Curriculum Vitae: W. Ashley Griffith

Assistant Professor, Geology and Environmental Science
Adjunct Assistant Professor, Civil Engineering
The University of Akron, Akron, OH, 44325-4101
wag8@uakron.edu
Phone: (330) 972-7632
Webpage: http://www.uakron.edu/geology/faculty-staff/bio-detail.dot?identity=1559236

Home Address:
224 Casterton Ave
Akron, OH, 44303

Education & Training

2008-2009	**NSF Postdoc**	Earthquake Mechanics Supervisor: Giulio Di Toro	**INGV, Rome, Italy**
2008	**PhD**	Geology and Environmental Science Adviser: David D. Pollard	**Stanford University**
2003	**MS**	Geosciences Adviser: Michele L. Cooke	**U. Massachusetts, Amherst**
1999	**BS**	Geology (Minor in History) Adviser: Christopher M. Bailey	**College of William and Mary**

Appointments

2010-present	Assistant Professor, Department of Geology and Environmental Science & Adjunct Assistant Professor, Department of Civil Engineering, The University of Akron, Akron, OH
2008-2009	National Science Foundation International Postdoctoral Scholar, Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy
2007-2008	Research Assistant, Department of Geological and Environmental Science, Stanford University, Stanford, CA
2003-2007	Teaching Assistant, Department of Geological and Environmental Science, Stanford University, Stanford, CA
2002-2003	Research Assistant, Department of Geoscience, University of Massachusetts-Amherst, Amherst, MA
2001-2002	Teaching Assistant, Department of Geoscience, University of Massachusetts-Amherst, Amherst, MA
1999-2001	Middle School Science Teacher, Houston Independent School District

Awards

2010	Certificate of Recognition for Teaching, National Residence Hall Honorary, University of Akron
2008	NSF International Research Fellowship Program Postdoctoral Scholar
2005	Outstanding Student Paper Award, Tectonophysics, American Geophysical Union
2002	Outstanding Teaching Assistant – Department of Geoscience, Umass-Amherst
1999-2001	Teach for America Corps Member

Publications

Ngo, D., Y. Huang, A. J. Rosakis, **W.A. Griffith**, and D.D. Pollard, **2012**, Off-fault tensile cracks: A link between geological fault observations, lab experiments and dynamic rupture models, *Journal of Geophysical Research*, 117, B01307, doi:10.1029/2011JB008577.

Bistacchi, A., **W.A. Griffith**, S. Nielsen, S.A.F. Smith, G. Di Toro, and R. Jones, **2011**, Surface roughness of ancient seismic faults: a combined LIDAR and high resolution photogrammetric analysis of fault trace profiles, *Pure and Applied Geophysics*, doi: 10.1007/s00024-011-0301-7.

Griffith, W.A., S. Nielsen, and G. Di Toro, S. E. A. Smith, **2010**, Rough faults, distributed weakening, and off-fault deformation, *Journal of Geophysical Research,* 115, B08409, doi:10.1029/2009JB006925.

Nielsen, S., G. Di Toro, **W.A. Griffith**, **2010**, Friction and roughness of a melting rock surface, *Geophysics Journal International*, 182: 299–310. doi: 10.1111/j.1365-246X.2010.04607.x

Griffith, W.A., G. Di Toro, G. Pennacchioni, D.D. Pollard, and S. Nielsen, **2009**. Static stress drop associated with brittle slip events on exhumed faults, *Journal of Geophysical Research,* 114, B02402, doi: 10.1029/2008JB005879.

Griffith, W.A., A.J. Rosakis, D.D. Pollard, and C.-W. Ko, **2009**. Dynamic rupture experiments elucidate tensile crack development during propagating earthquake ruptures, *Geology*, 37, 795–798, doi: 10.1130/G30064A.1.

Griffith, W.A., P.F. Sanz, and D.D. Pollard, **2009**. Influence of outcrop scale fractures on the effective stiffness of fault damage zone rocks, for *Pure and Applied Geophysics* Special Issue on "Mechanics, Structure, and Evolution of Fault Zones", p. 1-33, doi: 10.1007/s00024-009-0519-9.

Griffith, W.A., G. Di Toro, G. Pennacchioni, and D.D. Pollard, **2008**. Thin pseudotachylytes in faults of the Mt. Abbot Quadrangle, Sierra Nevada: Physical constraints for seismic slip, *Journal of Structural Geology,* vol. 30, pp. 1186-1194.

Griffith, W.A. and M.L. Cooke, **2005**. How sensitive are fault slip rates in the Los Angeles Basin to tectonic boundary conditions? *Bulletin of the Seismological Society of America*, vol. 95, pp. 1263-1275.

Griffith, W.A. and M.L. Cooke, **2004**. Mechanical validation of the three-dimensional intersection geometry between the Puente Hills blind-thrust system and the Whittier fault, Los Angeles, California, *Bulletin of the Seismological Society of America*, vol. 94 pp. 493-505.

Articles in Review/Preparation

Niemeijer, A., G. Di Toro, S. Nielsen, S.A.F. Smith, **W.A. Griffith**, and A. Bistacchi, Inferring earthquake mechanics using an integrated field and laboratory approach, *Journal of Structural Geology*, under review

Griffith, W.A., T.M. Mitchell, J. Renner, G. Di Toro, Ultra-low co-seismic stiffness of fault zone rocks, in preparation

Cione, K.M.* and **W.A. Griffith**, Calculation of 3D topographic stress perturbations using the Displacement Discontinuity Method: Applications to Roof Stability Forecasting in Underground Mines, in preparation

**denotes student author*

Invited Lectures

Griffith, W.A. (2011). Ultra-low coseismic stiffness of fault zone rocks. USGS Earthquake Hazards Seminar, Menlo Park, CA, September 26, 2011

Griffith, W.A., Breaking and melting rocks at high speeds: Virtual rock mechanics testing in the seismogenic crust, Bowling Green State University, March 17, 2011

Griffith, W.A., Earthquake tales lost in the cracks, Department of Geology, Kent State University, December 3, 2010

Griffith, W.A., Earthquake tales lost in the cracks, Northern Ohio Geological Society, November 8, 2010

Griffith, W.A., Using fracture geometries in fault zones to understand the mechanical behavior of ancient earthquakes, Department of Geosciences, University of Arkansas, February 20, 2009

Griffith, W.A., Using fracture geometries in fault zones to understand the mechanical behavior of ancient earthquakes, Department of Geology and Environmental Science, University of Akron, February 3, 2009

Griffith, W.A., Earthquake rupture velocity and shear stress drop from outcrop observations and laboratory models, Department of Marine Geology and Geophysics, Rosenstiel School of Marine and Atmospheric Science, University of Miami, FL, April 16, 2008

Griffith, W.A., Earthquake rupture velocity and shear stress drop from outcrop observations and laboratory models, Department of Geology and Geophysics, Louisiana State University, March 26, 2008

Griffith, W.A., Multi scale studies of earthquake mechanics using laboratory and computer models, Department of Geology, Appalachian State University, March 17, 2008

Griffith, W.A. and D.D. Pollard**,** Earthquake rupture velocity and shear stress drop on exhumed faults: insights from laboratory experiments and field mapping, Earthquake Seminar Series, USGS Menlo Park, February 20, 2008.

Griffith, W.A., Earthquake rupture velocity and shear stress drop on exhumed faults: insights from field mapping and lab experiments, Department of Physics, Cal Poly-San Luis Obispo, January 17, 2007

Griffith, W.A, Breaking and Melting Rocks at High Speeds, Indiana University-Purdue University Fort Wayne, Department of Geosciences, December 7, 2007

Griffith, W.A., Breaking and Melting Rocks at High Speeds, Institute of Geophysics and Planetary Physics, UC Santa Cruz, November 16, 2007

Conference Presentations (* indicates student authors)

Griffith, W.A., C. Biro* (co-presenter), K. Armstrong*, B. Bisesi*, J. Court*, M. Grom*, D. Homer*, D. King*, K. Kohlman*, J. Stith*, and P. Valatka*, 2012, Using Service Learning to Evaluate Natural and Anthropogenic Influences on Erosion, Northeast Ohio Regional Parks Conference.

Griffith, W.A., Rosakis, A.J., & Prakash, V. (2011), ***INVITED***. Secondary fracture arrays provide insight into coseismic friction along faults in crystalline rocks. American Geophysical Union Fall Meeting.

Resor, P.G., **W.A. Griffith**, & G. Di Toro, (2011). Three-dimensional micro-roughness of a pseudotachylyte-bearing fault surface. American Geophysical Union Fall Meeting.

Griffith, W.A., T.M. Mitchell, J. Renner, & G. Di Toro (2011). Ultra-low co-seismic stiffness of fault rocks at seismogenic (8-11 km) depth. American Geophysical Union Fall Meeting.

Bistacchi, A., Spagnuolo, E., Di Toro, G., Nielsen, S.B., & **Griffith, W.A.** (2011). Fault roughness evolution with slip (Gole Larghe Fault Zone, Italian Alps). American Geophysical Union Fall Meeting.

Griffith, **W.A.,** T.M. Mitchell, and G. Di Toro, In situ coseismic stiffness of fault rocks calculated using pseudotachylyte injection veins, Geophysical Research Abstracts, Vol. 13, EGU2011-9049, 2011EGU General Assembly, **2011**.

Bistacchi, A., **W.A. Griffith**, S.A.F. Smith, G. Di Toro, R. Jones, S. Nielsen, S. Mittepergher, and E. Spagnuolo, Geophysical Research Abstracts, Vol. 13, EGU2011-12210-1, EGU General Assembly, **2011**.

Kunkle, K.L.* and **W.A. Griffith**, Deformation bands in large sandstone dikes near Sheep Mountain Anticline, North-Central Wyoming, Northeast-North-Central Geological Society of America Annual Meeting, **2011**.

Griffith, **W.A.,** D. Ngo, Y. Huang, A.J. Rosakis, and D. Pollard, Using off-fault tensile cracks to provide a link between fracture mechanics- and laboratory friction-based approaches to studying earthquakes, Workshop on Physico-chemical process in seismic faults, Padova, Italy, **2010**.

Griffith, **W.A.,** P.J. Newman*, and N. Tokach*, Damage zone cracks formed under quasi-static and dynamic loading conditions: Insights from field observations, experiments, and theory. Geoloical Society of America Fall Meeting, 195-10, **2010**.

Ngo, D., Y. Huang, A.J. Rosakis, **W.A. Griffith**, and D.D. Pollard, Off-fault tensile cracks: A ling between geological fault observations, lab experiments, and dynamic rupture models, 173-10, **2010**.

Nielsen, S., G. Di Toro, and **W.A. Griffith**, Friction and roughness of a melting rock surface, 2010 European Geophysical Union Meeting), Geophysical Research Abstracts, Vol. 12, EGU2010-15178, **2010**.

Bistacchi, A., **W.A. Griffith**, S. Nielsen, S.A.F. Smith, G. Di Toro, and R. Jones, Surface roughness of ancient seismic faults exhumed from seismogenic depths (Gole Larghe Fault, Italian Alps): a combined LIDAR and high-resolution photogrammetric analysis, 30th International GOCAD meeting, **2010**.

A. Bistacchi**, W.A. Griffith**, S. Nielsen, S.A.F. Smith, and G. Di Toro, Surface roughness of ancient seismic faults exhumed from seismogenic depths (Gole Larghe Fault, Italian Alps), Geophysical Research Abstracts Vol. 12, EGU2010-12005, **2010**.

S.A.F. Smith**,** R. Jones, G. Di Toro, S. Mariano, A. Niemeijer, **W.A. Griffith**, A. Bistacchi, S. Mittempherger, and S.Nielsen, The Structure of Seismogenic Faults in Crystalline Basement), Geophysical Research Abstracts Vol. 12, EGU2010-13883, **2010**.

Bistacchi, A., **W.A. Griffith**, S.A.F. Smith, S. Mittempergher, A. Niemeijer, and G. Di Toro, Surface roughness of ancient seismic faults exhumed from seismogenic depths (Gole Larghe Fault, Italian Alps), American Geophysical Union, Fall Meeting, T21D-1865, **2009**.

Di Toro, G., **W.A. Griffith**, S.B. Nielsen, S.A.F. Smith, A. Niemeijer, A. Bistacchi, and S. Mittempergher, Inferring earthquake mechanics from exhumed faults, INVITED, American Geophysical Union, Fall Meeting, T12B-03, **2009**.

Griffith, W.A., S. Nielsen, G. Di Toro, S.A.F. Smith, and A. Niemeijer, Rough faults, distributed weakening, and off-fault deformation, American Geophysical Union, Fall Meeting, T23C-1936, **2009**.

Ngo, D., Y. Huang, A. J. Rosakis, **W.A. Griffith**, and D.D. Pollard, Off-fault tensile cracks: A link between geological fault observations, experiments and earthquake rupture models, American Geophysical Union, Fall Meeting, T52A-06, **2009**.

A. Niemeijer, G. Di Toro, S. B. Nielsen, S.A.F. Smith, W.A. Griffith, P. Scarlato, G. Romeo, G. Di Stefano, F. Di Felice, and S. Mariano, A New State-of-the-art Tool to Investigate Rock Friction Under Extreme Slip Velocities and Accelerations: SHIVA, American Geophysical Union, Fall Meeting, T23C-1950, **2009**.

Smith, S.A.F., R.R. Jones, G. Di Toro, S. Mariano, A. R. Niemeijer, **W. A. Griffith**, A. Bistacchi, S. Mittempergher, and S. B. Nielsen, Quantifying the Structure of an Exhumed Seismogenic Fault Zone Using Terrestrial Laser-Scanning and Differential GPS, American Geophysical Union, Fall Meeting, T23C-1935, **2009**.

Griffith, W.A., A.J. Rosakis, D.D. Pollard, and C.-W. Ko, 2008. Tensile cracks: a new link between geological observations of faults and seismological models of earthquake dynamics, American Geophysical Union, Fall Meeting, T22A-05, **2008**.

Griffith, W.A., S. Nielsen, G. Di Toro, D.D. Pollard, and G. Pennacchioni, 2007. Co-seismic static stress drops for earthquake ruptures nucleated on faults after progressive strain localization, American Geophysical Union, Fall Meeting **2007**.

Ko, C.W., **W.A. Griffith**, D.D. Pollard, and A. Rosakis, 2007. Tensile microcrack formation during experimental dynamic shear rupture under uniaxial loading, American Geophysical Union, Fall Meeting **2007**.

Griffith, W.A., G. Di Toro, G. Pennacchioni, and D.D. Pollard, 2007. Pseudotachylytes in Faults of the Mt. Abbot Quadrangle, Sierra Nevada: Implications for Seismic Slip, Geological Society of America, Fall Meeting **2007**.

Griffith, W.A., G. Di Toro, S.J. Martel, G Pennacchioni, and D.D. Pollard, 2006. Controls on Fault Behavior and Growth in Granitoid Plutons at Seismogenic Depths in the Mt. Abbot Quadrangle, Sierra Nevada, and Adamello Batholith, Northern Italian Alps, American Geophysical Union, Fall Meeting 2006.

Griffith, W.A., G. Di Toro, and D.D. Pollard, **2005**. The balance of frictional heat production, thermal pressurization, and slip resistance on exhumed mid-crustal faults (Adamello batholith, Southern Italian Alps), American Geophysical Union, Fall Meeting 2005.

Griffith, W.A., and M. L. Cooke, **2003**. Using Three-dimensional Mechanical Models of the Los Angeles Basin, California, to Validate Tectonic Boundary Conditions and Locate Unrecognized Secondary Faults, American Geophysical Union, Fall Meeting 2003.

Griffith, W.A. and M.L. Cooke, **2002**. Mechanical Analysis of Fault Interaction in the Puente Hills Region, Los Angeles Basin, California, American Geophysical Union, Fall Meeting 2002.

Conference Sessions Organized

W. Ashley Griffith, Tom M. Mitchell, Nicholas Brantut, Charles Sammis, Rock Physical Properties in Fault Zones through the Seismic Cycle and Implications for Earthquake Dynamics, American Geophysical Union Annual Meeting, **2011**

W. Ashley Griffith and Jon L. Lewis, Structural Geology and Natural Resources in the Central and Northeastern United States, Northeast-North-central Geological Society of America Annual Meeting, **2011**.

Christie D. Rowe, Heather M. Savage, Jean-Philippe Avouac, **W. Ashley Griffith**, Zoe K. Shipton, Where does Earthquake Physics Meet Earthquake Geology?, Geological Society of America Annual Fall Meeting, Denver CO, **2010**

Grants

Funded:

- The influence of topography on roof collapse in underground coal mines, supported by the University of Akron Faculty Research Committee, **$10,000**, Summer 2011.
- *New perspectives on earthquake mechanics: A multidisciplinary study of physico-chemical processes during the seismic cycle*, supported by the NSF International Postdoctoral Research Fellowship Program, P.I: W.A. Griffith, Postdoctoral Supervisor: Giulio Di Toro, amount granted: **$163,500**, Oct 2008- Sept 2010, no cost extension through December 2012.
- 2007-2008 - *Laboratory Investigation of Damage by Tensile Fracture during Dynamic Shear Rupture Propagation*, supported by the USGS National Earthquake Hazard Reduction Program (NEHRP), May 2007, PI: D. D. Pollard, preliminary research and contributing author: W.A. Griffith, amount granted: **$62,417**
- 2007 GSA Structural Geology and Tectonics Section Field Trip *Grant,* **$250**
- 2007 Shell Fund Grant, **$500**
- 2006 McGee Research Grant, **$2000**
- 2005 McGee Research Grant, **$2200**
- 2002 GSA Graduate Research Grant, **$1200**

Submitted:

- **Griffith, W.A**. (submitted Fall 2011). A Field-Based Geomechanical Study of the Formation, Deformation, and Internal Structure of Reservoir-scale Sandstone Dikes, Sheep Mountain Anticline, WY. *Petroleum Research Fund* (Requested Amount: $50,000, Proposed Start Date: 09/01/2012, Proposed Duration: 24 months)
- **Griffith, W.A.,** & Prakash, V. (submitted Fall 2011). Collaborative Research: Developing a Link between Dynamic Friction and Fracture Mechanics Models of Earthquake Rupture using a New Dynamic Double-direct Shear Apparatus. *National Science Foundation, Geophysics Program* (Requested Amount: $155,000, Proposed Start Date: 07/01/2012, Proposed Duration: 36 months)
- **Griffith, W.A.,** & Pan, E. (submitted Fall 2011). Incorporating topographic stress perturbations and geological structures into stability forecasting in underground mines. *National Institute for Occupational Safety and Health* (Requested Amount: $150,000, Proposed Start Date: 09/01/2012, Proposed Duration: 24 months)
- **Griffith, W.A.** (submitted Fall 2011). The work budget of rough faults with applications to the Community Fault Model. *Southern California Earthquake Center* (Requested Amount: $32,000, Proposed Start Date: 02/01/2012, Proposed Duration: 12 months)

Proprietary Industry Reports

Griffith, W.A., A.J. Rosakis, D.D. Pollard, and C.W. Ko, 2008, New insights into fault damage zone development by tensile fracture during dynamic shear rupture propagation under remote compression, Stanford University Rock Fracture Project Annual Meeting, v. 19, pp. F1-10.

Griffith, W.A., P.F. Sanz, and D.D. Pollard, 2008, Influence of fault damage zone fractures on the effective elastic modulus: Implications for rupture dynamics, Stanford University Rock Fracture Project Annual Meeting, v. 19, pp. PB1-12.

Griffith, W.A. and D.D. Pollard, 2007, Laboratory investigation of fault damage zone development by tensile fracture during dynamic shear rupture propagation, Stanford University Rock Fracture Project Annual Meeting, v. 18, pp. F1-9.

Griffith, W.A. and D.D. Pollard, 2006, The balance of coseismic frictional heat production, fluid diffusion, and pore dilation on exhumed mid-crustal faults (Adamello Batholith, Northern Italian Alps), Stanford University Rock Fracture Project Annual Meeting, v. 17, pp. PF1-10.

Griffith, W.A., 2005, Secondary fault structures and damage zone development around high velocity fault ruptures, Stanford University Rock Fracture Project Annual Meeting, v. 16(A), pp. F1-7.

Griffith, W.A., 2004, Frictional heating, transient fluid pressure, and fault zone structure during slip as inferred from exhumed faults, Stanford University Rock Fracture Project Annual Meeting, v. 15, pp. PB1-8.

Courses Taught

- Structural Geology (Spring 2010, Spring 2011)
- Advanced Structural Geology & Geomechanics (Spring 2011)
- Rock Fracture Mechanics (Spring 2012)
- Physical Geology (Fall 2011, Spring 2012)
- Geology and Environmental Science Service Learning (Fall 2011)
- Field Camp II (Summer 2010, Summer 2011)
- Geology Colloquium (Fall 2010, Spring 2011)
- Field Studies in Geology: Geology of the Adirondacks (Fall 2010)
- Seminar in Geology (Spring 2010)

Student Mentoring

- Graduate - M.S. Student, Patrick Newman, Fall 2011 – Present (in progress)
- Graduate - M.S. Student, James Becker, Spring 2011 - Present (in progress)
- Graduate – M.S. Student, Chrystal Fretz, Spring 2012 - Present (in progress)
- Undergraduate – Summer Research Project, Krysta Cione (Summer 2011) (completed)
- Undergraduate - Honor's Thesis, Cody Kunkle Fall 2010 - Spring 2011 (completed)

Academic Service

- Interviewer for Honors College Scholarship Friday (University of Akron) Fall 2011
- Web Page Development, 2011, Dept. of Geology and Environmental Science, University of Akron
- Chair, Merit Review Committee, 2010, Dept. of Geology and Environmental Science, University of Akron
- Merit Review Committee, 2010, Dept. of Geology and Environmental Science, University of Akron
- Dean’s Graduate Student Advisory Counsel (GSAC), School of Earth Sciences, Stanford University, 2005-2006
- Teach for America Recruiter for the Five Colleges, Amherst, MA, 2001-2003
- Testified before the Labor, Health and Human Services, and Education Appropriations Subcommittee, US House of Representatives on behalf of Teach for America, May 2003

Collaborators

- *Field, microstructural, and geochemical investigations:* **Giulio Di Toro**, (University of Padova/INGV – Rome, IT), **Giorgio Pennacchioni** (University of Padova, IT), **Steven A. F. Smith** (INGV – Rome, IT), **Andrea Bistacchi** (University of Milan, IT), **Tim Miller** (East Fairfield Coal Company, N. Lima OH)
- *Numerical/Theoretical Modeling:* **Michele Cooke** (University of Massachusetts), **Pablo Sanz** (Exxon-Mobil Upstream Research Company, Houston, TX), **Stefan Nielsen** (INGV – Rome, IT), **Yonggang Huang** (Northwestern University), **Ernian Pan** (University of Akron)
- *Experimental Mechanics:* **Ares J. Rosakis** (Caltech), **Giulio Di Toro**, **Stefan Nielsen, Andre Niemeijer** (Utrecht University, The Netherlands), **Tom Mitchell** (Ruhr-University Bochum, Germany), **Vikas Prakash** (Case Western Reserve University), **Joerg Renner** (Ruhr-University Bochum, Germany)

Reviewer for

- *Journal of Geophysical Research*
- *Geophysical Research Letters*
- *Journal of Structural Geology*
- *National Science Foundation, Tectonics Program*
- *National Science Foundation, Earthscope Program*
- *Tectonophysics*
- *Geosphere*
- *Georisk*
- *Environmental and Engineering Geoscience*

Professional Memberships

Geological Society of America, 1999-present
American Geophysical Union, 2002-present
Northern Ohio Geological Society, 2011-present

Professional Licensures & Certifications

Secondary teacher certification - Earth Science, Texas State Board of Education 2000