

VITAE

James N. Connelly

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Citizenship: Canadian

Areas of Specialization

- Conventional U-Pb Geochronology
- Isotope Geology
- Laser Ablation – ICP-MS
- Precambrian Geology
- Structure/Tectonics

Education

Ph.D. Memorial University of Newfoundland, St. John's, Newfoundland, Canada, 1988-1991

M.Sc. Geology, Queen's University, Kingston, Ontario, Canada, 1983-1986

B.Sc. Honours, Geology, Carleton University, Ottawa, Ontario, Canada, 1979-1983

Recent Professional Experience

1999-present	Associate Professor, The University of Texas at Austin
1994- 1999	Assistant Professor, The University of Texas at Austin
1991-1993	Post-doctoral Research Fellow, Memorial University of Newfoundland
1986-1987	Project Geologist, Newfoundland Department of Mines and Energy

Field Experience

Field Area

Baltic Shield	1991-2000	Swedish Geological Survey
Lewisian, Scotland	1997-2001	NATO, NSF (Tectonics)
West Greenland	1994-2001	NSF (Tectonics) and Danish Lithosphere Centre
Andes Peru, Chile	1996,1998	NSF (Tectonics)
Antarctica	1998	NSF (Polar program)
Nain Prov.	1991-1994	Lithoprobe, Geol. Survey Can., Nfld. Geol. Survey
Slave Prov.	1985	Geol. Survey Can.
Grenville Prov.	1989-1990	Ph.D., Nfld. Geol. Survey
Grenville Prov.	1987-1988	Project Geologist, Nfld. Geol. Survey
Grenville Prov.	1984-1985	MSc., Geol. Survey Can.
Superior Prov.	1987	British Columbia Geological Survey
Superior Prov.	1982-1984	Mineral exploration, Falconbridge Cu, Noranda
Cordillera	1979	Assistant to R.L. Brown, C. Rees

Awards

2005	College of Natural Sciences Teaching Award, UTA
2003	Knebel Faculty Teaching Award Dept. of Geological Sciences, UTA
2001	Knebel Faculty Teaching Award Dept. of Geological Sciences, UTA
1996	Knebel Faculty Teaching Award Dept. of Geological Sciences, UTA
1988-91	Memorial University of Newfoundland Graduate Fellowship
1985	Queen's Graduate Award (Queen's University)
1984-85	McLaughlin Scholarship (Queen's University)
1982	Bickell Scholarship (Carleton University)

Professional Societies

Geological Society of America (Member)
Geological Association of Canada (Fellow)
European Union of Geosciences (Member)

Convenor of Conferences/Field Trips

Co-organizer of Grenville of western Labrador Field Trip for Correlation of the Proterozoic in the North Atlantic Realm IGCP 371, July, 1996.
Co-organizer of Friends of the Grenville Fall Field Trip - workshop, September, 1993.

National Service

National Science Foundation review panel, Tectonics (2001)
Geological Society of America Bulletin – Associate Editor (2000-2004)
Geology Editorial Board (1998-2000)
Geological Society of America Research Grant Review Committee (1997-1999; Chair 1998)
Geological Society of America Nominations Committee (1999-2001)
Consultant for National Public Radio's program Earth and Sky (1999-indefinite)

Reviewer

Funding Agencies: National Science Foundation (Instrumentation, Tectonics and Petrology Divisions), Natural Sciences and Engineering Research Council (NSERC) (Canada) Operating Grants, Lithoprobe (Canada) Project Grants
Journals: Precambrian Research, Geological Society of America Bulletin, Canadian Journal of Earth Sciences, Tectonophysics, Science, Computers and Geosciences, Geoscience Canada

University/Departmental Service

Departmental Associate Chair (2000-2004)
Equipment Committee (1995-present; Chair 1998-present)
Supervisor Machine Shop (1994-present)
Supervisor Electronics Shop (1996-present)
Search Committee for Electronics Technician (1997; Chair)
Guest Speakers Committee (1995-present; Chair)
Foundation Faculty Review Committee (1996-present)
Technical Sessions Coordinator (1995-present)
Search Committee for Machinist (1995; Chair)
Committee on Teaching Effectiveness (1996)
Strategic Plan Implementation Committee (1996)

Classes Taught at The University of Texas at Austin

	Fall	Spring	Summer
1993-94	not at UTA	Radiogenic Isotopes (G) Introductory Geology (U1) ¹	Field (U3)
1994-95	Structure (U3)	Metamorphic petrology (G)	Field (U3)
1995-96	Structure (U3) Tectonics (G) ²	Radiogenic Isotopes (G)	Field (U3)
1996-97	Structure (U3) Tectonics (G) ²	Radiogenic Isotopes (G)	Field (U3)
1997-98	Structure (U3)	Radiogenic Isotopes (G)	Field (U3)
1998-99	Structure (U3)	Deans Fellow	Field (U3)
1999-2000	Asymmetric	Physical Geology (U1) Graduate Seminar (G)	Field (U3)
2000-01	Physical Geology (U1) Radiogenic Isotopes (G)	Physical Geology (U1)	Field (U3)
2001-02	Physical Geology (U1) Radiogenic Isotopes (G)	Asymmetric Teaching Load	Field (U3)
2002-2003	Radiogenic Isotopes (G)	Physical Geology (U1)	
2003-2004	Physical Geology (U1)	Leave without pay	
2004-2005	Physical Geology (U1) Radiogenic Isotopes (G)	Asymmetric Teaching Load	Field (U3)

¹ Team taught with Lundelius

² Team taught with Cloos, Marrett and Mosher

(U3) = Undergraduate course and level; (G) = Graduate course

Publications near completion for submission to Refereed Journals

Loewy, S.L., and Connelly, S.L., Global Precambrian Pb isotopic signatures: Implications for mantle reservoirs through time. *Geology*.

Connelly, J.N., Helper, M.A., Fuller, R., and Dalziel, I.W.D. Final assembly of Gondwanaland: Accretion of the East Antarctic Craton. *Geology*.

Grimes, S.W. and Connelly, J.N. Lithotypes of the Carrizo Mountain Group, west Texas: Implications for Mesoproterozoic tectonics of southeast Laurentia. *Geological Society of America Bulletin*.

Publications in Refereed Journals

Connelly, J.N. in review. An improved method to date garnets by Lu-Hf geochronology. *G³*.

Connelly, J.N., Bizzarro, M., Thrane, K., and Ulfbeck, D. in review. Utilizing TODGA-specific resin for the separation and analyses of Lutetium and Hafnium from geochemical samples. *Chemical Geology*.

McDowell, F.W., Lehman, T.M., and Connelly, J.N., in review. First Isotopic (U-Pb) Age For The Late Cretaceous *Alamosaurus* Vertebrate Fauna Of West Texas, And Its Significance As A Link Between Two Faunal Provinces. *Geology*.

Connelly, J.N., and Thrane, K., in review. Pb isotopes to define allochthonous Precambrian terranes: A Palaeoproterozoic example from West Greenland. *Geology*.

Åhäll, K-I. and Connelly, J.N., in review. Long-term stability of a convergent margin:

- 330 m.y. of Proterozoic crustal growth in Sweden. *Precambrian Research*.
- Jessup, M., Karlstrom, K., Williams, M., Connelly, J., Heizler, M., Jones, J. in review. Three Proterozoic Orogenic Episodes and an intervening Exhumation Event in the Black Canyon of the Gunnison Region, Colorado.
- Baker, J., Bizzarro, M., Wittig, N., Connelly, J.N., and Haack, H. in press. The Solar System's oldest basaltic meteorites. *Nature*.
- McFarlane, C.R.M., Connelly, J.N. and Carlson, W.D. in press. Contrasting response of monazite and zircon to a high-temperature thermal overprint. *Lithos*.
- Jessup, M.J., Karlstrom, K.E., Livaccari, R., Connelly, J.N., Tyson, A., and Rogers, S.A., in press. Complex Proterozoic crustal assembly of southwestern North America involving northeast, then northwest, directed convergence in an arcuate subduction system: The Black Canyon of the Gunnison, southwestern Colorado. Karlstrom, K.E. and Keller, G.R., editors, 2004, *The Rocky Mountain Region -- An Evolving Lithosphere: Tectonics, Geochemistry, and Geophysics: American Geophysical Union Geophysical Monograph 154*.
- Connelly, J.N., Thrane, K., Krawiec, A.W., and Garde, A.A., in press. Linking the Palaeoproterozoic Nagssugtoqidian and Rinkian orogens through the Disko Bugt region of West Greenland. *Geological Society of London Bulletin*.
- Thrane, K. and Connelly, J.N. in press. Zircon geochronology from Qusiannuguit area of West Greenland. *Bulletin of the Geological Survey of Denmark and Greenland*.
- Thrane, K., Baker, J.A., and Connelly, J.N., in press. Age, petrogenesis and metamorphism of the syn-collisional Prøven Igneous Complex, West Greenland. *Contributions to Mineralogy and Petrology*.
- Smith, D., Connelly, J.N., Manser, K., Moser, D.E., Housh, T.B., McDowell, F.W., and Mack, L.M., 2004, Evolution of Navajo eclogites and hydration of the mantle wedge below the Colorado Plateau, southwestern United States. *G-cubed*, 5(4), doi:10.1029/2003GC000675.
- McFarlane, C.R.M., Connelly, J.N., and Carlson, W.D., 2004. Intracrystalline redistribution of Pb in metamorphic zircon during high temperature contact metamorphism in the aureole of the Makhaviniex Lake Pluton, northern Labrador. *Chemical Geology*, Vol. 217, 1-28.
- Loewy, S.L., Connelly, J.N., and Dalziel, I.W.D., 2004. An orphaned basement block: The Arequipa-Antofalla basement (AAB) of the central Andean margin of South America. *GSA Bulletin*, Vol. 116, 171-187.
- McFarlane, C.R.M., Connelly, J.N., and Carlson, W.D., 2004. Monazite and Xenotime Petrogenesis in the Contact Aureole of the Makhaviniex Lake Pluton, Northern Labrador. *Contributions to Mineralogy and Petrology*, Vol. 148, 524-541.
- Loewy, S.L., Connelly, J.N., and Dalziel, I.W.D., Gower, C.F., 2003. Amazonia in Rodinia: Constraints from whole-rock Pb and U-Pb geochronology. *Tectonophysics*, Vol. 375, 169-197.
- Gilmer, A.K., Kyle, R., Connelly, J.N., Mathur, R.D., and Henry, C.D. 2003. Extension of Laramide magmatism in southwestern North America into Trans-Pecos Texas. *K. Geology*, Vol. 31, Issue 5, pp.447-450.
- McFarlane, C., Carlson, W., and Connelly, J.N., 2003. Prograde, peak, and retrograde P-T paths from aluminum in orthopyroxene: High-temperature contact metamorphism in the aureole of the Nain Plutonic Suite. *Journal of Metamorphic Geology*. Vol. 21, Issue 5, pp.405-423.
- Van Gool, J.A.M., Connelly, J.N., Marker, M.M., and Mengel, F.C., 2002. The Nagssugtoqidian Orogen of West Greenland: Tectonic evolution and regional correlations

- from a West Greenland perspective. *Canadian Journal of Earth Sciences*, v. 39, p. 665-686.
- Wardle, R.J., et al., 2002. Correlation chart of the Proterozoic assembly of the northeastern Canadian-Greenland shield. *Canadian Journal of Earth Sciences*, v. 39, p. 895.
- McDowell, F.W., Roldán-Quintana, J. and Connelly, J.N., 2001. Duration of Laramide magmatic arc development in east-central Sonora, Mexico. *Geological Society of America Bulletin*, 113: 521-531.
- Park, R.G., Tarney, J. and Connelly, J.N., 2001. The Lock Maree Group: Paleoproterozoic subduction-accretion complex in the Lewisian of NW Scotland. *Precambrian Research*, 105: 205-226.
- Connelly, J.N., 2001. Degree of preservation of igneous zonation in zircon as a signpost for concordancy in U-Pb geochronology. *Chemical Geology*, 172: 25-39.
- Connelly, J.N., 2000. Constraining the timing of metamorphism: U-Pb and Sm-Nd ages from a transect across the northern Torngat Orogen, Labrador, Canada. *Journal of Geology*, 109: 57-77.
- Åhäll, K.-I., Connelly, J.N. and Brewer, T.S., 2000. Episodic rapakivi magmatism due to distal orogenesis? Correlation of 1.69-1.50 Ga orogenic and inboard, "anorogenic" events in the Baltic Shield. *Geology*, 28: 823-826.
- Connelly, J.N., van Gool, J.A.M., and Mengel, F.C., 2000. Temporal evolution of a deep crustal orogen: The Nagssugtoqidian Orogen, West Greenland. *Canadian Journal of Earth Sciences*, 37: 1121-1142.
- Beane, R.J. and Connelly, J.N., 2000. $^{40}\text{Ar}/^{39}\text{Ar}$, U-Pb and Sm-Nd age constraints on the timing of metamorphic events in the Maksyutov Complex, southern Ural Mountains. *Journal of the Geological Society, London*, 157: 811-822.
- Connelly, J.N. and Mengel, F.C., 2000. Evolution of Archean components of the Nagssugtoqidian Orogen of West Greenland. *Geological Society of America Bulletin*, 112: 747-763.
- Reese, J.F., Mosher, S., Connelly, J.N. and Roback, R., 2000. Mesoproterozoic chronostratigraphy of the southeastern Llano uplift, central Texas. *Geological Society of America Bulletin* 112: 278-291.
- Christoffel, C.A., Connelly, J.N. and Åhäll, K.-I., 1999. Timing and characterization of recurrent pre-Sveconorwegian metamorphism and deformation in the Varberg-Halmstad region of SW Sweden. *Precambrian Research* 98: 173-195.
- Connelly, J.N. and Ryan, A.B., 1999. The age and tectonic implications of Paleoproterozoic granitoid intrusions near Nain, Labrador. *Canadian Journal of Earth Sciences* 36: 833-853.
- Borg, L.E., Connelly, J.N., Nyquist, L.E., Shih, C.Y., Wiesmann, H., and Reese, Y., 1999. The age of Carbonates in the Martian Meteorite ALH84001. *Science* 286: 90-94.
- Rougvié, J.R., Carlson, W.D., Copeland, P. and Connelly, J.N., 1999. Late thermal evolution of Proterozoic rocks in the northeastern Llano Uplift, central Texas. *Precambrian Research* 94: 49-72.
- Åhäll, K.-I. and Connelly, J.N., 1998. Intermittent 1.53-1.13 Ga magmatism in western Baltica; age constraints and correlations within a postulated supercontinent. *Precambrian Research* 92: 1-20.
- Indares, A., Dunning, G., Cox, R., Gale, D. and Connelly, J.N., 1998. High PT rocks from the base of thickened continental crust: An example from the eastern Grenville Province. *Tectonics* 17: 426-440.

- Gose, W.A., Helper, M.A., Connelly, J.N., Hutson, F.E. and Dalziel, I.W.D., 1997. Paleomagnetic data and U-Pb isotopic ages from Coats Land, Antarctica: Implications for Neoproterozoic plate reconstructions. *Journal of Geophysical Research* 102: 7887-7902.
- Hanmer, S., Mengel, F.C., Connelly, J.N., and van Gool, J.A.M., 1997. Significance of crustal-scale shear zones and mafic dykes in the Nagssugtoqidian orogen, SW Greenland: A re-examination. *Journal of Structural Geology* 19: 59-75.
- Connelly, J.N., Berglund, J. and Larson, S.Å., 1996. Thermotectonic evolution of the Eastern Segment of southwestern Sweden: Tectonic constraints from U-Pb geochronology. *In* Brewer, T.S. ed., *Precambrian Crustal Evolution in the North Atlantic Region*, Geological Society Special Publication 112: 297-313.
- Connelly, J.N. and Åhäll, K.-I., 1996. The Mesoproterozoic cratonization of Baltica - new age constraints from SW Sweden. *In* Brewer, T.S. ed., *Precambrian Crustal Evolution in the North Atlantic Region*, Geological Society Special Publication 112: 261-273.
- Connelly, J.N. and Ryan, A.B., 1996. Late Archean evolution of the Nain Province, Nain, Labrador: Imprint of a collision. *Canadian Journal of Earth Sciences* 33: 1325-1342.
- James, D.T., Connelly, J.N., Wasteneys, H.A., and Kilfoil, G.J., 1996. A new subdivision of the Rae Province in western Labrador. *Canadian Journal of Earth Sciences* 33: 216-230.
- Connelly, J.N., Rivers, T. and James, D., 1995. Thermotectonic evolution of the Grenville Province of western Labrador. *Tectonics* 14: 202-217.
- Connelly, J.N. and Heaman, L.M., 1993. U-Pb geochronological constraints on the tectonic evolution of the Grenville Province of western Labrador. *Precambrian Research* 63: 123-142.
- Rivers, T., van Gool, J. and Connelly, J.N., 1993. Contrasting tectonic styles in the Parautochthonous Belt, Grenville Province. *Geology* 21: 1127-1130.

Abstracts

- Jones, J.V. III, Siddoway, C.S., Connelly, J.N., Perkins, G., and Callahan, O., Circa 1.4 Ga penetrative deformation in the southern Wet Mountains, Colorado: implications for Mesoproterozoic intracontinental tectonism across the southern Rocky Mountains: Geological Society of America Abstracts with Programs, v. 36, no. 5, November 2004.
- Rogers, S.A., Connelly, J.N., Jones, J.V. III, and Rhea, C., U-Pb zircon geochronology of Proterozoic granites of the Taylor River area, SW Sawatch Range, Gunnison County, central Colorado: Geological Society of America Abstracts with Programs, v. 36, no. 5, November 2004.
- Connelly, J.N., McFarlane, C.R.M., and Carlson, W.D., 2004. Intracrystalline mobility of Pb in zircon in a high-temperature aureole. Goldschmidt Conference, Copenhagen.
- Loewy, S.L., and Connelly, J.N., 2004. Global Precambrian Pb isotopic signatures: Implications for mantle reservoirs. 14th Annual Goldschmidt Conference, Copenhagen. Conference Supplement to *Geochimica et Cosmochimica Acta*, A569.
- Loewy, S., Connelly, J. N., Dalziel, I. W. D., and Gower, C. F. (2003) Pb Isotopes of the Precambrian Scottish Highlands: Rodinian links to Laurentia, but not to Amazonia. Highlands Workshop, British Geological Survey, Murchison House, Edinburgh, May 1-2, 2003.
- Connelly, J.N. 2003. Dating metamorphism with mafic rocks. EUG-AGU Joint Meeting, Nice, France.

- Thrane, K., Connelly, J.N., Garde, A.A., Grocott, 2003. Linking The Nagssugtoqidian Orogen And Rinkian Belt: U-Pb And Pb-Pb Zircon Ages From A Traverse From 68°4 To 72°6 N. EUG-AGU Joint Meeting, Nice, France.
- Garde, A.A., Grocott, J., Thrane, K. and Connelly, J.N., 2003. Contrasting Structural Styles of the Rinkian Orogen. EUG-AGU Joint Meeting, Nice, France.
- Loewy, S. L., Connelly, J. N., and Dalziel, I. W. D. (2002) Pb isotopes as a correlation tool to constrain Rodinia reconstruction. Geological Society of America Abstracts with Programs, Vol. 34, No. 7.
- Loewy, S., Connelly, J. N., Dalziel, I. W. D., and Gower, C. F. (2001) The Arequipa-Antofalla Basement (AAB): An Orphaned Crustal Block? Geological Society of America Abstracts with Programs, Vol. 33, No. 7
- Jessup, M.J., Karlstrom, Connelly, J.N., and Livaccari, R. 2002. Complex crustal assembly of southwestern North America involving northwest and northeast-striking fabrics; the Black Canyon of the Gunnison, southern Colorado, In: Abstracts with Programs - Geological Society of America, v. 34, pp.48.
- Connelly, J.N., Helper, M., Fuller, R., Dalziel, I.W.D. and McDowell, F. 2002. Amalgamation of Coats Land/western Dronning Maud Land with the East Antarctic Craton; evidence from Heimefrontfjella, Dronning Maud Land, Antarctica, In: Abstracts with Programs - Geological Society of America, v. 34, pp.45
- Whittington, A., Pedrosa-Soares, A., Connelly, J., Marshak, S., Alkimim, F. 2002. Extensional collapse of a small orogenic plateau and the production of voluminous post-collisional granite; an example from the Neoproterozoic Aracuai Orogen, eastern Brazil. In: Abstracts with Programs - Geological Society of America, v. 34, pp.84-85.
- Connelly, J.N., Åhäll, K.-I., 2001. Accretionary growth of the Sveconorwegian Province of the Baltic Shield between 1.7-1.5 Ga and links to intracontinental magmatism. Geological Society of America, Abstract with Programs 2001 Annual Meeting, v. 33 (6).
- McFarlane, C.R.M., Connelly, J.N., and Carlson, W.D., 2001. Apatite, xenotime, and monazite growth during garnet breakdown in the contact aureole of the Makhavinekh Lake pluton, northern Labrador. Geological Society of America, Abstract with Programs 2001 Annual Meeting, v. 33 (6).
- Gilmer, A.K., Kyle, J.R., Connelly, J.N., Mathur, R.D., and Henry, C.D., 2001. The Red Hills intrusive system, Presidio County, Texas; the easternmost Laramide porphyry copper-molybdenum deposit in southwestern North America. Geological Society of America, Abstract with Programs 2001 Annual Meeting, v. 33 (6).
- Mayborn, K.R., Leshner, C.E., and Connelly, J.N., 2001. Trace element and isotopic constraints on crustal contamination and the origin of composite dikes within the Kangâmiut Dike Swarm, West Greenland. Geological Society of America, Abstract with Programs 2001 Annual Meeting, v. 33 (6).
- Loewy, S., Connelly, J.N., Dalziel, I.W.D., 2001. The Arequipa-Antofalla basement (AAB): An orphaned crustal block? Geological Society of America, Abstract with Programs 2001 Annual Meeting, v. 33 (6).
- Gilmer, A. K., Kyle, J. R., Connelly, J. N., Mathur, R. D., Age and characterization of the Red Hills porphyry copper-molybdenum deposit and its relationship to the Chinati Mountains Caldera, Presidio County, Texas Anonymous, Geological Society of America, Rocky Mountain Section, 53rd annual meeting; Geological Society of America, South-Central Section, 35th annual meeting, Abstract with Programs 2001, 33 (5), p. 5, 2001.

- Åhäll, K.-I., Brewer, T.S., and Connelly, J.N., 2001. Deciphering the complex accretionary growth history of the Baltic Shield between 1.7-1.5 Ga and its links with intracontinental magmatism. Geological Association of Canada, Abstracts Volume 26, p.1.
- Connelly, J.N., van Gool, J.A.M., and Mengel, F.C., 2001. Timing and correlation of the Nagssugtoqidian orogen, West Greenland. Geological Association of Canada, Abstracts Volume 26, p.28.
- McFarlane, C.R.M., Connelly, J.N., and Carlson, W.D., 2001. Resetting of major-element thermometers for pelitic granulites in the contact aureole of the Makhavinekh Lake Pluton, northern Labrador. Geological Association of Canada, Abstracts Volume 26, p.100.
- Smith, R.L., Wilton, D.H.C., Connelly, J.N., and Sparkes, K., 2001. Geology, geochemistry and sulphide mineralization of the basal gabbro subdivision of the Pants Lake Intrusion, Labrador, Canada. Geological Association of Canada, Abstracts Volume 26, p.141.
- Van Gool, J.A.M., Connelly, J.N., and Garde, A.A., 2001. The Nagssugtoqidian Orogen in the North Atlantic Paleoproterozoic evolution. Geological Association of Canada, Abstracts Volume 26, p.154.
- Loewy, S.L., Connelly, J.N., Dalziel, I.W.D., Gower, C.F., and Cawood, P.A. 2000. Testing a proposed Rodinia reconstruction using Pb isotopes and U-Pb geochronology. Geological Society of America, Abstracts with Programs 32: A-100.
- Mosher, S., Connelly, J.N., Zumbro, J. and Roback, R.C., 1999. Evidence for an active southern Laurentian margin from 1288-1232 Ma, Llano Uplift, central Texas. Geological Society of America Annual Meeting, Abstracts with Programs 31: A-108.
- Connelly, J.N., 1999. Constraining the timing of metamorphism: U-Pb and Sm-Nd ages from a transect across the northern Torngat Orogen, Labrador, Canada. Geological Society of America Annual Meeting, Abstracts with Programs 31: A-429.
- Ryan, A.B., Hamilton, M., Emslie, R. and Connelly, J.N., 1999. Paleoproterozoic and Mesoproterozoic anorthosite and granitic plutons in the Nain-Okak region, Labrador: Repetitive anorogenic magmatism. AGU 1999 Spring Meeting, American Geophysical Union, Boston.
- Van Gool, J.A.M., Connelly, J.N. and Mengel, F.C., 1999. Tectonic evolution of the Nagssugtoqidian orogen: The Greenlandic segment of the Paleoproterozoic orogenic mosaic in the North Atlantic region. EUG 10 Abstracts: 128.
- Scott, D.J., Connelly, J.N., St-Onge, M.R., van Gool, J.A.M. and Mengel, F.C., 1999. Paleoproterozoic orogenesis in NE Laurentia: Linking Quebec-Baffin-Labrador with West Greenland across Davis Strait. EUG 10 Abstracts: 127.
- Åhäll, K.-I., Connelly, J.N. and Brewer, T.S., 1999. Proterozoic rapakivi-type magmatism as a distal expression of orogenesis; a correlation of orogenic and "anorogenic" events in the Baltic Shield. EUG 10 Abstracts: 133.
- Borg, L. E., Connelly, J. N., Nyquist, L. E., and Shih, C. -Y., 1999. Pb-Pb age of the carbonates in the Martian meteorite ALH84001. Lunar and Planetary Science Conference: CD ROM.
- Connelly, J.N., 1998. Preservation of primary zonation in igneous zircons as a signpost to concordancy in the U-Pb system. Geological Society of America Annual Meeting, Abstracts with Programs 28: A-376.
- Piontek, J.E., Connelly, J.N., and Åhäll, K.-I., 1998. 1.3 Ga anorogenic magmatism in southwest Sweden. Geological Society of America Annual Meeting, Abstracts with Programs 28: A-376.

- Borg, L.E., Nyquist, L.E., Shih, C.Y., Wiesmann, H., Reese, Y. and Connelly, J.N., 1998. Rb-Sr formation age of ALH84001 carbonates. *Martian meteorites: Where do we stand and where are we going?* Lunar and Planetary Institute Contribution 956: 5-6.
- Christoffel, C.A., Connelly, J.N. and Åhäll, K.-I., 1997. The Tectonothermal history of southwest Sweden: New age constraints using U-Pb geochronology. *Geological Society of America Annual Meeting, Abstracts with Programs* 29: A-466.
- Scott, D.J., Connelly, J.N. and Mengel, F.C., 1997. Archean crust of eastern Baffin Island and central West Greenland: Implications for Paleoproterozoic orogenesis in northeastern Laurentia. *Geological Association of Canada – Mineralogical Association of Canada Annual Meeting, Abstracts with Programs* 22: A-133.
- Helper, M.A., Roback, R.C., Connelly, J.N. and Dalziel, I.W.D., 1997. Comparison of Proterozoic basement provinces of the southwestern US and the East Antarctic craton: Implications for Neoproterozoic plate reconstructions. *Abstract volume for Terrane Dynamics 97, International Conference on Terrane Geology, Christchurch, NZ.*
- Gose, W., Helper, M.A., Connelly, J.N., Hutson, F.E. Dalziel, I.W.D., 1997. Paleomagnetic data and U-Pb isotopic age determinations from Coats Land, Antarctica: Implications for late Paleozoic plate reconstructions. *Abstract volume for Terrane Dynamics 97, International Conference on Terrane Geology, Christchurch, NZ*
- Connelly, J.N., 1996. Geochronological constraints on the timing and duration of thermal events in the North Atlantic region: Implications for tectonic history and mineral systematics. *Geological Society of America Annual Meeting, Abstracts with Programs* 28: A-314.
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Invited Talks

Texas A&M University, November 11, 2004.

Re-interpreting the Trans-Hudson collisional orogens of W. Greenland: A middle- to deep-crustal Himalayan analogue.

Danish Lithosphere Centre, Review of the Proterozoic Supercontinent Rodinia, March, 2004.

The University of British Columbia, May 26, 1997

Integrating U-Pb geochronology into a multidisciplinary tectonics study: The Nagssugtoqidian Orogen of the North Atlantic region, West Greenland

Syracuse University, November 8, 1996

The Grenville Orogen of western Labrador: Polycyclic evolution and exhumation of deep (eclogitic) crustal material

Other invited presentations listed under Workshops

Field Trips and Guides

Connelly, J.N., van Gool, J.A.M., Rivers, T., and James, D.T., 1996. Field guide to the geology of the Grenville Province of western Labrador. Proterozoic Evolution in the North Atlantic Realm Field Trip, IGCP 371, July 27-July 29: 86 p.

Connelly, J.N., van Gool, J.A.M., Rivers, T., and James, D.T., 1993. Field guide to the geology of the Grenville Province of western Labrador. Friends of the Grenville, August, 1993: 96 p.

Government Publications (internally reviewed)

- James, D.T. and Connelly, J.N., 1995. Geology of the Paleoproterozoic Blueberry Lake Group, Grenville Province, Western Labrador. Current Research, Newfoundland Department of Natural Resources, Geological Survey, Report 95-1: 25-36.
- Nixon, G.T, Hammack, J.L., Connelly, J.N., Case, G. and Paterson, W.P.E., 1990. Geology and noble metal geochemistry of the Polaris Ultramafic complex, north-central British Columbia. Ministry of Energy Mines and Petroleum Resources, Geological Fieldwork, 1989, Paper 1990-1: 387-403.
- Nixon, G.T, Ash, C.H., Connelly, J.N. and Case, G., 1989. Alaskan-type mafic-ultramafic rocks in British Columbia: The Gnat Lakes, Hickman, and Menard Creek Complexes. British Columbia Ministry of Energy Mines and Petroleum Resources, Geological Fieldwork, 1988, Paper 1989-1: B83-B89.
- Connelly, J.N., 1988. An investigation of the margin of the Lac Joseph Allochthon, Grenville Province, southwestern Labrador. Current Research. Newfoundland Department of Mines, Mineral Development Division, Report 88-1: 37-48.
- Connelly, J.N., Hanmer, S. and van Breeman, O., 1987. The age of deformation related to the emplacement of the Elzevir Batholith and its regional implications, Grenville Province, southeastern Ontario. Radiogenic Age and Isotopic Studies: Report 1, Geological Survey of Canada, Paper 87-2: 51-54.
- Connelly, J.N. and Scowen, P., 1987. Geology of the Lac Caopacho - Lac Fleur-de-May area southwestern Labrador. Current Research. Newfoundland Department of Mines and Energy, Mineral Development Division, Report 87-1: 225-235.
- Hanmer, S. and Connelly, J.N., 1986. Mechanical role of the syntectonic Laloche Batholith in the Great Slave Lake Shear Zone, District of Mackenzie, N.W.T. Current Research, Part B, Geological Survey of Canada, Paper 86-1B: 811-826.
- Connelly, J.N., 1985. The Elzevir Batholith: Emplacement history with respect to the Grenville Supergroup and Finton Group, southeastern Ontario. Current Research, Part B, Geological Survey of Canada, Paper 85-1B: 161-167.

Workshops (Abstracts and Extended Abstracts)

- Connelly, J.N., and van Gool, J.A.M., 2002. Tectonic evolution of the North Atlantic region – an overview from a West Greenland perspective. Workshop on Nagssugtoqidian and Rinkian geology, West Greenland. Rapport, 2002/9, p. 13.
- Thrane, K. and Connelly, J.N., 2002. Linking the Nagssugtoqidian Orogen and Rinkian Belt: Preliminary ages from the Disko Bugt region. Workshop on Nagssugtoqidian and Rinkian geology, West Greenland. Rapport, 2002/9, p. 46.
- Garde, A.A., Connelly, J.N., Krawiec, A., Piazzolo, S. and Thrane, K., 2002. Surveying the southern Rinkian fold belt, central West Greenland. Workshop on Nagssugtoqidian and Rinkian geology, West Greenland. Rapport, 2002/9, p. 17.
- van Gool, J.A.M., Connelly, J.N. and Mengel, F.C., 1999. The Nagssugtoqidian Orogen at its 50th birthday. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop: in press.
- van Gool, J.A.M., Connelly, J.N., Mengel, F.C. and Scott, D.J., 1998. The Nagssugtoqidian Orogen, West Greenland: Tectonic development and regional correlations. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 68: 207-223.

- James, D., Connelly, J.N. and Scott, D., 1998. Core zone of the southeastern Churchill Province, Western Labrador to Ungava Bay and beyond: The MEAT of the problem. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 68: 92-100.
- Connelly, J.N., Mengel, F.C. and van Gool, J., 1998. Age constraints for the Archean and Paleoproterozoic evolution of the Nagssugtoqidian Orogen, West Greenland: A tale of two orogenies. Danish Lithosphere Centre workshop on Nagssugtoqidian Geology.
- Mengel, F.C., van Gool, J., Connelly, J.N., Krogstad, E. and Willigers, B., 1998. Structures and lithologies in the SE Disco Bugt area: The link between the Nagssugtoqidian Orogen and Rinkian belt. Danish Lithosphere Centre workshop on Nagssugtoqidian Geology.
- van Gool, J., Mengel, F.C. and Connelly, J.N., 1998. The Nordre Strømfjord Steep Belt: At least three phases of high strain, but still not a big shear zone. Danish Lithosphere Centre workshop on Nagssugtoqidian Geology.
- Connelly, J.N., Mengel, F.C., and van Gool, J. 1997. The Nagssugtoqidian Orogen of West Greenland: Geochronological update and regional correlations. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 61: 36-44.
- Connelly, J.N. and Mengel, F.C., 1996. The Archean backdrop to Paleoproterozoic tectonism in the Nagssugtoqidian and Torngat orogens: New constraints from U-Pb geochronology. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 57: 15-24.
- Marker, M., Kalsbeek, F., Connelly, J.N. and van Gool, J., 1996. The Nordre Isortoq supracrustal belt, its position and significance in the south-central part of the Central Nagssugtoqidian Orogen. Danish Lithosphere workshop on Nagssugtoqidian geology. University of Copenhagen, Denmark: 25-27.
- Connelly, J.N. and Mengel, F.C., 1996. Definition and refinement of Archean and Paleoproterozoic magmatic and tectonic events in the Nagssugtoqidian Orogen: A summary of conventional U-Pb geochronology results. Danish Lithosphere workshop on Nagssugtoqidian geology. University of Copenhagen, Denmark: 71-73.
- Hanmer, S., Mengel, F., Connelly, J.N. and van Gool, J., 1995. A re-examination of crustal-scale shear zones and synkinematic mafic dykes in the Nagssugtoqidian orogen, SW Greenland: A summary. Proceedings of Danish Lithosphere Centre Workshop on Nagssugtoqidian Geology: 21.
- Connelly, J.N., Mengel, F. and Hanmer, S., 1995. Preliminary conventional U-Pb results from the Nagssugtoqidian Orogen: An Archean magmatic arc modified by a penetrative Paleoproterozoic thermal event. Proceedings of Danish Lithosphere Centre Workshop on Nagssugtoqidian Geology 1995: 41-44.
- Connelly, J.N. and Mengel, F., 1994. Preliminary U-Pb data from Archean gneisses in a transect across the Komatorvik Shear Zone, northern Torngat Orogen. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 45: 72-82.
- Connelly, J.N. and Ryan, B. 1993. Late Archean and Proterozoic events in the central Nain Craton. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 36: 53-61.
- James, D.T., Connelly, J.N. and van Gool, J., 1992. A foreland to hinterland transect across the Grenville Front: A western Labrador perspective. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 32: 201-205.

- Rivers, T., van Gool, J., Connelly, J.N. and Owen, V., 1992. Comparative tectonics of the Grenville Front and Parutochthonous Belt in Labrador and Ontario. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 32: 206-215.
- Connelly, J.N., Ryan, B. and Dunning, G.R., 1991. U-Pb geochronology from the Nain Archipelago area, Labrador. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 27: 72-75.
- Connelly, J.N., and Dunning, G.R., 1990. U-Pb studies in the Central Nain Province, Nain Area. Lithoprobe - Eastern Canadian Shield Onshore-Offshore Transect Workshop, Lithoprobe Report 14: 78-83.

Talks at The University of Texas at Austin (since Jan. 1994)

- Hard Rock Spring 1999. Dating Martian carbonates in ALH-84001.
- Hard Rock Spring 1997. Constraining tectonic events in polydeformed terranes: The evolution of the Nagssugtoqidian Orogen, West Greenland.
- Hard Rock Spring 1997. Crystalline rocks of the Heimefrontfjella, Antarctica: The hows, whys and wheres of an unusual trip around the world.
- Hard Rock Spring 1996. Production of a Pb-205 spike for U-Pb geochronology.
- Technical Sessions Fall 1994. Using precise U-Pb geochronology to unravel tectonic histories in complex terranes: Examples from the Grenville Orogen of Canada and Baltica.
- Institute for Geophysics Fall 1994. The evolution of the Grenville Province of eastern Canada.

Graduate Students Supervised

- Hutson, F. in progress. Late Proterozoic and Early Paleozoic history of the Shackleton Range: Comparisons with North America. Ph.D. dissertation (jointly supervised with I. Dalziel)
- Rogers, S. in progress. Middle Proterozoic continental growth and accretion along the southwestern margin of Laurentia.
- Jones, J.V. 2005. Contrasting deformational styles across the brittle-ductile transition: a field example from S. Colorado.
- Krawiec, A. 2004. Linking the Nagssugtoqidian and Rinkian orogens across Disko Bugt.
- Roller, L., 2004. Anorogenic magmatism in the Llano Uplift of central Texas – an isotopic and geochemical study.
- McFarlane, C., 2002. Temperature, time paths and reactions of U-, Sm- and Rb-bearing phases in the contact aureole of the Nain Plutonic Suite. Ph.D. dissertation. (jointly supervised with W. Carlson)
- Loewy, S., 2002. Proterozoic basement to the Central Andes: Implications for Laurentia-South America correlations. Ph.D. dissertation.
- Roth, M., 2000. Archean orthogneisses of the Central Nagssugtoqidian Orogen of West Greenland: Is there a suture? M.Sc. thesis.
- Piontek, J., 1999. Origin of the 1.3 Ga Hastefjorden and Ursand intrusions, SW Sweden: Nd evidence for crust-mantle interaction in the genesis of A-type granites. M.Sc. thesis: 120 p. (presently Ph.D. student at MIT)
- Christoffel, C., 1997. Mesoproterozoic tectonothermal development of southwestern Sweden: New age constraints using field relationships and U-Pb geochronology: M.Sc. thesis: 79 p. (presently employed by Conoco, Midland, TX)
- Whitefield, C., 1996. A Sm-Nd study of the Coal Creek Domain and Sandy Creek Shear Zone, M.Sc. thesis: 159 p. (presently employed by Midland Valley Software, New Braunfels, TX)

Graduate Student Committees (completed)

- Wertz, K. 2003. Tectonic evolution of the MacQuarie Ridge. CDROM.
- Meckel, T.A., 2002. Tectonics of the Hjort region of the MacQuarie Ridge Complex, southernmost Australian-Pacific plate boundary, southwest Pacific. CDROM.
- Hoh, A., 2000. Geologic history of the Valley Spring Gneiss at Inks Lake State Park, Llano Uplift, Texas. M.Sc.
- Hunt, B., 1999. Precambrian geologic history of the Llano River region south of Mason, Texas. M.Sc.
- Weiland, R., 1999. Emplacement history of the Irian Ophiolite. Ph.D. dissertation: 526 p.
- Hansen Castellana, C., 1998. Age and origin of the Coronel Joao Sa Pluton, Bahia, Brazil. M.Sc. thesis: 138 p.
- Luck, R., 1999. Structural emplacement of the Grasberg Intrusive complex, Irian Jaya. M.Sc.
- Zumbro, J., 2000. Proterozoic history of the Valley Spring Gneiss near Honey Creek, Llano Uplift, Llano Co., Texas. M.Sc.
- Davidow, J., 1996. Proterozoic evolution of the Llano Uplift, central Texas: Evidence for high pressure metamorphism from the Oxford mafic body. M.Sc. thesis: 171 p.
- Steinke, T., 1996. Structure and kinematics of the Plomosa Pass Area, northern Plomosa Mountains, Arizona. M.Sc. thesis: 154 p. with map insert.
- Henderson, D., 1996. Rb-Sr and Sm-Nd isotopic evidence for the age and origin of the Turf-loop Batholith, Pietersburg Granite-Greenstone Terrane, South Africa. M.Sc. thesis: 113 p.
- Ghosh, A., not completed. Formation and age of granulites of southern India. Ph.D.

Undergraduate Committees

- Meth, C., 1999. Computer Tomography of diopside schists. Senior honours thesis: in press.
- Åasheim, H., 1999. Mapping an area using GPS equipment and combining the resulting data with digitized maps in AutoCAD Map. Senior honours thesis.
- Schaffer, J. E., 1997. Differential global positioning system mapping (DGPS), petrography, and T-X constraints for the Loeffler Ranch marble lens, Mason County, Texas. Senior honours thesis.

UT Graduate Students benefiting from the U-Pb Laboratory (supervisors indicated)

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|--------------------------------|------------------------------------|
| Christina Hanson (M.Sc., Long) | April Hoh (M.Sc., Mosher) |
| Steve Grimes (Ph.D., Mosher) | Stefan Boettcher (Ph.D., Mosher) |
| Justin Zumbro (M.Sc., Mosher) | Danielle Carpenter (M.Sc. Dalziel) |
| Rob Reed (Ph.D., Mosher) | Rich Weiland (Ph.D., Cloos) |
| Jim Rougvie (Ph.D., Carlson) | Brian Hunt (M.Sc., Mosher) |
| Doug Henderson (M.Sc., Long) | Denise Ketchum (M.Sc., Long) |
| Tor Steinke (M.Sc., Mosher) | |

Participation with Students outside the University of Texas at Austin

- James Carty, Ph.D. student, Derby University, England
- Rachel Beane, Ph.D. student, Stanford University (graduated 1998)
- Johan Berglund, Ph.D. student, University of Göteborg, Sweden (graduated 1998)

Lena Lundqvist, M.Sc. student, University of Göteborg, Sweden (graduated 1997)

Peer-Reviewed Grants (contracts not listed)

- The Paleoproterozoic quartzite-rhyolite problem: a key to the tectonic evolution of southwestern Laurentia and a potential 1.7-1.65 Ga signature event in Earth history. 50,520\$, NSF, co-PI with M. Williams U.Mass and K. Karlstrom U. New Mexico: pending.
- Collisional response of the middle to upper-lower crust: A Himalayan analogue in West Greenland. 105,493\$, NSF. 2004-2006.
- Diffusion, closure temperatures and accessory mineral petrogenesis in a high-temperature aureole: refining the integration of P-T and t. \$119,303, NSF: 2001-2003.
- Neoproterozoic-Early Paleozoic history of the Scottish promontory of Laurentia. \$113,756, NSF, co-PI with I.W.D. Dalziel: 2001-2003.
- Contrasting styles of ca. 1.4 Ga tectonism in the southern Rockies: Evidence for a fossil rheologic transition in a deeply exhumed intracontinental orogen. \$89,225, NSF, co-PI with Karl Karlstrom and Mike Williams, 2001-2003.
- Tectonics of the Aracuai/Ribeira Orogenic Tongue of Southeastern Brazil and its significance for the Paleoproterozoic- and Neoproterozoic assembly of West Gondwana. NSF, \$169,146 (25,000 for U-Pb geochronology at UTA), S. Marshak as PI: 1999-2001.
- Acquisition of magnetic-sector, high-resolution inductively-coupled plasma mass spectrometer for The University of Texas. \$229,000, NSF, co-PI with J. Banner, P. Bennett, T. Housh: 1998-2000.
- Mesoproterozoic tectonic evolution of the southern margin of Laurentia. NSF, \$120,000, co-PI with S. Mosher, W. Carlson: 1997-1999.
- Production of Pb^{205} . TRIUMF (University of British Columbia), Beam time, target preparation and related costs, T. Ruth: current.
- Radiometric dating of ALH84001 carbonates. NASA, Ancient Martian Meteorite Research Program, \$60,000 (\$15,000 for U-Pb geochronology at UTA), L. Nyquist PI with Connelly and L. Borg, co-PI: 1996-1998.
- Tectonic processes, architecture and isotopic systematics of deep crustal levels: Investigation of the Nagssugtoqidian Orogen of West Greenland, NSF, \$100,000, Connelly, sole PI: 1996-1998.
- Was Laurentia the “southeast Pacific continent”? NSF, \$220,000, co-PI with I. Dalziel and W. Gose: 1995-1998
- Evolution of the Nagssugtoqidian Orogen. Danish Lithosphere Centre, 20,000: 1994-1996
- Evolution of the Torngat orogen, NSERC-Lithoprobe, \$20,000, Connelly, sole PI: 1994-1996
- Financial support from grants and contracts has allowed for a full-time laboratory technician since my arrival at UTA in 1994.

Research Activities

My research in the first 8 years at UT Austin centered mainly on state-of-the-art, conventional U-Pb geochronology, a method applicable to a wide range of geological problems. Utilizing this technique, I have worked to establish the timing and duration of magmatic, sedimentological, metamorphic and/or structural events to constrain and test tectonic models and processes. I have concentrated on Precambrian orogens (Grenville Province of Laurentia, Baltica, Antarctica and South America, Trans Hudson belts of the North Atlantic region and the Yavapai and Mazatzal orogens of the SW USA), but have also collaborated on projects in younger orogens (Uralian Orogen, Central Russia; Sonoma magmatic arc, Mexico; recent arc complex of Irian Jaya). In addition to addressing fundamental questions regarding geological processes of specific regions, the results contribute to a broader framework that is being applied to the general understanding of deeper crustal processes. Models developed for well-exposed, deep crustal orogens (e.g. Torngat and Nagssugtoqidian orogens) are being integrated with lithosphere-scale numerical models and studies of the higher-level orogens (e.g. Himalayas) to understand the interaction of brittle upper crust and ductile lower crust during orogenesis.

Several projects have been specifically undertaken to test proposed plate reconstructions during the Neoproterozoic (e.g. the supercontinent of Rodinia – with PhD student S. Loewy). In addition to U-Pb geochronology, these projects employ common Pb and Sm-Nd to characterize isotopic signatures to test whether domains of different continents may represent a single, rifted domain. These projects have involved work in Grenvillian and Neoproterozoic belts of Texas, South America (Chile and Peru), Antarctica, NE Laurentia, Scotland and Baltica.

In the course of regional U-Pb geochronology studies, the systematics of the phases utilized for geochronology require constant consideration. I have become particularly interested in the relationship between the preservation of zonation in zircon and Pb diffusion. Work specifically designed to investigate this relationship has revealed that use of cathodoluminescence permits greater success in selecting concordant grains from complex populations. Also related to issues of systematics, I have investigated the relationship between the formation and closure of U-bearing phases that are commonly utilized for geochronology (with PhD student C. McFarlane). This work shows that zircon forms by compositionally-controlled reactions over a wide temperature range, thereby precluding making assumptions regarding the relationship between peak conditions and metamorphic zircon ages. With the precision of U-Pb ages much improved, a better understanding of the formation of these phases and their relationship to metamorphic reactions is required to fully exploit this precision.

In the pursuit of understanding the significance of “metamorphic ages” in upper-amphibolite to granulite facies rocks as defined by conventional methods, I have integrated Sm-Nd and Lu-Hf mineral isochron with U-Pb single phase ages. This work suggests that garnet (the slope-controlling phase in both Sm-Nd and Lu-Hf systems) has a relatively low closure temperature for these elements such that these systems typically record points along the cooling path (except in rapidly cooled domains). This requires that Sm-Nd ages from high-grade domains be treated with caution and raises interesting questions about major element equilibrium in phases used for geothermobarometry.

In the past two years, I have dedicated considerable time developing Pb-Pb and U-Pb geochronology analyzing zircon by laser ablation with both quadrupole and multicollector inductively coupled plasma mass spectrometers (with Todd Housh). These methods are now

fully functional at UT Austin and the first projects are coming to fruition. We now have national and international visitors to this facility collecting geochronological data to constrain a wide variety of geological problems.

Recognizing the great potential of the Lu-Hf system for geochronology using garnet in metamorphic systems, I have developed a digestion method that virtually excludes the dissolution of zircon inclusions (the main impediment to its widespread application because zircon contains 2-3% Hf and is not likely to be in isotopic equilibrium with garnet). Simultaneously, I have developed a revised and simplified chemical separation method that supports this digestion method. I believe that these methods will regreatly improve definition of PTt paths in metamorphic systems and a “techniques paper” describing the dissolution and chemical methods is currently in review.

I have also developed a new chemical separation method for Lu-Hf from whole rock matrixes that supports both flux fusion and HF-HNO₃ dissolution methods. Importantly, these methods have incorporated boric acid as a means to digest relatively insoluble fluorides that have traditionally required use of perchloric acid. Boric acid is also used to neutralize F⁻ in chemical steps where high field strength elements are not otherwise retained. These methods, which offer a more robust and simpler method to isolate Lu and Hf than those traditionally employed, form the basis of a techniques paper that is currently in review.

In addition to isotopic work in terrestrial systems, I dedicated considerable time developing a method (with co-workers at JSC NASA) to step-leach radiogenic elements from the carbonate component of the Martian sample AHL-84001. These efforts led to a ca. 3.95 Ga age by two isotopic systems, the first widely-accepted age for the formation of the secondary carbonate in this well-known sample. This project has required extensive preparation work involving monitoring and/or cleaning NASA reagents and isotopic tracers so that they would be suitable for this novel, multi-element work that includes U-Pb.

More recently, working with collaborators at Copenhagen University and the Danish Geological Museum, we have precisely dated the oldest known basaltic meteorite by Pb-Pb and Al-Mg methods. This work provides a new minimum age for the solar system and infers that now extinct, short-lived nuclides caused the partial melting and differentiation of the planets. Previous estimates of stoney meteorites were consistently too young to allow for extinct nuclides to drive planetary melting, resulting in a major discrepancy between astrophysical and geochemical models for the formation of the solar system.