

Clay Emerson Wood

clayewood@gmail.com +1 470-305-8655

BRIEF

Experience operating/maintaining high-pressure apparatus to conduct biaxial and triaxial experiments with fractured rock specimens to investigate poromechanics. Also experienced in managing and processing large datasets (mechanical/pressure and ultrasonic data) and numerical modeling. Proficient in Python, Matlab, Julia programming languages.

EDUCATION

Pennsylvania State University State College, PA
Ph.D. Geosciences 08/2017 – 08/2023

Emory University Atlanta, GA
B.S. Physics 08/2012 – 05/2016

PROFESSIONAL APPOINTMENTS

Pennsylvania State University – Rock and Sediment Mechanics Lab State College, PA
Research Assistant 08/2017 - Present

Emory University – Fluid and Granular Mechanics Physics Lab Atlanta, GA
Research Technician 06/2016 – 07/2018

PUBLICATIONS AND TALKS

JOURNAL ARTICLES

C. Wood, C. Ke, A. Rathbun, J. Rivière, D. Elsworth, C. Marone, P. Shokouhi. (2023) Multiphysics modeling of rough fracture deformation to constrain the connection between fracture stiffness, permeability, and acoustic transmission (in prep.) JGR: Solid Earth

C. Wood, P. Manogharan, A. Rathbun, J. Rivière, D. Elsworth, C. Marone, P. Shokouhi. (2023) Relating fracture aperture to hydro-mechanical properties of dynamically-stressed tensile-fractured rock (under rev.) JGR: Solid Earth

C. Wood, P. Shokouhi, P. Manogharan, J. Rivière, D. Elsworth, C. Marone. (2021) Imaging Elastodynamic and Hydraulic Properties of In Situ Fractured Rock: An Experimental Investigation Exploring Effects of Dynamic Stressing and Shearing. JGR: Solid Earth e2020JB021521.

S. Shreedharan, M. Ikari, **C. Wood**, D. Saffer, L. Wallace, C. Marone. (2021) Frictional and Lithological Controls on Shallow Slow Slip at the Northern Hikurangi Margin. G-Cubed.

P. Manogharan, **C. Wood**, C. Marone, D. Elsworth, J. Rivière, P. Shokouhi. (2021) Nonlinear elastodynamic behavior of intact and fractured rock under in-situ stress and saturation conditions. JMPS 153, 104491.

P. Manogharan, **C. Wood**, C. Marone, D. Elsworth, J. Rivière, P. Shokouhi. (2021) Experimental Investigation of Elastodynamic Nonlinear Response of Dry Intact, Fractured and Saturated Rock. *Rock Mech Rock Eng*, 125.

A. Mouat, **C. Wood**, J. Pye, J. Burton. (2020) Tuning Contact Line Dynamics and Deposition Patterns in Volatile Liquid Mixtures. *Phys. Rev. Lett*, 124, 064502

P. Shokouhi, J. Jin, **C. Wood**, J. Rivière, B. Madara, D. Elsworth, C. Marone. (2020). Dynamic stressing of naturally fractured rocks: On the relation between transient changes in permeability and elastic wave velocity. *Geophys. Rev. Lett*, 47, e2019GL083557.

A. Mouat, **C. Wood**, J. Pye, J. Burton. (2019) Liquid deposition through evaporation. *Phys. Rev. Fluids*, 4, 100512.

J. Pye, **C. Wood**, J. Burton. (2018) Precursors to Molecular Slip on Smooth Hydrophobic Surfaces. *Phys. Rev. Lett*, 121, 134501.

CONFERENCE TALKS & PRESENTATIONS

C. Wood, C. Ke, J. Riviere, D. Elsworth, C. Marone, P. Shokouhi. Decoupling the poromechanics of particle remobilization and interface stiffness of dynamically stressed tensile fractured rock Poster. European Geophysical Union. Vienna, Austria. May 2023.

C. Wood, C. Ke, J. Riviere, D. Elsworth, C. Marone, P. Shokouhi. Decoupling the poromechanics of particle remobilization and interface stiffness of dynamically stressed tensile fractured rock Poster. American Geophysical Union Fall Meeting. Chicago, USA. December 2022.

C. Wood, C. Ke, J. Riviere, D. Elsworth, C. Marone, P. Shokouhi. Probing the micromechanical features of a fracture interface using a multi-physics approach: A numerical investigation relating asperity deformation with fluid flow. Poster. Rock Deformation Gordon Research Conference. Maine, USA. August 2022.

C. Wood, C. Ke, J. Riviere, D. Elsworth, C. Marone, P. Shokouhi. Probing the micromechanical features of a fracture interface using a multi-physics approach: A numerical investigation relating asperity deformation with fluid flow. Talk. European Geophysical Union. Vienna, Austria. May 2022.

C. Wood, P. Manogharan, J. Rivière, D. Elsworth, C. Marone, P. Shokouhi. Relating fracture aperture to hydraulic and elastodynamic properties of dynamically-stressed rock under true-triaxial stress conditions. Talk. American Geophysical Union Fall Meeting. Washington D.C., USA. December 2021.

C. Wood, P. Manogharan, J. Rivière, D. Elsworth, C. Marone, P. Shokouhi. Relating fracture aperture to hydraulic and elastodynamic properties of dynamically-stressed rock under true-triaxial stress conditions. Poster. The Physics of Earthquake Faulting. Rome, IT. September 2021.

C. Wood, P. Manogharan, S. Zi, J. Rivière, D. Elsworth, C. Marone, P. Shokouhi. The Relation Between Fracture Aperture and Hydro-mechanical Properties: An Experimental and Analytical Approach. Poster. American Geophysical Union Fall Meeting. Washington D.C., USA. December 2020.

C. Wood, P. Manogharan, J. Jin, J. Rivière, D. Elsworth, C. Marone, P. Shokouhi. The Influence of Fracture Aperture on Permeability and Elastic Nonlinearity: An Integrated Analytical and Empirical Investigation. Talk. American Geophysical Union Fall Meeting. Washington D.C. December 2019.

C. Wood, B. Madera, P. Shokouhi, J. Jin, J. Rivière, D. Elsworth, C. Marone. The Effect of Roughness on the Elasticity and Permeability of Fractured Media. Poster. Schatzalp 3rd Induced Seismicity Workshop. Davos, SW. March 2019.

C. Wood, B. Madera, P. Shokouhi, J. Jin, J. Rivière, D. Elsworth, C. Marone. The Effect of Roughness on the Elasticity and Permeability of Fractured Media. Poster. American Geophysical Union Fall Meeting. Washington D.C. December 2018.

C. Wood, B. Madera, P. Shokouhi, J. Jin, J. Rivière, D. Elsworth, C. Marone. The Effect of Roughness on the Elasticity and Permeability of Fractured Media. Poster. International School of Physics, Enrico Fermi. Verena, It. December 2018.

C. Wood, J. Pye, J. Burton. Liquid “Coffee Rings” and the Spreading of Volatile Liquid Mixtures. Talk. American Physical Society March Meeting. New Orleans, USA. March 2017

C. Wood, J. Pye, J. Burton. Quantifying stick-slip contact line motion of evaporating sessile droplets. Talk. American Physical Society March Meeting. Baltimore, USA. March 20

HONORS & AWARDS

- **Geosciences Department Colloquium Presentation Award**, 2023: 2nd Place.
- **Krynine Travel Grant**: 2018-2023
- **Shell Geosciences Energy Research Facilitation Award**: 2019, 20

TEACHING EXPERIENCE

- Geosc 597: *Techniques in Geophysical Experimentation*. Co-instructor with Dr. Chris Marone for laboratory skills course.
- Geosc 452: *Hydrogeology*. Teaching Assistant. Instructors: Dr. Byron Parizek, Dr. John Hooker

SERVICE

- Reviewer for US Dept. of Energy

OUTREACH

- Laboratory demonstrations for Discovery Space of State College, PA. 2018, 2022
- Participated in outreach event through PSU Geosciences Department to teach geology to local Cub Scout pack.
- *Shake, Rattle, Rocks*: geology outreach for State College School District fifth grade.

PROFESSIONAL MEMBERSHIPS

- American Geophysical Union member: 2018-Present
- American Physical Society member: 2016-Present