

Ondřej Šrámek

Geophysicist

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Education

Ph.D., Geophysics, December 2007

École Normale Supérieure de Lyon (France) & Charles University in Prague (Czech Republic)

M.Phil., Geophysics, May 2006

Yale University, New Haven, Connecticut (USA)

M.S. equivalent, Geophysics, June 2002

Charles University in Prague (Czech Republic)

B.S. equivalent, Physics, June 2000

Charles University in Prague (Czech Republic)

Professional Experience

Charles University in Prague , Department of Geophysics Assistant Professor (since 2016)	2014–present
University of Maryland , Department of Geology Research Associate	2011–2013
University of Colorado Boulder , Department of Physics Research Associate	2008–2011
Charles University in Prague , Department of Geophysics Postdoctoral Scholar	2008

Research Projects

Estimating electron density along beam lines of neutrino experiments	2015–present
Subsurface nucleonic production of noble gases and heat producing element abundances	2012–present
Using geoneutrinos to constrain the heat budget and thermal evolution of the Earth	2011–2014
Thermal evolution of growing planetesimals and early core formation in terrestrial bodies	2009–2011
Internal dynamics and evolution of Mars: study of long-wavelength convection in Martian mantle and its link to formation of the hemispheric dichotomy and the Tharsis volcanic province	2008–2011
High-pressure mineralogy experiments: solubility of hydrogen at grain boundaries of olivine crystals. Supervised by Shun-ichiro Karato (Yale University)	2006–2007
Application of two-phase model to metal–silicate segregation and planetary core formation Theoretical analysis, 1-D and 2-D numerical modeling	2006–2007

Application of two-phase model to partial melting below mid-ocean ridges: effect of coupling of deformation and phase change on the depth of melting 2004–2006

Thermodynamics and deformation of two-phase media – modification of a theoretical model of Bercovici et al. (2000, Geophys. J. Int.) to include phase change 2002–2004

Incorporation of post-glacial rebound signal into modeling on dynamic geoid 2001–2002

Field/Lab Experience

PLUME Cruise IV – R/V Kilo Moana (University of Hawai'i) May 2007
Assisted in the recovery of ocean bottom seismometers around the Hawaiian Islands

Prof. Karato's Mineral Physics Lab (Yale University) 2006–2007
Prepared samples and performed high-pressure mineralogy experiments

Teaching Experience

Mentoring undergraduate and graduate students 2008, 2011–present
University of Maryland; Charles University in Prague

Teaching Fellow 2005–2006
Yale University, Department of Geology & Geophysics

High-School Physics Teacher, curriculum development and teaching 2001
Gymnasium Františka Palackého, Neratovice (Czech Republic)

Service and Outreach

Physics instruction at Montessori middle school in Kladno (Czech Republic), 2015

Education outreach program participant, University of Colorado Boulder (JILA PFC PISEC), 2011

Started and compiled a **Wikipedia entry** on [Geoneutrinos](#)

Co-convenor of session “Two-phase dynamics of mid-ocean ridges and other systems: theory and observation” at EGU General Assembly 2010

Co-organizer of the “8th European Workshop on Numerical Modeling of Mantle Convection and Lithospheric Dynamics,” Hrubá Skála, Czech Republic, 2003

Reviewer for geoscience journals: Earth and Planetary Science Letters; Geochemistry, Geophysics, Geosystems; Geophysical Journal International; Icarus; Journal of Geophysical Research; Journal of Petrology

Computer Skills

Operating Systems: Unix/Linux, OS X, Windows. Programming, code/web development: Fortran 95/77, C, R, Unix tools and scripting, HTML, CSS. Visualization, presentation, manuscript preparation, applications: GMT, LaTeX, Maple, Matlab, OpenDX, Adobe suite applications, word editing/spreadsheet/presentation software.

Honors and Awards

Charles University in Prague Graduate Fellowship, 2007

Yale University Graduate Fellowship, 2004–2006

Ph.D. Fellowship of the French Government (“Bourse de thèse en cotutelle”), 2002–2004

Charles University in Prague, Czech Republic, graduated with honors, 2002

Publications

14. O. Šrámek, L. Stevens, W. F. McDonough, S. Mukhopadhyay, and J. Peterson: “Subterranean production of neutrons, ^{39}Ar and ^{21}Ne : Rates and uncertainties.” Submitted to *Geochimica et Cosmochimica Acta* ([arXiv:1509.07436](https://arxiv.org/abs/1509.07436)).
13. O. Šrámek, B. Roskovec, S. A. Wipperfurth, Y. Xi, and W. F. McDonough: “Revealing the Earth’s mantle from the tallest mountains using the Jinping Neutrino Experiment.” *Scientific Reports* 6 (2016): Article number 33034, doi:[10.1038/srep33034](https://doi.org/10.1038/srep33034), [pdf](#).
12. S. T. Dye, Y. Huang, V. Lekić, W. F. McDonough, and O. Šrámek: “Geo-neutrinos and Earth models.” *Physics Procedia* 61 (2015): 310–318, doi:[10.1016/j.phpro.2014.12.050](https://doi.org/10.1016/j.phpro.2014.12.050), [pdf](#) ([arXiv:1405.0192](https://arxiv.org/abs/1405.0192)).
11. W. F. McDonough, and O. Šrámek: “Neutrino geoscience, news in brief.” *Environmental Earth Sciences.*, 71, no. 8 (2014): 3787–3791, doi:[10.1007/s12665-014-3133-9](https://doi.org/10.1007/s12665-014-3133-9), [pdf](#).
10. O. Šrámek, W. F. McDonough, E. S. Kite, V. Lekić, S. T. Dye, and S.J. Zhong: “Geophysical and geochemical constraints on geoneutrino fluxes from Earth’s mantle.” *Earth and Planetary Science Letters* 361 (2013): 356–366, doi:[10.1016/j.epsl.2012.11.001](https://doi.org/10.1016/j.epsl.2012.11.001), [pdf](#) ([arXiv:1207.0853](https://arxiv.org/abs/1207.0853)).
9. O. Šrámek, W. F. McDonough, and J. G. Learned: “Geoneutrinos.” *Advances in High Energy Physics* vol. 2012, Special Issue on Neutrino Physics, Article ID 235686, doi:[10.1155/2012/235686](https://doi.org/10.1155/2012/235686), [pdf](#).
8. O. Šrámek, and S.J. Zhong: “Martian crustal dichotomy and Tharsis formation by partial melting coupled to early plume migration.” *Journal of Geophysical Research* 117, no. E1 (2012): E01005, doi:[10.1029/2011JE003867](https://doi.org/10.1029/2011JE003867), [pdf](#).
7. O. Šrámek, L. Milelli, Y. Ricard, and S. Labrosse: “Thermal evolution and differentiation of planetesimals and planetary embryos.” *Icarus* 217, no. 1 (2012): 339–354, doi:[10.1016/j.icarus.2011.11.021](https://doi.org/10.1016/j.icarus.2011.11.021), [pdf](#).
6. M. Ulvrová, N. Coltice, Y. Ricard, S. Labrosse, F. Dubuffet, J. Velínský, and O. Šrámek: “Compositional and thermal equilibration of particles, drops and diapirs in geophysical flows.” *Geochemistry, Geophysics, Geosystems* 12, no. 10 (2011): Q10014, doi:[10.1029/2011GC003757](https://doi.org/10.1029/2011GC003757), [pdf](#).
5. B. M. Hynek, S. J. Robbins, O. Šrámek, and S.J. Zhong: “Geological evidence for a migrating Tharsis plume on early Mars.” *Earth and Planetary Science Letters* 310, no. 3-4 (2011): 327–333, doi:[10.1016/j.epsl.2011.08.020](https://doi.org/10.1016/j.epsl.2011.08.020), [pdf](#).
4. O. Šrámek, and S.J. Zhong: “Long-wavelength stagnant-lid convection with hemispheric variation in lithospheric thickness: link between Martian crustal dichotomy and Tharsis?” *Journal of Geophysical Research* 115 (2010): E09010, doi:[10.1029/2010JE003597](https://doi.org/10.1029/2010JE003597), [pdf](#).
3. O. Šrámek, Y. Ricard, and F. Dubuffet: “A multiphase model of core formation.” *Geophysical Journal International* 181, no. 1 (2010): 198–220, doi:[10.1111/j.1365-246X.2010.04528.x](https://doi.org/10.1111/j.1365-246X.2010.04528.x), [pdf](#).
2. Y. Ricard, O. Šrámek, and F. Dubuffet: “A multi-phase model of runaway core–mantle segregation in planetary embryos.” *Earth and Planetary Science Letters* 284, no. 1-2 (2009): 144–150, doi:[10.1016/j.epsl.2009.04.021](https://doi.org/10.1016/j.epsl.2009.04.021), [pdf](#).
1. O. Šrámek, Y. Ricard and D. Bercovici: “Simultaneous melting and compaction in deformable two-phase media.” *Geophysical Journal International* 168, no. 3 (2007): 964–982, doi:[10.1111/j.1365-246X.2006.03269.x](https://doi.org/10.1111/j.1365-246X.2006.03269.x), [pdf](#).

Invited Talks

“Geoneutrinos – a new tool to study Earth’s interior.” Seminar presented at Institute of Theoretical Physics, Charles University in Prague, on April 12, 2016.

“Modeling Mars’ early internal dynamics.” Talk presented at Nečas seminar on continuum mechanics, Mathematical Institute of the Charles University in Prague, on January 6, 2014.

“Calculating subsurface nucleonic production of noble gas nuclides: Implications on crustal and mantle K, Th, U abundances.” Seminar presented at Department of Geophysics, Charles University in Prague on December 18, 2013.

“Neutrino tomography of Earth's mantle.” Colloquium presented at Department of Earth, Ocean and Atmospheric Sciences, University of British Columbia on October 24, 2013.

“Geoneutrino perspective on Earth's heat budget and mantle structure.” Colloquium presented at Southwest Research Institute in Boulder, Colorado on July 25, 2013.

“Earth models and primordial heat and geoneutrino emission from deep mantle piles.” Talk presented at Neutrino Geoscience 2013, Takayama (Japan), 21–23 March.

“Geoneutrinos and the heat budget of the Earth.” Seminar presented at Department of Geophysics, Charles University in Prague on November 14, 2012.

“Modeling of two-phase flow in geophysics: compaction, differentiation, partial melting, and melt migration.” Talk presented at BIRS workshop “Model reduction in continuum thermodynamics: Modeling, analysis and computation”, Banff, Canada, September 16–21, 2012.

“Thermal Evolution And Core Formation In Planetesimals And Planetary Embryos.” Abstract D141B-04 presented at AGU 2011 Fall Meeting, San Francisco, 5–9 December (with S. Labrosse, Y. Ricard, and L. Milelli).

“Modeling of two-phase flow in geophysics: compaction, differentiation and partial melting.” Talk presented at Nečas seminar on continuum mechanics, Mathematical Institute of the Charles University in Prague, on April 18, 2011.

Other Presentations

Please refer to <http://www.ondrejsramek.net/publications/>

Personal Information

Citizen of the Czech Republic

Fluent in Czech, English, and French; basic knowledge of Spanish

Other interests: music (double bass), mountain trail running

References

Prof. William F. McDonough

University of Maryland, Department of Geology
College Park MD 20742-4211 USA
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Postdoctoral advisor

Prof. Shijie Zhong

University of Colorado Boulder, Department of Physics
390 UCB, Boulder, CO 80309-0390 USA
shijie.zhong@colorado.edu, +1-303-735-5095

Postdoctoral advisor

Dr. Yanick Ricard

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CNRS/ENS Lyon/Université Lyon-1
Bâtiment Géode, 2 rue Raphael Dubois
69622 Villeurbanne Cedex France
ricard@ens-lyon.fr, +33-472-448-413 (Univ), +33-472-728-015 (ENS)

Doctoral thesis advisor