers in Microbiology
- 2007 – 2009 Administrator for webpage for the DFG Research Training Group “Alteration and element mobility at the microbe-mineral interface” at the Friedrich Schiller University Jena, Germany
- 2003 Industrial Internship, CENAS AG – Center for Food Safety, Kulmbach, Germany

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SOFTWARE SKILLS

MS Office (Word, Excel, PowerPoint, Access, Outlook, OneNote), LaTeX, SigmaPlot, R,
MathCad, Origin, EndNote, Adobe Photoshop, GIMP, ImageJ, FrontPage
AFM-related software: Nanoscope Analysis, Gwyddion, WsxM

LANGUAGES

German	Native
English	Near native/Fluent