

CURRICULUM VITAE

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EDUCATION

Ph.D. Planetary Sciences, 1996; minor in Geosciences; University of Arizona, Tucson, Arizona. Thesis title: Chemical Studies of Enstatite Chondrites

M.S. Earth and Space Sciences, 1988; State University of New York at Stony Brook, Stony Brook, New York. Thesis title: Major Element Variations in L- and H-Group Ordinary Chondrites

B.S. Geophysics, 1982; University of Minnesota, Institute of Technology, Minneapolis, Minnesota.

RESEARCH AND TEACHING EXPERIENCE

- 2004-present **Research Assistant Professor**, Department of Geology, Portland State University, Portland, OR. Research focus: meteorites. Courses taught: Astrogeology G456/556, Life in the Universe G345U (which I initiated and developed), and Exploring Mars (an on-line course which I initiated and developed).
- 1996-present **Full-time faculty**, Portland Community College, Portland, OR. Courses taught: Physical Geology G201/202, Historical Geology G203, Introductory Astronomy Phy 121/122/123, Geology of the Pacific Northwest G207, Volcanoes G208, Earthquakes G209, Field Trip Classes to Oregon Coast G160 and Malheur G161. Served as Subject Area Committee (SAC) Chair since 1999, Initiated and developed G209, G160 and G161.
- 2003-2004 **Sabbatical** from Portland Community College at Portland State University studying silicate inclusions in two iron meteorites using SEM and electromicroprobe. Studied relict olivine grains in type 3 ordinary chondrites using SEM. Helped create the Cascadia Meteorite Laboratory at Portland State University.
- 2001-2003 **Instructor** at Portland State University. Courses taught: Life in the Universe G345U, Physical Geology G201/202.
- 1992-1996 **Associate Faculty**, Pima Community College, Tucson AZ. Courses taught: Introductory Astronomy AST 101/102 and Life in the Universe AST 105 (which I initiated and co-developed). Received adjunct faculty award for teaching excellence in 1995.
- 1985-1996 **Graduate Research Assistant** (1985-1988) and **Graduate Research**

- Associate** (1988-1996), Department of Planetary Sciences, University of Arizona. Advisor: John S. Lewis. Examined major element variations in enstatite chondrites. Experience using SEM and electron microprobe. Coursework in igneous and metamorphic petrology, cosmochemistry, geochemistry, organic geochemistry, planetary physics, planetary surfaces, planetary atmospheres.
- 1994-1996 **Teaching Assistant**, Department of Planetary Sciences, University of Arizona, teaching PTYS 106 (Solar System laboratory), substitute lecture and grading for PTYS 107 (Earth as a Habitable Planet) and PTYS 105a (Humanity and the Universe).
- Fall 1981 **Undergraduate Research Assistant**, Geology Department, University of Minnesota. Advisor: Clement Chase. Seismic study of subduction zones.
- Summer 1980 **NASA Planetary Geology Undergraduate Research Fellow**, Air and Space Museum, Smithsonian. Advisor: Robert Wolfe. Digital analysis of the non-circularity of martian impact craters.

OTHER PROFESSIONAL ACTIVITIES

- 2003-present **Curator of meteorite collection**, Cascadia Meteorite Laboratory, Portland State University.
- 2001-2008 **Board Member**, Sigma-Xi, Columbia-Willamette chapter.
- 1999-2000 **Primary organizer**, Northwest Sectional Meeting of the National Association of Geoscience Teachers (NAGT), held at Portland Community College, June 22-25, 2000.

GRANTS AND AWARDS

- 2010 Co-I on NASA Grant for "Meteorites on the road II: Expanding NASA outreach to the Pacific Northwest."
- 2010 Collaborator on NASA Grant for "Shock histories of chondrites as revealed by combined microstructural (TEM), petrographic, and X-ray microtomography (μ CT) analysis."
- 2009 Collaborator on NASA Grant for "Constraints on solar-system processes from geochemical studies of asteroidal and nebular materials".
- 2009 Recipient of Academic Innovation Mini (AIM) Grant for "Design or Retool a Web-Enhanced Course: A Comprehensive Approach".
- 2006 Co-I on NASA Grant for "Meteorites on the road: Taking meteorite science to rural communities".
- 2006 Co-I on NASA Grant for "Evolution of primordial matter: aggregational olivine inclusions in carbonaceous and ordinary chondrites"..
- 2003 Co-I on NASA Grant for "Public outreach and education with meteorites involving a museum exhibit, website, and teacher workshops".
- 1995 Recipient of Adjunct Faculty Award for Teaching Excellence at Pima Community College, Tucson AZ.
- 1991 Recipient of Travel Awards from the Barringer Crater Company and the

- 1991 Meteoritical Society, to attend and present a paper at the 54th meetings of the Meteoritical Society.
- 1991 and 1989 Recipient of Travel Awards from the NATO/NSF Advanced Studies Institute (ASI) to participate in Chemistry in Space short courses on the "Chemistry of life's origins", and the "Origin and chemistry of the interstellar medium", in Erice, Italy.
- 1986-1988 Graduate Student Scholarship, University of Arizona.
- 1980 NASA Planetary Geology Undergraduate Research Fellow.

BIBLIOGRAPHY—PEER-REVIEWED MANUSCRIPTS

- Macke, R.J., G.J. Consolmagno, D.T. Britt, and M.L. Hutson (2010) Enstatite chondrite density, magnetic susceptibility and porosity. *Meteoritics & Planetary Science* (in press).
- Ruzicka, A. and **M. Hutson** (2010) Comparative petrology of silicates in the Udei Station (IAB) and Miles (IIE) iron meteorites: Implications for the origin of silicate-bearing irons. *Geochim. Cosmochim. Acta* **74**, 394-433.
- Ruzicka A., C. Floss, and **M. Hutson** (2008) Relict olivine grains, chondrule recycling, and implications for the chemical, thermal, and mechanical processing of nebular materials. *Geochimica et Cosmochimica Acta* **72**, 5530-5557.
- Hutson M.**, A. Ruzicka, R. Pugh, L. Sloan, and E. Thompson (2007) Complex brecciation and shock effects in the Buck Mountain Wash (H3-5) chondrite. *Meteoritics & Planetary Science* **42**, 963-978.
- Ruzicka A., H. Hiyagon, **M. Hutson**, and C. Floss (2007) Relict olivine, chondrule recycling, and the evolution of nebular oxygen reservoirs, *Earth and Planetary Science Letters* **257**, 274-289.
- Ruzicka A. and **M. Hutson** (2006) Differentiation and evolution of the IVA meteorite parent body: Clues from pyroxene geochemistry in the Steinbach stony-iron, *Meteoritics & Planetary Science* **41**, 1959-1987.
- Ruzicka A., **M. Hutson**, and C. Floss (2006) Petrology of silicate inclusions in the Sombrete ungrouped iron meteorite: Implications for the origins of IIE-type silicate-bearing irons. *Meteoritics & Planetary Science* **41**, 1797-1831.
- Hutson M.** and A. Ruzicka (2000) A multi-step model for the origin of E3 (enstatite) chondrites. *Meteoritics & Planetary Science*. **35**, 601-608.
- Lingner, D.W., T.J. Huston, **M. Hutson** and M.E. Lipschutz (1987) Chemical Studies of H chondrites: I. Mobile trace elements and gas retention ages *Geochimica et Cosmochimica Acta* **51**, 727-739.

BIBLIOGRAPHY—OTHER MANUSCRIPTS, CHAPTERS, AND BOOKS

- Hutson M.** (2008) Do angrites come from Mercury? *Meteorite*, May 2008, Vol. 14, No. 2, 7-11.
- Hutson M.** (2006) What does it take to classify a meteorite? *Meteorite*, August 2006, Vol. 12, No. 3, 29-31.
- Ruzicka A. and **M. Hutson** (2005) Portales Valley: Not just another ordinary chondrite. On-line publication by the University of Hawaii's Planetary Science Research Discoveries (PSRD) program at <http://www.psrdd.hawaii.edu/Sept05/PortalesValley.html>
- Pugh R., A. Ruzicka, **M. Hutson**, and B. Schmeer (2004) Eyewitness reports for the June 3,

- 2004 Pacific Northwest Fireball. On-line publication by the “June 3, 2004 Fireball project” at <http://astrowww.phys.uvic.ca/~tatum/fireball/>
- Mechler G., **M. Hutson**, and R. Marcialis (1995) The Sun and Moon, an Audubon Society Pocket guide, New York: Alfred A. Knopf.
- Mechler G., S. Croft, **M. Hutson**, and R. Marcialis (1995) Planets and their Moons, an Audubon Society Pocket guide, New York: Alfred A. Knopf
- Lewis, J.S. and **M.L. Hutson** (1993) Asteroidal Resource Opportunities Suggested by Meteorite Data. In J. Lewis, M.S. Matthews, and M.L. Guerriera (eds), Resources of Near-Earth Space, Univ. of Arizona Press, 523-542.
- Lewis, J.S. and **M.L. Hutson** (1991) Chemistry of the Solar Nebula. In J.M. Greenberg and V. Pirronello (eds), Chemistry in Space, Kluwer Academic Publishers, 321-338.

BIBLIOGRAPHY--ABSTRACTS

- Ruzicka A., **M. Hutson**, and S.A. Kissin (2010) Classification of four new irons, including common (IIAB) and uncommon (IIIF, unusual IAB) types. *73rd Annual Meeting of the Meteoritical Society*, Abstract #5330.
- Ruzicka A., C. Floss, and **M. Hutson** (2010) Accretion and melting of dust to form ferroan chondrules in ordinary chondrites. *Lunar Planet. Sci. XXXXI*, Abstract #1956. Lunar and Planetary Institute.
- Hutson M.L.** and A.M. Ruzicka (2010) Jungo 001, Jungo 002, Jungo 003, and Big Horn Mountains: Four new chondrites from Nevada and Arizona which contain a variety of unusual petrographic features. *Lunar Planet. Sci. XXXXI*, Abstract #1878. Lunar and Planetary Institute.
- Macke R.J., **M.L. Hutson**, D.T. Britt, and G.T. Consolmagno (2009) EH and EL enstatite chondrite physical properties: No difference in iron content. *Meteoritics & Planetary Science* **44**, Abstract #5047.
- Hildebrand A.R., E.P. Milley, P.G. Brown, P.J. McCausland, W.M. Edwards, M. Beech, A. Ling, G. Sarty, M. Paulson, L.A. Maillet, S.F. Jones, M.R. Stauffer, **M.L. Hutson**, and A.M. Ruzicka (2009) A bright multiple fragmentation fireball and meteorite fall at Buzzard Coulee, Saskatchewan, Canada, November 20, 2008. *EOS Trans. AGU*, **90(22)**, Jt. Assem. Suppl., Abstract MA12A-01.
- Hutson, M. L.**, A. M. Ruzicka, E. P. Milley and A. R. Hildebrand (2009) A first look at the petrography of the Buzzard Coulee (H4) chondrite, a recently observed fall from Saskatchewan. *Lunar Planet Sci. XL*, Abstract #1893, Lunar and Planetary Institute.
- Hutson, M. L.**, R. Hugo, A. M. Ruzicka, and A. R. Rubin (2009) Olivine microstructures in the Miller Range 99301 (LL6) ordinary chondrite. *Lunar Planet Sci. XL*, Abstract #1081, Lunar and Planetary Institute.
- Ruzicka A., C. Floss, and **M. Hutson** (2008) Amoeboid olivine aggregates (AOAs) in the Efremovka (CV_R) chondrite: First SIMS trace-element results. *Lunar Planet Sci. XXXIX*, Abstract #1764, Lunar and Planetary Institute.
- Hutson, M. L.** and A. Ruzicka (2007) The case against Mercury as the angrite parent body. *Meteoritics & Planetary Science* **42**, Abstract #5238.
- Hutson, M.**, R. Hugo, A. Ruzicka, and M. Killgore (2007) Annealing after shock: Evidence from olivine microstructures in Portales Valley. *Meteoritics & Planetary Science* **42**, Abstract #5072.

- Ruzicka A. and **M. Hutson** (2006) NWA 2999 and other angrites: No compelling evidence for a mercurian origin. *Meteoritics & Planetary Science* **41**, Abstract #5080.
- Ruzicka, A., C. Floss and **M. Hutson** (2006) Trace-element compositions of normal, dusty, and clear olivine in Chainpur chondrules. *Meteoritics & Planetary Science* **41**, Abstract #5266.
- Hutson, M.L.**, R.N. Pugh and A.M. Ruzicka (2006) Public outreach and education with meteorites involving a museum exhibit, website, and teacher workshops. Submitted to *Lunar Planet. Sci. XXXVII*, Abstract #1095, Lunar and Planetary Institute.
- Ruzicka, A. and **M. Hutson** (2005) Geochemical constraints for the origin of the Steinbach (IVA) stony iron meteorite. *Meteoritics & Planetary Science*, **40**, A133 (Abstract #5279).
- Ruzicka, A. and **M. Hutson** (2005) Filter-press differentiation: A newly-recognized fractionation mechanism for silicate inclusions in Sombrerete and possibly in other iron meteorites. *Lunar Planet. Sci. XXXVI*, Abstract #1169, Lunar and Planetary Institute (CD-ROM).
- Ruzicka, A. and **M. Hutson** (2003) Evidence for silicate liquid immiscibility within silicate inclusions during rapid cooling of the Sombrerete (Ungrouped) iron meteorite. *Meteoritics & Planetary Science*, **38**, A129.
- Hutson, M.** and A. Ruzicka (1999) A simple three-step model for the origin of the enstatite chondrites. *Antarctic Meteorites XXIV*, pp. 40-42.
- Cyr, K.E., **M.L. Hutson**, and J.I. Lunine (1998) Effect of revised nebular water distribution on enstatite chondrite formation. In M.E. Zolensky, A.N. Krot and E.R.D. Scott (eds), Workshop on Parent-Body and Nebular Modification of Chondritic Materials. LPI Tech. Rpt. 97-02, Part 1, Houston: Lunar and Planetary Institute, 12-13.
- Hutson, M.L.** (1991) Na-Cr sulfide phases in the Indarch (EH4) chondrite. *Meteoritics* **26**, 349-350.
- Hutson, M.L.** and J.S. Lewis (1991) Enstatite chondrites and achondrites as asteroidal resources. In the abstracts for the second annual UA/NASA SERC symposium, *Resources of Near-Earth Space*, **21**.
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- Hutson, M.L.** (1987) A closer look at the significance of chemical variations in enstatite chondrites. *Lunar Planet. Sci. XVIII*, 449-450.
- Hutson, M.** (1986) A search for chemical clusters in H- and L-chondrites. *Meteoritics* **21**, 404-405.
- Wolfe, R.W. and **M.L. Hutson** (1980) Noncircularity of martian impact craters: Clues to hidden structures. Reports of Plan. Geol. Program, NASA Tech. Me. 82385, 164-166.

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- Hutson, M.** (2008) Formation & Evolution of the Earth/Solar System. Oregon teachers scholars lecture series on Our Cosmic History.
- Hutson, M.** (2000) Enhance teaching using the internet: Integrating web resources into instruction, League for Innovation in the Community College 2000 conference on Information Technology.

PROFESSIONAL ORGANIZATIONS

Member of the National Association of Geoscience Teachers (NAGT), Sigma Xi.