

PERSONAL DETAILS

Surname:	Asael	First name:	Dan
Affiliation:	Department of Geology and Geophysics, Yale University, Kline Geology Lab, 210 Whitney Avenue, PO Box 208109, New Haven, CT 06520		
Position:	Associate Research Scientist		
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EDUCATION

The Hebrew University of Jerusalem, Jerusalem, Israel

Ph.D. degree in Geology	2010
Research thesis: Copper stable isotope fractionation in low-temperature geological systems	
Supervisors: Prof. Alan Matthews and Dr. Miryam Bar-Matthews. In cooperation with the Geological Survey of Israel, Jerusalem.	
M.Sc. degree in Geology at the Faculty of Sciences	2005
B.Sc. degree in Geology and Atmospheric Sciences	2002

TEACHING EXPERIENCE

The Hebrew University of Jerusalem, Jerusalem, Israel

Teaching assistant – Introduction to Geology for Geography students (Prof. Oded Navon; Dr. Hagai Ron)	2003-4
Teaching assistant – Introduction to Geology for Agriculture students (Prof. Boaz Luz; Dr. Ronit Kessel)	2005-7
Teaching assistant – Geological Mapping A' for Geology students (Prof. Amotz Agnon)	2007
Teaching assistant – Geological Mapping B' for Geology students (Dr. Ari Matmon)	2006
Teaching assistant – Dynamic Earth (Introduction to Geology for Geology students) (Dr. Ari Matmon)	2007-8
Teaching assistant – The Geology of the Negev Desert Field trip for Geology students (Dr. Ari Matmon)	2008-9

POSITIONS IN ACADEMIC INSTITUTES

Student technician at the Geological Survey of Israel	2001-2
Working mainly on the dating of carbonates using ^{230}Th - ^{238}U method under the supervision of Dr. Miryam Bar-Matthews.	
Research assistant	2002-3
Working on a computer program analyzing the results of a numerical model dealing with atmospheric waves under the supervision of Prof. Nathan Paldor of the Atmospheric Sciences Department, The Hebrew University of Jerusalem.	

POST-DOC ACTIVITY**Postdoctoral research scientist at the Institut Universitaire Européen de la Mer, Université de Bretagne Occidentale, Brest, France 2010-2012**

Studying Black Shales from key geological units for Fe and Mo isotopes and major/trace elements. The goal is to document the sequence of environmental changes associated with and pursuant to the Great Oxidation Event. Studied geological units include the ca. 2.1 Ga Ludikovian Series (Russia) and Sengoma Argillite Fm. (Botswana); ca. 2.32 Ga Timeball Hill Fm. (South Africa); ca. 2.5 Ga Mount McRae shale (Western Australia) and Gamohaam Fm. (South Africa); 2.63 Ga Jeerinah Fm. (Western Australia); and ca. 2.7 Ga Manjeri Fm. (Zimbabwe).
Participating in a multi-isotope study of seafloor hydrothermal fluids and mineralization from the Back-arc Manus Basin hydrothermal system. Addressing the processes leading to the fractionation of metal isotopes in hydrothermal systems.

MC-ICP-MS lab manager at the Laboratoire Géochimie et Métallogénie at the French Research Institute for Exploitation of the Sea (IFREMER), Brest, France 2012-2013

Operating the MC-ICP-MS machine under various projects and measuring large variety of isotopic systems (e.g., Si, Fe, Ni, Cu, Mo, Nd, Sm and Pb). The work included collaboration with different scientists from IFREMER and from other research institutes and universities. Development and calibration of isotopic measurements by laser ablation MC-ICP-MS methods. Guiding students in all aspects of clean lab work and isotopic measurements.

Postdoctoral research scientist at the Geology department of the University of Liège, Belgium 2013-2014

Studying Mo isotopes (and possibly other metallic isotope systems) of Mesoproterozoic - Neoproterozoic sediments from the Mbuji-Mayi Supergroup of Congo. The ca. 1300 – 800 Ma Mbuji-Mayi Supergroup is associated with great climatic and biological changes also linked to the assembly (~ 1000 Ma) and break-up (~ 850 Ma) of Rodinia. In this project I attempt to reconstruct the paleo-redox conditions of the ocean and atmosphere during this time window using isotopic compositions of metallic elements. Other aspects of this project include the study of microfossils, carbon and oxygen isotopes and TOC.

HONORS

Student fellowship for visiting the University of Chicago. Working experience in the laboratories of Prof. Robert N. Clayton and Dr. Munir Humayun.	2002
Award for teaching assistant excellence, The Hebrew University of Jerusalem.	2005, 2008
EGU/GMPV Young Scientist Outstanding Poster Presentation (YSOPP) Award, The European Geosciences Union General Assembly, Vienna, Austria.	2008
Goldschmidt Conference travel grant, Vancouver, Canada.	2008

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Geochemical Society

PUBLICATIONS AND PAPERS

Papers

- Asael, D., Matthews, A., Bar-Matthews, M. and Halicz, L., 2007. Copper isotope fractionation in sedimentary copper mineralization (Timna Valley, Israel). *Chemical Geology*, 243(3-4): 238-254.
- Asael, D., Matthews, A., Oszczepalski, S., Bar-Matthews, M. and Halicz, L., 2009. Fluid speciation controls of low temperature copper isotope fractionation applied to the Kupferschiefer and Timna ore deposits. *Chemical Geology*, 262(3-4): 147-158.
- Pękala, M., Asael, D., Butler, I.B., Matthews, A. and Rickard, D., 2011. Experimental study of Cu isotope fractionation during the reaction of aqueous Cu(II) with Fe(II) sulphides at temperatures between 40 and 200°C. *Chemical Geology*, 289(1-2): 31-38.
- Asael, D., Matthews, A., Bar-Matthews, M., Harlavan, Y. and Segal, I., 2012. Tracking redox controls and sources of sedimentary mineralization using copper and lead isotopes. *Chemical Geology*, 310-311: 23-35. doi:10.1016/j.chemgeo.2012.03.021.
- Reinhard, C.T., Lyons, T.W., Rouxel, O., Asael, D., Dauphas, N., and Kump, L.R. 2013. Iron speciation and isotope perspectives on Paleoproterozoic water column chemistry. *Reading the Archive of Earth's Oxygenation: Initial Report of the Fennoscandian Arctic Russia - Drilling Early Earth Project (FAR-DEEP)*.
- Tissot, F., Dauphas, N., Reinhard, C. T., Lyons T.W., Asael, D. and Rouxel, O. Mo and U Geochemistry and Isotopes, In Melezhik, V.A., Fallick, A.E., Kump, L., Lepland, A., Prave, A.R., and Strauss, H. (eds.), *Reading the Archive of Earth's Oxygenation: Initial Report of the Fennoscandian Arctic Russia - Drilling Early Earth Project (FAR-DEEP)*.
- Asael, D., Tissot, F.L.H., Reinhard, C.T., Rouxel, O., Dauphas, N., Lyons, T.W., Ponzevera, E., Liorzou, C. and Chéron, S., 2013. Coupled molybdenum, iron and uranium stable isotopes as oceanic paleoredox proxies during the Paleoproterozoic Shunga Event. *Chemical Geology*, in press.
- Dekov, V.M., Bindi, L., Burgaud, G., Petersen, S., Asael, D., Rédou, V., Fouquet, Y. and Pracejus, B., 2013. Inorganic and biogenic As-sulfide precipitation at seafloor hydrothermal fields. *Marine Geology*, 342: 28–38.
- Dekov, V.M., Rouxel, O., Asael, D., Hålenius, U. and Munnik, F., 2013. Native Cu from the oceanic crust: Isotopic insights into native metal origin. *Chemical Geology*, 359: 136–149.
- Canfield, D.E., Ngombi-Pemba, L., Hammarlund, E.U., Bengtson, S., Chaussidon, M., Gauthier-Lafaye, F., Meunier, A., Riboulleau, A., Rollion-Bard, C., Rouxel, O., Asael, D., Pierson-Wickmann, A.-C. and El Albani, A., 2013. Oxygen dynamics in the aftermath of the Great Oxidation of Earth's atmosphere. *Proc. Natl. Acad. Sci. U. S. A.*, 110: 16736–41.
- Planavsky, N.J., Asael, D., Hofmann, A., Reinhard, C.T., Lalonde, S.V., Knudsen, A., Wang, X., Ossa Ossa, F., Pecoits, E., Smith, A.J. B., Beukes, N.J., Bekker, A., Johnson, T.M., Konhauser, K.O., Lyons, T.W. and Rouxel, O.J., 2014. Evidence for oxygenic photosynthesis half a billion years before the Great Oxidation Event. *Nature Geoscience*, 7: 283–286.

Submitted

- Harlavan, Y., Matthews, A., Bar-Matthews, M., Asael, D., Segal, I., Tepylakov, N. and Halicz, L. Lead and strontium isotopic fractionation during sedimentary manganese and copper mineralization in the Timna Valley, Israel.
- Segal, I., Bar-Matthews, M., Matthews, A., Harlavan, Y. and Asael, D. Provenance of ancient metallurgical artifacts: Implications of new Pb isotope data from Timna ores.

In Preparation

- Asael, D., Rouxel, O., Bekker, A., Scott, C.T. and Poulton, S. The rise and fall of Earth's surface free oxygen during the early Paleoproterozoic.
- Asael, D., Rouxel, O., Bekker, A. and Scott, C.T. Fe isotope systematics of the 2.63 Jeerinah Formation.
- Asael, D., Lalonde, S. and Rouxel, O. Can Mo isotopes be used as a paleoredox proxy of the late Archean ocean? A case study from the 2.63 Ga Jeerinah Formation.
- Dekov, V.M., Rouxel, O., Asael, D. and Tivey, M.K. Cu-isotope systematics of seafloor hydrothermal systems in Manus back-arc basin.
- Dekov, V.M., Rouxel, O., Asael, D. and Tivey, M.K. Cu-isotope variability in a seafloor hydrothermal system affected by a volcanic eruption (East Pacific Rise 9°50' N).

Dekov, V.M., Rouxel, O., Bindi, L., Asael, D., Fouquet, Y., Etoubleau, J. and Munnik, F. Enargite black smokers in Manus Back-Arc Basin: Some constraints on precipitation at high sulfidation.

Conference Presentations

- Asael, D., Matthews, A., Ehrlich, S., Bar-Matthews, M. and Harlavan, Y., 2004. Copper, oxygen and carbon stable-isotope fractionation among the copper-bearing minerals of the Timna Valley, southern Israel, Israel Geological Society, Annual Meeting, Kibbutz HaGoshrim, Israel.
- Asael, D. et al., 2005. Redox fractionation of copper isotopes in sedimentary conditions, 15th Annual V M Goldschmidt Conference. Pergamon-Elsevier Science Ltd, Moscow, ID, pp. A216-A216.
- Asael, D. et al., 2006. (CU)-C-65/(CU)-C-63 fractionation during copper sulphide formation from iron sulphides in aqueous solution, 16th Annual V M Goldschmidt Conference. Pergamon-Elsevier Science Ltd, Melbourne, Australia, pp. A23-A23.
- Asael, D. et al., 2006. Redox fractionation of copper isotopes in sedimentary conditions (Timna valley area, southern Israel), Israel Geological Society, Annual Meeting, Beit She'an, Israel.
- Asael, D. et al., 2007. Origin, mobilization and depositional processes of copper in the Timna area: evidence from copper, strontium and lead isotope ratios, Israel Geological Society, Annual Meeting, Dead Sea, Israel.
- Asael, D., Matthews, A., Bar-Matthews, M. and Halicz, L., 2007. Copper isotope fractionation in sedimentary copper mineralization, EGU General Assembly, Vienna, Austria.
- Asael, D., Matthews, A., Oszczepalski, S., Bar-Matthews, M. and Halicz, L., 2007. Fluid speciation controls of low-temperature copper isotope fractionation, AGU, San Francisco, CA.
- Asael, D., Matthews, A., Bar-Matthews, M., Halicz, L. and Oszczepalski, S., 2008. Fluid speciation controls of low-temperature copper isotope fractionation, EGU General Assembly, Vienna, Austria.
- Asael, D., Matthews, A., Bar-Matthews, M. and Segal, I., 2008. Copper and lead isotopes as tracers of copper redox cycling, 18th Annual V M Goldschmidt Conference. Pergamon-Elsevier Science Ltd, Vancouver, Canada, pp. A34-A34.
- Asael, D., 2009. Fluid speciation controls of redox-sensitive non-traditional stable isotope systems, EGU General Assembly, Vienna, Austria.
- Asael, D., Matthews, A., Bar-Matthews, M., Segal, I. and Harlavan, Y., 2010. Copper and lead isotope study of sedimentary copper and manganese mineralization, EGU General Assembly, Vienna, Austria.
- Asael, D., Rouxel, O., Reinhard, C., Lyons, T.W. and Kump, L., 2011. Molybdenum isotopes as oceanic paleoredox proxy of the Paleoproterozoic Shunga event. 21st Annual V M Goldschmidt Conference. Pergamon-Elsevier Science Ltd, Prague, Czech Republic.
- Asael, D., Rouxel, O.J., Bekker, A. and Scott, C.T., 2012. Large Mo isotope variations before the Great Oxidation Event. 22nd Annual V M Goldschmidt Conference. Pergamon-Elsevier Science Ltd, Montreal, Canada.
- Hardisty, D.S., Riedinger, N., Gill, B.C., Johnston, D.T., Reinhard, C.T., Planavsky, N., Asael, D. and Lyons, T.W., 2012. New insights from FOAM: iron and trace metal cycling in highly sulfidic pore waters beneath an oxic water column. 22nd Annual V M Goldschmidt Conference. Pergamon-Elsevier Science Ltd, Montreal, Canada.

FURTHER INFORMATION

Languages

English and Hebrew.

Computer skills

Microsoft Office suite, MATLAB, Geochemist's Workbench, Inkscape, GIMP.