

Dr. Matthias Konrad-Schmolke



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Personal details

<i>Date and place of birth</i>	30. 7. 1970, Heidelberg, Germany
<i>Marital status</i>	Married, two children
<i>Citizenship</i>	German

Education and Professional Experience

1993-1997	Study of Geosciences at the University of Heidelberg, Germany
1998-1999	Diploma Thesis: Petrostructural studies at the Moldanubian/Tepla-Barrandian boundary; Bavarian Forest (Germany) (Prof. Dr. Angelika Kalt and Prof. Dr. Rainer Altherr)
2000-2005	Ph.D. Thesis at the Free University of Berlin: Exhumation Mechanisms of high pressure rocks in the Western Alpine Sesia-Lanzo zone (Prof. Dr. Mark R. Handy)
2001	Parental Leave with my daughter Marlene
2005-2007	Postdoctoral Research Fellow, University of Potsdam
2006	Parental Leave with my son Oskar
2007- 2015	Assistent (Assistant Professor), University of Potsdam
2016 -	Senior lecturer, Earth Science Department, University of Gothenburg

Research Interests

Element cycles and –transport in subduction and collision zones
Fluid migration and element transport mechanisms in the lithosphere
Recrystallisation and reaction mechanisms in rocks and minerals
Correlation of IR remote sensing data with rock forming processes

Current or recent projects

Thermodynamic forward modeling of rock-forming processes

Correlation of thermodynamic forward models with in situ trace element data
Modeling light element isotopes in subduction zone fluids
Ar-isotope investigations of compositionally zoned white mica and amphibole
Modeling fluid-induced trace element compositional zoning patterns in metamorphic minerals
Quantification of element transport processes in metamorphic rocks – simulating garnet porphyroblast growth in a three dimensional composition-space-time system
Paleoclimate Dynamics: Quantifying mass transport utilizing remote sensing techniques

Publications

- Konrad-Schmolke, M.; Handy, M.R.; Babist, J. & O'Brien, P.J. (2005). Thermodynamic modelling of diffusion-controlled garnet growth. *Contributions to Mineralogy and Petrology* 149 (2): 181-195.
- Handy, M.R.; Babist, J.; Wagner, R.; Rosenberg, C. & Konrad-Schmolke, M. (2005). Decoupling and its relation to strain partitioning in continental lithosphere-insight from the Periadriatic Fault system (European Alps). *Geol.Soc.Spec.Publ.*, 243, 249-276.
- Konrad-Schmolke, M., Babist, J., Handy, M.R. & O'Brien, P.J. (2006). The physico-chemical properties of a subducted slab from garnet zonation patterns (Sesia Zone, Western Alps) *Journal of Petrology*, 47, 11, 2123-2148.
- Babist, J., Handy, M.R., Konrad-Schmolke, M. & Hammerschmidt, K. (2006). Precollisional, multistage exhumation of subducted continental crust: The Sesia Zone, western Alps. *Tectonics*, 25, (6): TC6008.
- Konrad-Schmolke, M. (2006). Exhumation Mechanisms of high pressure rocks in the Western Alpine Sesia-Lanzo zone. PhD Thesis at the Freie Universität Berlin.
- Konrad-Schmolke, M., O'Brien, P.J. & Heidelbach, F. (2007). Compositional re-equilibration of garnet: the importance of sub-grain boundaries. *European Journal of Mineralogy*, 19, 4, 431-438.
- Konrad-Schmolke, M., O'Brien, P.J., De Capitani, C. and Carswell, D.A. (2008a). Garnet growth at high- and ultra-high pressure conditions and the effect of element fractionation on mineral modes and composition. *Lithos*, 103, 3-4, 309-332.
- Konrad-Schmolke, M., Zack, T. and O'Brien, P.J. and Jacob, D. (2008b). Major- and rare-earth-element modelling in garnet along eclogite P-T paths, examples from the Western Gneiss Region, Norway. *Earth and Planetary Science Letters*, 272, 488-498.
- Wilke, F.D.H., O'Brien, P.J., Altenberger, U., Konrad-Schmolke, M. and Khan, M.A. (2009). Multi-stage reaction history in different eclogite types from the Pakistan Himalaya and implications for exhumation processes. *Lithos*, doi: 10.1016/j.lithos.2009.07.015
- Konrad-Schmolke, M., O'Brien, P.J. and Zack, T. (2011a). Fluid migration above a subducted slab – Constraints on amount, pathways and major element mobility from partially overprinted eclogite-facies rocks (Sesia Zone, Western Alps), *Journal of Petrology*, DOI: 10.1093/petrology/egq087.
- Konrad-Schmolke, M., Zack, T., O'Brien, P.J. and Barth, M. (2011b). Fluid migration above a subducted slab – Thermodynamic and trace element modeling of fluid-rock interaction in partially overprinted eclogite-facies rocks (Sesia Zone, Western Alps), *Earth and Planetary Science Letters*, 311: 287-298.
- Scott, J.M., Konrad-Schmolke, M., O'Brien, P.J. and Günter, C. (2013). High-T, Low-P

formation of rare olivine-bearing symplectites in Variscan eclogite. *Journal of Petrology*, 54, 1375-1398.

Halama, R., Konrad-Schmolke, M., Sudo, M., Marschall, M.R. and Wiedenbeck, M. (2014). Effects of fluid-rock interaction on $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology in high pressure rocks (Sesia-Lanzo zone, Western Alps). *Geochimica et Cosmochimica Acta*, 126, 475-494.

Konrad-Schmolke, M., and Halama, R. (2014). Combined thermodynamic–geochemical modeling in metamorphic geology: Boron as tracer of fluid–rock interaction. *Lithos*, 208, 393-414.

Halama, R., and Konrad-Schmolke, M. (2015). Retrograde metasomatic effects on phase assemblages in an interlayered blueschist–greenschist sequence (Coastal Cordillera, Chile). *Lithos*, 216, 31-47.

Citations: ISI ~ 280; h-index: 9

Invited talks

University of Bern (2001): „Fault zones in front of an orogenic Indenter“

Universität Heidelberg (2003): „Petrostructural evolution of the HP rocks in the Sesia-Lanzo zone“

University of Potsdam (2004): „Element fractionation effects during garnet growth – implications for subduction zone processes“

University of Potsdam (2006): „Mineral reactions and physico-chemical properties of subducted slabs“

University of Freiburg (2007): „Fully quantifying metamorphic P-T paths: from snapshots to geodynamics“

Woods Hole Oceanographic Institution (2010): “Combining thermodynamic and trace element modelling to constrain element cycles in subduction zones”

University of Münster (2010): “Tracing the fluid-flux above a subducted slab – constraints from thermodynamic and trace element models”.

Karls-University Prague (2011):” Utilising equilibrium thermodynamics to study disequilibrium processes in subduction zones”

Misasa, Japan (2012): “Constraining the effect of fluid-rock interaction on amount and composition of percolating fluids with thermodynamic and trace element models”

European Geoscience Union General Meeting Vienna (2013): “Modeling of boron concentrations and isotopic compositions in subducted slabs and dehydration fluids”

University of Brno (2013): “Constraints on slab dehydration and the global water cycle from combined thermodynamic and trace element modelling”

University of Potsdam (2014): Tectonics, Structural Geology, Crystalline Geology Meeting. “Thermodynamic and trace element modelling – using light elements to constrain fluid fluxes in subduction zones”

University of Gothenburg (2015): “Boron – not boring. Constraints on the amount of water on Earth”.

Metamorphic Studies Group (MSG) Meeting in Leeds (2015): Keynote: “Fluid migration and fluid-rock interaction during metamorphism”.

Goldschmidt Conference 2015, Prague: Keynote: "Fluid migration and fluid-rock interaction in the forearc region of subduction zones".

Miscellaneous

More than 40 reviews for: Contributions to Mineralogy and Petrology, Earth and Planetary Science Letters, European Journal of Mineralogy, GEOLOGY, GSA Bulletin, Gondwana Research, International Journal of Earth Sciences, Journal of Metamorphic Geology, Journal of Petrology, Lithos, Mineralogical Magazine, Mineralogy and Petrology, National Science Foundation, Nature Communications, Schweizerische Mineralogische und Petrologische Mitteilungen, Tectonics, Tectonophysics.

Memberships

AGU – American Geophysical Union

EGU – European Geoscience Union

DMG – Deutsche Mineralogische Gesellschaft