

# CURRICULUM VITAE

TOBIAS WALTER HÖFIG, PH.D.

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## PROFESSIONAL EXPERIENCE

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- 12/2017 – present: Graduate Faculty, Department of Geology & Geophysics, Texas A&M University
- 11/2016 – present: Expedition Project Manager/Staff Scientist, Assistant Research Scientist, International Ocean Discovery Program at Texas A&M University, College Station, TX, U.S.A.
- 08/2014 – 09/2016: Postdoctoral Research Associate at the Division of Economic Geology and Petrology, Department of Mineralogy, TU Bergakademie Freiberg, Germany
- 01/2012 – 07/2014: Senior Research Associate at the Division of Economic Geology and Petrology, Department of Mineralogy, TU Bergakademie Freiberg, Germany
- 10/2009 – 12/2011: Research Associate at the Research Unit “Magmatic and Hydrothermal Systems”, Research Division “Dynamics of the Ocean Floor”, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
- 01/2009 – 07/2009: Research Assistant at the Research Unit “Magmatic and Hydrothermal Systems”, Research Division “Dynamics of the Ocean Floor”, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
- 08/2007 – 10/2007: Research Assistant at the German Archaeological Institute (DAI), Research Cluster 6 “Connecting Cultures”, Federal Foreign Office, Berlin, Germany
- 09/2006 – 12/2007: Student Assistant at the Museum of Natural History of the Geisel Valley (the so-called Geiseltalmuseum), Halle/Saale, Germany

## TEACHING EXPERIENCE

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- 2017 – present: Texas A&M University (Instructor)  
Undergraduate Research: Fall 2017, Spring 2018, Fall 2018 (1 student each)  
1<sup>st</sup> Year Seminar (topic: science below the sea): Fall 2017 (8 students), Fall 2018 (18 students)
- 2012 – 2016: TU Bergakademie Freiberg (Instructor)  
Undergraduate Research: 3 BS theses

Graduate Research: 7 MS theses

1<sup>st</sup> Year MS tutorial: Specific Ore Deposit Geology (10–20 students)

2<sup>nd</sup> Year BS lecture: Economic Geology of Ore Deposits (30–60 students)

2<sup>nd</sup> Year BS tutorial: Economic Geology of Ore Deposits (30–60 students)

2<sup>nd</sup> Year MS lecture: Metallogeny (10–20 students)

2<sup>nd</sup> Year MS lecture: Exploration of Mineral Deposits (15–25 students)

2<sup>nd</sup> Year MS field trip in economic geology (2014, 2015; 15–25 students)

3<sup>rd</sup> Year Dipl. lecture: Econ. Geol. of Ore Deposits (40–70 students) [minors]

#### PROFESSIONAL SERVICE

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2018 – present: Ph.D. committee member for Antonio Luna, University of South Florida  
 2017: Judge for the Outstanding Student Paper Award at 2017 AGU Fall Meeting  
 2016 – present: Member of IODP Geology Lab Working Group  
 2016 – present: Member of IODP Geochemistry Lab Working Group  
 2016 – present: Member of IODP Curation Lab Working Group  
 2013 – 2016: Member of Faculty Council of the School of Geosciences, Geoengineering, and Mining at TU Bergakademie Freiberg

#### PROFESSIONAL DEVELOPMENT

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08/2017 The Voice of Leadership: How Leaders Inspire, Influence, and Achieve Results. American Management Association Seminar.

#### EDUCATION

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10/2009 – 07/2014: Ph.D. in Geosciences [Doctor rerum naturalium], Advisor: Kaj Hoernle  
 University of Kiel (Christian-Albrechts-Universität zu Kiel, CAU), Germany  
 Thesis: *Geochemical (major and trace elements and Sr-Nd-Hf-Pb isotopes) characterization of the upper oceanic crust (sediments to gabbros) at ODP/IODP Site 1256 in the eastern Central Pacific*

09/2008 – 09/2009: MS [German Diplom] in Geology/Paleontology, Advisors: Maxim Portnyagin, Kurt Friese  
 Martin Luther University Halle-Wittenberg, Halle/Saale, Germany  
 Thesis: *Magmatic evolution of Komandorsky Islands, Western Aleutian Arc: From subduction to slab break-off and strike-slip regime*

08/2007 – 06/2008: MS [German Diplom] mapping project, Advisors: Gregor Borg, Thomas J. Degen  
 Martin Luther University Halle-Wittenberg, Halle/Saale, Germany  
 Thesis: *The geology of Tavşan Adası and its adjacent coast considering geoarchaeological aspects, Aegean Sea, SW Turkey*

- 10/2004 – 09/2009: Studies in Geology/Paleontology  
Martin Luther University Halle-Wittenberg, Halle/Saale, Germany  
*Undergraduate and graduate level courses with specialization in Economic Geology and Petrology (including 6 weeks of mapping courses in metamorphic terranes)*
- 10/2003 – 03/2004: Studies in Physics  
Friedrich Schiller University Jena, Germany
- 06/2002: High school graduation at public Heinrich Mann secondary school Erfurt, Germany, through achieving the general qualification for university entrance

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 PUBLISHED PEER-REVIEWED JOURNAL ARTICLES
 

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- Larsen, H.C., Mohn, G., Nirrengarten, M., Sun, Z., Stock, J., Jian, Z., Klaus, A., Alvarez-Zarikian, C.A., Boaga, J., Bowden, S.A., Briais, A., Chen, Y., Cukur, D., Dadd, K., Ding, W., Dorais, M., Ferré, E.C., Ferreira, F., Furusawa, A., Gewecke, A., Hinojosa, J., **Höfig, T.W.**, Hsiung, K.H., Huang, B., Huang, E., Huang, X.L., Jiang, S., Jin, H., Johnson, B.G., Kurzawski, R.M., Lei, C., Li, B., Li, L., Li, Y., Lin, J., Liu, C., Liu, C., Liu, Z., Luna, A.J., Lupi, C., McCarthy, A., Ningthoujam, L., Osono, N., Peate, D.W., Persaud, P., Qiu, N., Robinson, C., Satolli, S., Sauermilch, I., Schindlbeck, J.C., Skinner, S., Straub, S., Su, X., Su, C., Tian, L., van der Zwan, F.M., Wan, S., Wu, H., Xiang, R., Yadav, R., Yi, L., Yu, P.S., Zhang, C., Zhang, J., Zhang, Y., Zhao, N., Zhong, G., Zhong, L., 2018, Rapid transition from continental breakup to igneous oceanic crust in the South China Sea. *Nature Geoscience*. DOI: 10.1038/s41561-018-0198-1.
- Höfig, T.W.**, Hoernle, K., Hauff, F., Frank, M., 2016, Hydrothermal versus active margin sediment supply to the eastern equatorial Pacific over the past 23 million years traced by radiogenic Pb isotopes: Paleoceanographic and paleoclimatic implications. *Geochimica et Cosmochimica Acta*, 190: 213–238, DOI: 10.1016/j.gca.2016.05.003.
- Höfig, T.W.**, Geldmacher, J., Hoernle, K., Hauff, F., Garbe-Schönberg, D., Duggen, S., 2014, From the lavas to the gabbros: 1.25 km of geochemical characterization of upper oceanic crust at ODP/IODP Site 1256, eastern equatorial Pacific. *Lithos*, 210–211: 289–312, DOI: 10.1016/j.lithos.2014.08.013.
- Geldmacher, J., **Höfig, T.W.**, Hauff, F., Hoernle, K., Garbe-Schönberg, D., Wilson, D.S., 2013, Influence of the Galápagos hotspot on the East Pacific Rise during Miocene superfast spreading. *Geology*, 41 (2): 183–186, DOI: 10.1130/G33533.1.

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 IODP-RELATED PUBLICATIONS
 

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- Sun, Z., Stock, J., Klaus, A., and the Expedition 367 Scientists (including **Höfig, T.W.**), 2018, Expedition 367 Preliminary Report: South China Sea Rifted Margin. *International Ocean Discovery Program*. <https://doi.org/10.14379/iodp.pr.367.2018>.

de Ronde, C.E.J., Humphris, S.E., and **Höfig, T.W.**, 2017, Expedition 376 Scientific Prospectus: Brothers Arc Flux. International Ocean Discovery Program. <https://doi.org/10.14379/iodp.sp.376.2017>.

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INTERNATIONAL CONFERENCE ABSTRACTS [\*denotes student author]

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**Höfig, T.W.**, LeVay, B., Stock, J., Sun, Z., Klaus, A., Jian, Z., Larsen, H.C., Alvarez-Zarikian, C., and the IODP Expedition 367/368 Scientists, 2017, XRF core scanning of igneous rocks: a case study of IODP Expeditions 367/368 lava flows, South China Sea. Abstract (T32A-08) presented at 2017 AGU Fall Meeting, New Orleans, LA, 11–15 Dec.

Höfig, D.F., **Höfig, T.W.**, Licht, O.A.B., Haser, S., Valore, L., 2017, SEM–MLA-based investigation of the composition of mafic volcanoclastic deposits from the Paraná Large Igneous Province, Brazil. Abstract (V43E-0581) presented at 2017 AGU Fall Meeting, New Orleans, LA, 11–15 Dec.

Minz, F.E., Kern, M., Birtel, S., **Höfig, T.W.**, Krause, J., Gutzmer, J., 2017, Distribution of REE minerals in fluorite flotation at the Vergenoeg mine, South Africa. Process Mineralogy '17, Cape Town.

Hoernle, K., **Höfig, T.W.**, Portnyagin, M., Yogodzinski, G., Werner, R., Hauff, F., van den Bogaard, P., Garbe-Schönber, D., 2016, Subduction initiation and early evolution of the Aleutian Arc: combined on-land and off-shore studies. Abstract (280508) presented at 2016 GSA Annual Meeting, Denver, CO, 25–28 Sep.

**Höfig, T.W.**, Krause, J., Kern, M., Birtel, S., Gutzmer, J., 2016, Phosphate mineralization in the Vergenoeg fluorite deposit (RSA) and its implication for the origin of REE-bearing fluid alteration. Abstract (3697) presented at 2016 35<sup>th</sup> International Geological Congress, Cape Town, South Africa, 27 Aug – 4 Sep.

Buch, T., Guimarães da Silva, L., **Höfig, T.W.**, 2016, SEM-based mineralogical characterization of artisanal tin tailings from Rondônia, northwestern Brazil. 7<sup>th</sup> Brazilian Symposium on Mineral Exploration, Ouro Preto.

Birtel, S., Kern, M., **Höfig, T.W.**, Krause, J., Gutzmer, J., 2015, Geometallurgical assessment: Beneficiation of rare earth minerals as a possible by-product from the Vergenoeg Fluorite Mine, South Africa. In: André-Meyer, A.-S. et al. (eds.), Mineral Resources in a Sustainable World. Proceedings of the 13<sup>th</sup> Biennial SGA Meeting, Nancy, France: 1383–1386.

Diers, S.\*, **Höfig, T.W.**, Haser, S., Bobadilla-Fazzini, R.A., Gutzmer, J., 2015, The mineralogical evolution of bioleached copper ore traced by SEM-MLA. Abstract (736) presented at 2015 Goldschmidt Conference, Prague, Czech Republic, 16–21 Aug.

**Höfig, T.W.**, Portnyagin, M., Hoernle, K., Hauff, F., van den Bogaard, P., Garbe-Schönberg, D., 2013, From birth to death of arc magmatism: The igneous evolution of Komandorsky Islands

recorded tectonic changes during 50 Ma of westernmost Aleutian history. Abstract (V21C-2742) presented at 2013 AGU Fall Meeting, San Francisco, CA, 9–13 Dec.

Geldmacher, J., **Höfig, T.W.**, Hauff, F., Hoernle, K., Garbe-Schönberg, D., 2011, Evidence for influence of the Galápagos hotspot on the East Pacific Rise MORB composition during times of superfast spreading. Abstract (V51E-2556) presented at 2011 AGU Fall Meeting, San Francisco, CA, 5–9 Dec.

**Höfig, T.W.**, Bertemes, F., Borg, G., Degen, T.J., 2011, The geology of Tavşan Adası and its geoarchaeological aspects (Southeastern Aegean Sea). Abstracts to the 4<sup>th</sup> International Archaeological Conference of Central Germany: 43–45. Halle/Saale, Germany, 14–16 Oct, 2011.

#### OTHER CONFERENCE CONTRIBUTIONS

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2009 – present            12 regular oral and poster presentations of original research findings at national symposiums/conferences and workshops

#### CO-SUPERVISED MS AND BS THESES (R&D PROJECTS) [all at TU Bergakademie Freiberg]

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- 2015/16 (MS):            Petrological, mineralogical, and geochemical characterization of high-grade hematite ores, Mt. Wall, Western Australia (*cooperation with Rio Tinto Exploration*)
- 2015/16 (MS):            Mineralogical assessment of treated low-grade chalcopyrite ore, Chile (*cooperation with BioSigma S.A.*)
- 2015/16 (BS):            Mineralogical characterization of REE-bearing ion-adsorption laterites, northwestern Madagascar (*cooperation with G.U.B. Ingenieur AG and Tantalus Rare Earths AG*)
- 2015 (BS):                3D-geological modelling of the Epembe Nb-Ta-P-(LREE-) deposit Namibia
- 2014/15 (BS):            Mineral-chemical characterization of sulfides from the Weissliegend of the Polkowice-Sieroszewice mine, Poland (in German)
- 2013/14 (MS):            Gangue mineralogy and deportment of deleterious elements in the iron ore of the Kiirunavaara deposit, Sweden (*cooperation with LKAB*)
- 2013/14 (MS):            Deportment of critical metals and process mineralogy of Kupferschiefer ores from the Polkowice-Sieroszowice mine, SW Poland (*cooperation with KGHM*)
- 2013/14 (MS):            Characterization of the Cu-Ag mineralization of the Polkowice-Sieroszowice mining district, SW Poland, and its significance for the potential recovery of trace metals (*cooperation with KGHM*)

- 2012/13 (MS): Geometallurgical assessment of the rare-earth mineralogy and processing characteristics at the Vergenoeg Fluorite Mine, South Africa (*cooperation with Vergenoeg Mining CO (PTY) Ltd.*)
- 2012/13 (MS): Characterization of Cu-Mo-Au mineralization at the Laver Prospect, northern Sweden (*cooperation with New Boliden Mineral AB*)

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 TECHNICAL REPORTS (MINERAL INDUSTRY) [\*denotes student author]
 

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- Diers, S. \*, Gutzmer, J., **Höfig, T.W.**, Haser, S., 2015, Mineralogical assessment of treated low-grade chalcopyrite ore, Chile. 23 pp. (*for BioSigma S.A.*)
- Richter, L. \*, **Höfig, T.W.**, Seifert, T., Gutzmer, J., 2013, Mineralogical assessment of samples from the skarn deposits Tellerhäuser and Hämmerlein, Erzgebirge (Ore Mountains), Saxony, Germany. 44 pp. (*for Treliver Minerals Ltd.*)
- Bachmann K., **Höfig, T.W.**, Gutzmer, J., 2013, Characterization of heavy REE mineralization in the Olserum Prospect, Southern Sweden. 97 pp. (*for Tasman Metals Ltd.*)

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 GRANTS AND AWARDS
 

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- 2013: SGA-SEG travel grant for participation in the 2<sup>nd</sup> SGA-SEG-UNESCO-IUGS Short Course on African Metallogeny “Base Metals in Basins”
- 01/2011 – 12/2011: Scholarship from the Sparkasse Foundation (Sparkassenstiftung Erfurt) *Funding for <sup>40</sup>Ar-<sup>39</sup>Ar dating and Sr-Nd-Pb isotopic analysis; related project: Petrogenesis and tectonics of the origin of adakitic volcanic suites of Bering Island (western Aleutians)*
- 02/2007 – 06/2009: Scholarship holder of the German Academic Scholarship Foundation (Studienstiftung des deutschen Volkes)

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 ON- AND OFFSHORE FIELDWORK
 

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- 05–07/2018: Expedition Project Manager/Staff Scientist on R/V *JOIDES Resolution* IODP Expedition 376 – Brothers Arc Flux (9 weeks).
- 02–04/2017: Shipboard scientist (petrologist) on R/V *JOIDES Resolution* IODP Expedition 367 – South China Sea Rifted Margin A (9 weeks).
- 06–07/2009: Shipboard scientist (petrologist) on the R/V *Sonne* Leg SO201-1b (NW Pacific Ocean and Bering Sea) funded by the German-Russian KALMAR (Kurile-Kamchatka and Aleutian Marginal Sea-Island Arc Systems: Geodynamic and Climate Interaction in Space and Time) project (4 weeks).

- 09–10/2008 Geological survey of igneous rock suites on the Komandorsky Islands (western Aleutian arc) and tephra deposits at Klyuchevskoy volcano (Kamchatka) funded by the German-Russian KALMAR project (4 weeks).
- 08–10/2007 Geological survey of the island of Tavşan Adası and adjacent coastline (SW Aegean Sea) through detailed field survey of excavations and outcrops, side marker probing, and diving; funded by the German Archaeological Institute (6 weeks).

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**INVITED TALKS**

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- 01/17/2018 TU Bergakademie Freiberg, Department of Mineralogy, Society of Economic Geologists (SEG) Student Chapter Freiberg: *Science below the sea and its impact on economic geology.*
- 07/19/2016 Texas A&M University, Department of Geology & Geophysics: *Beyond an insightful igneous basement: The ODP/IODP Site 1256 sedimentary Pb isotope record and its intriguing messages.*
- 04/28/2010 Martin Luther University Halle-Wittenberg, Department of Geosciences and Geography: *From Japan to Alaska: The R/V Sonne Leg SO201-1b through the NW Pacific and Bering Sea.*
- 10/28/2009 Martin Luther University Halle-Wittenberg, Department of Geosciences and Geography: *From Kamchatka to the Commander Islands: A geological travel report from the hottest world's end.*

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**WORKSHOPS AND SHORT COURSES**

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- 10/2017 Deep Crustal Drilling Engineering Working Group, College Station, TX, U.S.A. October 16–18, 2017. *JOIDES Resolution* Science Operator.
- 10/2017 “Drilling into Young Oceanic Crust for Subseafloor Observations at Axial Seamount” Workshop, Lamont-Doherty Earth Observatory, NY, U.S.A. October 11–13, 2017. U.S. Science Support Program.
- 09/2017 *JOIDES Resolution* Assessment Workshop, Denver, CO, U.S.A. September 26–27, 2017. U.S. Science Support Program.
- 12/2014 13<sup>th</sup> Freiberg Short Course in Economic Geology, “Rare Earth Elements Deposits”, TU Bergakademie Freiberg, Germany. December 8–12, 2014.
- 12/2013 12<sup>th</sup> Freiberg Short Course in Economic Geology, “Granite-related Mineral Systems”, TU Bergakademie Freiberg, Germany. December 2–6, 2013.

- 06/2013 2<sup>nd</sup> SGA-SEG-UNESCO-IUGS Short Course on African Metallogeny “Base Metals in Basins” in Kitwe, Zambia. June 17–21, 2013 (training with lectures and practical exercises, including extensive core logging and mine visit)
- 12/2012 11<sup>th</sup> Freiberg Short Course in Economic Geology, “Automated Mineralogy & Petrography for Geometallurgy”, TU Bergakademie Freiberg, Germany. December 5–7, 2012.
- 2012 – 2014 Principal organizer and facilitator of the international Freiberg Short Course in Economic Geology (~120–150 participants from academia and industry for one-week training course)
- 03/2011 GESEP (German Scientific Earth Probing Consortium) School 2011, “Preparing research drilling and filing application for funding”, University of Münster, Germany. March 16–17, 2011.
- 12/2010 9<sup>th</sup> Freiberg Short Course in Economic Geology, “Magmatic Ni-Cu-PGE deposits: petrogenesis and exploration”, TU Bergakademie Freiberg, Germany. December 6–10, 2010.
- 04/2010 Short Course on “Seafloor Massive Sulfides”, GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany. April 22–23, 2010.

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#### EDUCATION & OUTREACH ACTIVITIES

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- 08/31/2017 7<sup>th</sup> STEM Camp of the Auerbach High School, Germany. Workshop on “The International Ocean Discovery Program: Science at the open sea – around the clock”. Facilitator and Educator.
- 09/24/2015 5<sup>th</sup> STEM Camp of the Auerbach & Markneukirchen High Schools, Germany. Workshop on “Everything copper: From the mineral to the wire”. Facilitator and Educator.
- 06/20/2015 2<sup>nd</sup> Long Night of Science and Economy, City of Freiberg, TU Bergakademie Freiberg, Department of Mineralogy & Helmholtz Institute Freiberg for Resource Technology, Germany. Facilitator and Educator.
- 05/11/2015 Auerbach High School “Working Group Mineralogy”. Seminar: *Volcanoes: Window to the center of the Earth*.
- 09/24/2014 4<sup>th</sup> STEM Camp of the Auerbach High School, Germany. Workshop on “Hot Springs in the Deep Sea – Producer of commodities and elixir for life”. Facilitator and Educator.



- 09/25/2013 3<sup>rd</sup> STEM Camp of the Auerbach & Radeberg High Schools, Germany. Workshop on “The world of commodities – Discover what’s in your phone”. Facilitator and Educator.
- 09/27/2012 2<sup>nd</sup> STEM Camp of the Auerbach & Radeberg High Schools, Germany. Workshop on “The geological evolution of the Vogtland, western Bohemian Massif, Central European Variscides”. Facilitator and Educator.
- 05/2011 Elementary School “Am Steigerwald”, Erfurt, Germany. Project Week on “Rocks”. Workshop for students on “The Thuringian ancient ocean and its epoch – Erfurt and surrounding area 240 million years ago” (class room activities and field trips). May 23–27, 2011. Mentor and Educator.
- 07/2010 GEOMAR Summer School 2010. STEM Workshop for 10<sup>th</sup>-12<sup>th</sup> grade High School students on “The Formation of Magma below the Sea: Volcanic Glass as window to the heart of Earth”. July 12–16, 2010. Mentor and Educator.
- 2008 – 2011 Several Geoscience Education Talks at Elementary Schools and High Schools in Erfurt, Germany.
- 01/2008 – 12/2008 United Nations International Year of Planet Earth (IYPE) 2008, Martin Luther University Halle-Wittenberg (Germany), Department of Geosciences and Geography. Central IYPE contribution of the MLU within the scope of German IPYE activities; creative director and central coordinator of an academic lecture series.
- 07/06/2007 6<sup>th</sup> Long Night of Sciences, Martin Luther University Halle-Wittenberg (Germany), Department of Geosciences and Geography. Facilitator and Educator.
- 05/09/2007 8<sup>th</sup> Long Night of Museums, Halle/Saale, Germany. Guide at the Museum of Natural History of the Geisel Valley.

#### PROFESSIONAL MEMBERSHIPS

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American Geophysical Union (2013, 2017 – present)  
European Association of Geochemistry (2015 – present)  
German Geological Society (2006 – 2016)

#### LANGUAGES

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German (native speaker), English (fluently), French (basics), Portuguese (basics)