

Curriculum Vitae

Sune Grønlund Nielsen

Date of birth: 01-11-1976

Marital status: single

Nationality: Danish

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EDUCATION

- 2001-2005 **Ph.D. at ETH Zurich, Switzerland**
Thallium isotope variations in terrestrial materials and meteorites. Supervisors: Dr. Mark Rehkämper and Prof. Alex N. Halliday.
- 1999-2001 **M.Sc. at University of Copenhagen, Denmark**
Thesis title: Petrogenetic study of early Archean norite dike, Isua, West Greenland. Supervisors: Dr. Joel Baker, Dr. Eirik Krogstad, Prof. Robert Frei. Classes included physical chemistry, isotope geochemistry, igneous petrology, and mass spectrometry.
- 1996-1999 **B.Sc. at University of Copenhagen, Denmark**
Bachelors project title: Crystal growth mechanisms and petrology of layered mafic intrusions. Classes included mathematics, physics, chemistry, and geology.

PROFESSIONAL EXPERIENCE

- 2011 – present Assistant Scientist at Woods Hole Oceanographic Institution
- 2010 – present Visiting Research scientist Rice University, Houston, USA
- 2008 – present **NERC Research Fellow at University of Oxford, UK**
Project title: Tracking changes in ocean chemistry using thallium isotopes.
- 2006 – 2008 **Departmental Research Fellow in Analytical Geochemistry at Dept. of Earth Science, University of Oxford, UK**
- 2005 – 2006 **Danish Research Council Postdoc. Res. Fellow at Macquarie University, Australia** Project title: Tracing crustal recycling in the mantle and subduction zones via thallium isotope measurements

TEACHING EXPERIENCE

I have supervised four 4th year students at the University of Oxford, including three as principle supervisor. Two completed their degree in 2008 and two in 2009. Three of them received a 1st for their 4th year projects and three of the projects have been written up as papers with the students as co-authors (Nielsen et al. 2009a, in revision and in review).

REVIEWING WORK

I have reviewed manuscripts for the journals: Nature Geoscience, Geology, Earth and Planetary Science Letters, Geochimica Et Cosmochimica Acta, Journal of Analytical Atomic Spectrometry, and Philosophical Transactions of the Royal Society

FUNDING OBTAINED

- 2005 Danish Research Council Postdoctoral Fellowship: Tracing crustal recycling in the mantle and subduction zones via thallium isotope measurements
- 2008 NERC Postdoctoral Fellowship: Tracking changes in ocean chemistry using thallium isotopes
- 2009 Co-PI on Departmental Rolling Grant funded by STFC: Planetary Origins and Development.

PUBLICATIONS

In prep. and submitted

- Nielsen S.G., Peacock C., Wasylenki L., Rehkämper M., Moon E. and Zichen X.:** Thallium isotope fractionation during sorption to manganese oxide, *in prep*
- Nielsen S.G., Goff M., Hesselbo S.P., Jenkyns H.C., LaRowe D.E. and Lee C.T.A.:** Thallium isotope evidence for variable oxygenation of seawater during the Toarcian Oceanic Anoxic Event, *Geochim. Cosmochim. Acta*, *In review*
- Nielsen S.G., Gannoun A., Marnham C., Burton K.W., Halliday A.N. and Hein J.R.:** New age for ferromanganese crust 109D-C and implications for isotopic records of lead, neodymium, hafnium, and thallium in the Pliocene Indian Ocean *Paleoceanography*, *In Revision*

Published and In Press

- Nielsen S.G., Prytulak J. and Halliday A.N.:** Determination of high precision $^{51}\text{V}/^{50}\text{V}$ isotope ratios by MC-ICPMS, Part 1: Chemical separation of vanadium and mass spectrometric protocols *Geostandards Newsletter*, *In Press*
- Prytulak J., **Nielsen S.G.** and Halliday A.N.: Determination of high precision $^{51}\text{V}/^{50}\text{V}$ isotope ratios by MC-ICPMS, Part 2: Verification of precision and accuracy for standard reference materials *Geostandards Newsletter*, *In Press*
- Nielsen S.G. and Rehkämper M.:** Thallium isotopes and their application to problems in earth and environmental science, *Handbook of Environmental Isotope Geochemistry*, *In Press*
- Nielsen S.G. (2010):** Potassium and Uranium in the upper mantle controlled by Archean ocean crust recycling *Geology*, *38 (8)*, 683-686
- Horner T., Schönbächler M., Rehkämper M., **Nielsen S.G.**, Williams H.M., Halliday A.N., Xue Z., Hein J.R. (2010): Ferromanganese crusts as archives of deep-water Cd isotope compositions *GSG*, *11 (4)*, Q04001
- Nielsen S.G.**, Williams H.M., Griffin W.L., O'Reilly S.Y., Pearson N. and Viljoen K.S. (2009b): Thallium isotopes as a potential tracer for the origin of cratonic eclogites *Geochim. Cosmochim. Acta* *73*, 7387-7398
- Baker R.G.A., Rehkämper M., Hinkley T.K., **Nielsen S.G.**, Toutain J.P. (2009): Investigation of thallium fluxes from subaerial volcanism – Implications for the present and past mass balance of thallium in the oceans *Geochim. Cosmochim. Acta* *73*, 6340-6359
- Williams H.M., **Nielsen S.G.**, Renac C., Griffin W.L., O'Reilly S.Y., McCammon C.A., Pearson N., Alt J.C. and Halliday A.N. (2009): Fractionation of oxygen and iron isotopes in the mantle: implications for crustal recycling and the source regions of oceanic basalts *Earth Planet. Sci. Lett.* *283*, 156-166
- Nielsen S.G.**, Mar-Gerrison S., Gannoun A., LaRowe D., Klemm V., Halliday A.N., Burton K.W. and Hein J.R. (2009a): Thallium Isotope Evidence for Increased Marine Organic Carbon Export in the Early Eocene *Earth Planet. Sci. Lett.* *278*, 297-307
- Wood B.J., **Nielsen S.G.**, Rehkämper M. and Halliday A.N. (2008): The effects of core formation on the Pb- and Tl-isotopic composition of the silicate Earth *Earth Planet. Sci. Lett.* *269*, 325-335
- Nielsen S.G.**, Rehkämper M., Brandon A.D., Norman M.D., Turner S. and O'Reilly S.Y. (2007): Thallium isotopes in Iceland and Azores lavas - Implications for the role of altered crust and mantle geochemistry *Earth Planet. Sci. Lett.* *264*, 332-345
- Nielsen S.G.**, Rehkämper M., Teagle D.A.H., Butterfield D.A., Alt J.C. and Halliday A.N. (2006c): Hydrothermal fluid fluxes calculated from the isotopic mass balance of thallium in the ocean crust *Earth Planet. Sci. Lett.* *251 (1-2)*: 120-133
- Nielsen S.G.**, Rehkämper M., and Halliday A.N. (2006b): Large thallium isotopic variations in iron meteorites and evidence for lead-205 in the early solar system *Geochim. Cosmochim. Acta* *70*: 2643-2657
- Nielsen S.G.**, Rehkämper M., Norman M.D. and Halliday A.N. (2006a): Thallium isotopic evidence for ferromanganese sediments in the mantle source of Hawaiian basalts. *Nature*, *439*, 314-317
- Nielsen S.G.**, Rehkämper M., Porcelli D., Andersson P., Halliday A.N., Swarzenski P., Laskowski C., and Günther D. (2005): The thallium isotope composition of the upper continental crust and rivers – An investigation of the continental sources of dissolved marine thallium. *Geochim. Cosmochim. Acta* *69*, 2007-2019
- Nielsen S.G.**, Rehkämper M., Baker J.A., and Halliday A.N. (2004): The precise and accurate determination of thallium isotope compositions and concentrations for water samples by MC-ICPMS. *Chem. Geol.*, *204*, 109-124
- Rehkämper M. and **Nielsen S.G.** (2004): The mass balance of dissolved thallium in the oceans. *Mar. Chem.*, *85*, 125-139
- Nielsen S.G.** and Baker J.A. (2004): Reply to comment by Stefan Bernstein on "Petrogenesis of an early archaean (3.4 Ga) norite dyke, Isua, West Greenland: evidence for early Archean crustal recycling?" *Precam. Res.*, *128*, 195-196

Nielsen S.G., Baker J.A., and Krogstad E.J. (2002): Petrogenesis of an early Archaean (3.4 Ga) norite dyke, Isua, West Greenland: evidence for early Archaean crustal recycling? *Precam. Res.*, *118*, 133-148

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