Stuart V. Schmitt, Ph. D.

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Summary

Scientist with strong research background and diverse knowledge base. Highly adaptable to wide variety of analytical or quantitative roles. Rapidly acquires technical skills. Interacts effectively with coworkers of varied technical and personal backgrounds. Experienced in:

Optimization/inverse problems	Technical computing	Seismic processing
Engineering mechanics	Geomechanics	Induced seismicity
Petroleum geology	Electrical/electronic systems	Technical publication design

Experience

Seismic processing geophysicist, DownUnder GeoSolutions June 2016–present

Works on a team that performs seismic imaging services for clients. Role includes time processing and depth imaging for both marine and land surveys.

- Implements seismic processing workflows with careful attention to detail and technical correctness.
- Writes scripts and C++ programs helpful in converting data and validating processing output. Helps the company avoid weeks of laborious transcription and manual quality control.
- Assists coworkers by developing creative methods to use available software to overcome technical obstacles and achieve desired results.

Geophysicist, Chevron Energy Technology Company, R&D Division Dec. 2014–Nov. 2015

Conducted work on strategic research and development projects that integrate technology from multiple Earth Science disciplines. Projects sought to improve exploration success and reduce operating risk.

- Provided insight and analysis on operating risks associated with induced seismicity.
- In a petroleum systems project, researched methods to improve modeling of thermal history for some basin types. Co-advised an intern project that yielded an improved workflow for those basins.
- Helped to deploy an internal technical development product that improves reservoir model match to geophysical observations. Interfaced with geology and geophysics technical experts and was often instrumental in building interdisciplinary consensus.

Ph.D. student, Stanford University, Geophysics Department 2006–2014

Researched frictional behavior of faults as slip nucleates and transitions into seismic rupture. Results provided further theoretical support for the paradigm in which faults are frictionally strong between earthquakes and frictionally weak during earthquakes.

- Developed numerical earthquake models that included multiple coupled physical processes, and explored how the models' dynamic behavior depends on system parameters.
- Published two rigorously detailed research articles, with a third in preparation.
- Secured funding totaling $82,000 in four successful research grant proposals.
- Managed laboratory's Linux-based technical computing resources.
- Received excellent reviews during teaching assistant assignments for two undergraduate and two advanced graduate geophysics courses.

Technician, PFS Corporation, Laboratory Division, Madison, WI 2006

Designed and fabricated instruments at a laboratory that tested strength and other properties of construction materials. Assisted management in developing market strategy for testing services.

- Designed and deployed innovative creep-testing apparatus that increased testing capacity more than tenfold, reduced cost per sample, and improved technician safety.
- Developed procedures and trained coworkers to quantify and report measurement uncertainty, resulting in PFS being first-in-industry to achieve accreditation for that service.

Experience (continued)

Graduate student, University of Wisconsin-Madison, Geoscience Department 2002–2005

Researched crustal deformation associated with subduction zone tectonics in Mexico. Used a finite element model coupled with an optimization method to study a large earthquake using high-precision GPS. Conducted field campaigns to collect data.

- Published a research article about a significant earthquake that occurred in the study area.
- Engaged in field work beyond primary research, including an Antarctic marine geophysical survey.

Additional experience: Machinist, UW-Madison; Publications designer, Wisconsin Lottery

Education

Ph. D., Geophysics, Stanford University.

Dissertation title: *Thermal pressurization during earthquake nucleation and dynamic rupture*.

MS, Geophysics, University of Wisconsin-Madison.

Thesis title: *A geodetic study of the 22 January 2003 Tecomán, Colima, Mexico earthquake*.

BA, Physics with minor in history, Lawrence University, Appleton, WI.

Publications

Schmitt, S. V., P. Segall, and E. M. Dunham (in preparation), Flash heating and thermal pressurization during the nucleation and dynamic rupture on weakly stressed faults, submission to *Journal of Geophysical Research* in 2017.

Schmitt, S. V., P. Segall, and E. M. Dunham (2015), Nucleation and dynamic rupture on weakly stressed faults sustained by thermal pressurization, *Journal of Geophysical Research Solid Earth* 120.

Schmitt, S. V., P. Segall, and T. Matsuzawa (2011) Shear heating-induced thermal pressurization during earthquake nucleation, *Journal of Geophysical Research* 116, B06308.

Schmitt, S. V., C. DeMets, J. Stock, O. Sánchez, B. Márquez-Azúa, G. Reyes (2007), A geodetic study of the 22 January 2003 Tecomán, Colima, Mexico earthquake, *Geophysical Journal International* 169.

Technical knowledge

Programming experience in C++, *MATLAB*/*Octave*, and *IDL*. Can learn other languages quickly.

Expert in Linux system administration.

Some experience using and managing SQL databases.

Geoscience software experience in *GOCAD*, *PetroMod*, and *DUG Insight*.

Some experience with finite element modeling in *Abaqus*.

Proficient in Microsoft *Office* applications and open-source counterparts.

Expert in Adobe *InDesign*, *Illustrator*, and *Photoshop*.

Considerable experience designing publications and graphics in LaTeX, HTML/CSS, and GMT.

Experienced with electronics: analog and digital circuit design, prototyping, and repair.

Proficient in automotive mechanical and electrical work. Expert at designing automotive wiring systems.

Professional affiliations

American Geophysical Union (2002-present)

Society of Exploration Geophysicists (2002-2005, 2013-present)

American Association of Petroleum Geologists (2004-2005, 2015-present)

Houston Geological Society (2016-present)

Geophysical Society of Houston (2016-present)