

# Curriculum Vita

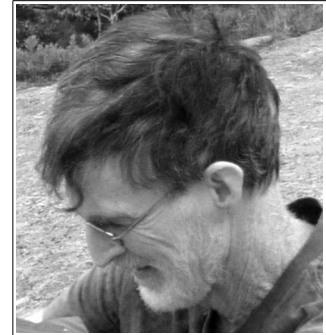
## Dr. Stephen R. Brown

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**Education:** University of Utah, Salt Lake City, Geology, B.S., 1979.  
Columbia University, New York, Geology, M.A., 1981.  
Columbia University, New York, Geology, M.Phil., 1983.  
Columbia University, New York, Geology, Ph.D., 1984.  
Los Alamos National Lab., New Mexico, Post-doc., 1984-1985.

**Affiliations:** American Geophysical Union (AGU), Society for Exploration Geophysicists (SEG), European Association of Geoscientists and Engineers (EAGE), Acoustical Society of America (ASA).

**Languages:** English and Spanish with minor Italian and German



### **Professional Appointments:**

Stephen Brown is a Research Scientist in the Department of Earth and Planetary Sciences at the Massachusetts Institute of Technology (MIT) (2009-present) and an Earth Science Consultant working under the auspices of Tierra Sciences Ltd. Co in Montpelier, VT. He was a Prometeo with INIGEMM, El Instituto Nacional de Investigación Geológico, Minero, Metalúrgico, in Quito, Ecuador (2014-2015). He was formerly a Principal Scientist at New England Research (NER) (1997-2011), a Senior Scientist at Applied Research Associates (1996-1997), a Member of the Technical Staff at Sandia National Laboratories (1987-1996), a Member of the Professional Staff at Schlumberger-Doll Research (1985-1987), and a post-doctoral fellow at Los Alamos National Laboratory (1984-1985). He was an Adjunct Assistant Professor at Dartmouth College, Hanover, New Hampshire (2000-2006). He was an Adjunct Associate Professor of Geology and Geophysics at the University of Utah (1987-2013). His former professional involvements include being a member of the NAS/NRC Committee on Fracture Characterization and Fluid Flow and a member of the board of directors of the American Rock Mechanics Association.

### **Qualifications, Skills, and Activities:**

Stephen Brown's primary scientific interests are the physical properties of fractured and otherwise heterogeneous rock as well as the application of geophysical methods to mining, energy, and environmental problems. His work combines field geologic and geophysical studies and mapping, experimental geophysics in the laboratory, computer modeling, and theoretical work. Field work has involved various fracture and fault mapping projects where the results have been placed in the context of theoretical models. In the course of this work, he has also invented, designed, and built unique laboratory and field apparatuses for measurement of physical processes as well as successfully designed, written, and used accompanying specialty software for data acquisition and analysis. Specific technical skills applied in these projects are: manufacturing and prototyping through the use of machining, metalwork, and casting; analog and digital electronics design and assembly; integration of micro-controllers into instrumentation; ELF and VLF radio receiver and antenna design and construction; radio remote control of instrumentation and data logging; laser imaging and ranging equipment design/assembly/use; time series analysis and image analysis; numerical modeling of elastic, electrical, and fluid transport processes. He is a licensed radio amateur. He authored and co-authored more than 50 peer-reviewed research articles in technical journals and conference proceedings.

### ***First-Hand Experience:***

- Mapping of fractures in water-supply tunnels for the Central Utah Water Supply Project.
- Mapping of fractures associated with normal faults in northern Utah.
- Field and laboratory measurement of fracture and fault irregularity and roughness.
- Study of the distribution and heterogeneity of mineralized veins in fault-controlled mineral deposits.
- Mapping and prediction of fault-controlled mineralization at Unico's Gold Button Mine, Arizona.
- Principal Investigator for three consecutive DOE Basic Energy Sciences grants for studies of flow, transport, and geophysical properties of fractured rock.
- Principal Investigator for DOE EMSP grant on use of complex electrical impedance for characterization of DNAPL's in the subsurface.
- Principal Investigator for DOE EMSP grant for study of geologic heterogeneity of the vadose zone.
- Principal Investigator on NSF SBIR grant to develop geophysical methods for fracture characterization.
- Principal Investigator for DOE SBIR grant to develop seismic methods for carbon sequestration characterization and monitoring.
- Developer of *TinyPerm*, a portable syringe permeameter sold by New England Research for field, laboratory, and drill-site measurements of porous rocks, soils, and fractures.
- Developer of GFT, a fractured rock fluid flow and geophysics forward and inverse modeling code.
- Developed multi-spectral cameras and data analysis techniques for use in remote-controlled aerial vehicles for close-range meso-scale geologic mapping for natural hazards monitoring and assessment..
- Mentoring of young geologists at INIGEMM, El Instituto Nacional de Investigación Geológica, Minero, Metalúrgico, in Quito, Ecuador during the field geologic mapping of structures and faults for natural resources and geologic hazard assessment in southern Ecuador.
- Designed and built a hand-held magnetometer for field geologists. Prototype donated to INIGEMM in Quito Ecuador for future field mapping use.

### ***Other Affiliations:***

- ***Collaborators and Co-Authors:*** Chris Barton (Wright State U.), Paul Bodin (U. Washington), Dan Burns (MIT), Ron Bruhn (U. of Utah), Jim Brune (U. Nevada Reno), Gilles Bussod (Los Alamos National Laboratory), Arthur Cheng (National U. of Singapore), Michael Fehler (MIT), Xuan Feng (MIT), Paul Hagin (Chevron), Joel Johnson (U. Texas Austin), Ruben Juanes (MIT), Peter Kang (MIT), David Lesmes (DOE), Carl Renshaw (Dartmouth Coll.), Martin Smith (New England Research), Jason Sorenson (USGS), Harlan Stockman (Sandia National Laboratories), Tom Szabo (Boston U.).
- ***Graduate and Postdoctoral Advisors:*** Christopher H. Scholz (Columbia University), Jim Blacic (Los Alamos National Laboratories).
- ***Thesis Advisor and Postgraduate-Scholar Sponsor for:*** Todd Myse (Dartmouth College, M.A. Thesis).

### ***Honors for Professional Achievement:***

- ***University of Utah:***
  - Utah Coal Company and Kennecott Copper Company academic scholarships.
  - 1979 Ronald Terrel Award for academic achievement.
  - Nominated for membership in the Phi Kappa Phi Scholastic Honor Society.
  - Graduated Magna Cum Laude.
- ***Columbia University:***
  - ARCO academic scholarship.
  - 1983 Bruce Heezen Memorial Prize for academic and research achievement.
  - Nominated for membership in Sigma Xi Scientific Honor Society for research achievement.
- ***U.S. National Committee for Rock Mechanics:***
  - 1989 Basic Research Award for the paper entitled: Fluid flow through rock joints: the effect of surface roughness.