Derek Elsworth
Professor, Energy and Mineral Engineering, Geosciences, Civil Engineering
The Pennsylvania State University, University Park, PA 16802
Phone: 814-865-2225, e-mail: elsworth@psu.edu

Professional Preparation/Education
Portsmouth Polytechnic, Portsmouth, UK, Engineering Geology, B.Sc. (1979)
Imperial College, London, UK, Engineering Rock Mechanics, M.Sc., DIC (1980)
University of California, Berkeley, Engineering, Ph.D. (1984)

Appointments/Professional Experience:

1997 - Pres.	Professor, Energy and Mineral Engineering, Pennsylvania State University.
2000 - 2003	Associate Dean for Research, College of Earth & Mineral Sciences, Penn State
1991 - 1997	Associate Professor, Mineral Engineering, Pennsylvania State University.
1985 - 1991	Assistant Professor, Mineral Engineering, Pennsylvania State University.
1990 - 1993	Adjunct Professor, Earth Sciences and WCGR, University of Waterloo.
1984 - 1984	Visiting Assistant Professor, Civil Engineering, University of Toronto.
1984	Research Associate, Lawrence Berkeley Laboratory.
1980 - 1982	Engineer D.R. Piteau and Assocs., and Komex Consultants. Calgary, Canada.

Publications Related to Proposal

Im, K.J., Elsworth, D., Wang, C. (2019) Cyclic permeability evolution during repose then reactivation of fractures and faults. J. Geophys. Res., Vol. 124, pp. 4492-406. https://doi.org/10.1029/2019JB017309

Wang, C., Elsworth, D., Fang, Y. (2019) Ensemble shear strength, stability, and permeability of mixed mineralogy fault gouge recovered from 3D granular models. J. Geophys. Res. Vol. 124. https://doi.org/10.1029/2018JB016066

Ishibashi, T., Elsworth, D., Fang, Y., Rivière, J., Madara, B., Asanuma, H., Watanabe, N., Marone, C. (2018) Friction-stability-permeability evolution of a fracture in granite. Water Resour. Res., Vol. 54. https://doi.org/10.1029/2018WR022598

Fang, Y., Elsworth, D., Wang, C., Jia, Y. (2018) Mineralogical controls on frictional strength, stability and shear permeability evolution of fractures. J. Geophys. Res. Vol. 123. https://doi.org/10.1029/2017JB015338

Im, K.J., Elsworth, D., Fang, Y. (2018) The influence of preslip sealing on the permeability evolution of fractures and faults. Geophys. Res. Let., Vol. 45. https://doi.org/10.1002/2017GL076216

Wang, C., Elsworth, D., Fang, Y. (2017) Influence of weakening minerals on the ensemble strength and slip stability of faults. J. Geophys. Res. Vol. 122. pp 7090-7110. http://dx.doi.org/10.1002/2016JB013687

Fang, Y., Elsworth, D., Wang, C., Ishibashi, T., Fitts, J.P. (2017) Frictional stability-permeability relationships for fractures in shales. J. Geophys. Res. , Vol. 122, pp. 1760-1776. http://dx.doi.org/10.1002/2016JB013435

Guglielmi, Y., Elsworth, D., Cappa, F., Henry, P., Gout, C., Dick, P., Durand, J. (2015) In situ observations on the coupling between hydraulic diffusivity and displacements during fault reactivation in shales. J. Geophys. Res. Solid Earth, Vol. 120. http://dx.doi.org/10.1002/2015JB012158

Guglielmi, Y., Cappa, F., Avouac, J.-P., Henry, P., Elsworth, D. (2015) Seismicity triggered by fluid-injection-induced aseismic slip. Science. Vol. 348, pp. 1224-1226. http://dx.doi.org/10.1126/science.aab0476

Cai. Y., Liu, D., Mathews, J.P. Pan, Z., Elsworth, D., Yao, Y., Li, J., Guo, X (2014) Permeability evolution in fractured coal – combining triaxial confinement with X-ray computed tomography, acoustic emission and ultrasonic techniques. Int. J. Coal Geology. Vol. 122. Pp. 91-104. http://dx.doi.org/10.1016/j.coal.2013.12.012

Synergistic Activities

Recent Keynotes: [2019]
Int. Forum on Unconventional Energy. Henan Polytechnic Uni., Jiaozuo, China
10th Int. Conf. on Field Exploration and Development. Xi'an, China
6th Int. Conf. on Unconventional Geomechanics. Beijing;
1st Summit on Deep Earth Drilling and Resource Development. China University of Geosciences, Wuhan
27th ISRM Online Lecture. https://www.isrm.net/gca/?id=1385 [Invited]
ARMA-CUPB Geothermal International Conference, Beijing
Int. Symp. on Multi-Physics Study of Hydro-Dynamically Induced Landslides: Lille, France
Int. Conf. on Energy Resources, Environment and Sustainable Development, Xuzhou
International Young Scholars Forum on Physics and Chemistry in Geomaterials. Wuhan, China
Int. Conf. on Geothermal Development in China. Weifang, China
[2018] *Six*; [2017] *Four*; [2016] *Five*; [2015] *Four.*

Recently Convened Meetings:
Co-Convener, *6th Unconventional Geomechanics Symposium*, CUMT-Beijing, China. 2019.
Co-Convener, *4th Unconventional Geomechanics Symposium*, Shenyang, China. 2017.
Convener ARMA-AAPG-SedHeat Workshop on "*Sedimentary Geothermal Systems.*" June 2016.
Co-Convener Penrose Conference on "*Geothermal Fluids in Deep Sedimentary Basins.*" October 2013.

Recent Advisory Activities:
Stanford University – DOE - Energy Frontiers Research Center, External Advisory Board (2018-).
China Jinping International Physics Laboratory, International Advisory Committee (2016-).
National Academy (NASEM) Committee on Geological and Geotechnical Engineering (2016-2018).
President, ARMA Foundation (2014-).
ARMA, Chair of Fellows (2011-2018).
Mine Safety and Health Research Advisory Committee, DHHS (2011-2013).

Honorary Appointments:

2019 –	Adjunct Professor, Shandong University, Jinan, China
2018 –	Visiting Professor, IROAST, Kumamoto University, Japan
2018 –	Adjunct Professor, China University of Mining and Technology, Beijing
2017 –	Adjunct Professor, Henan Polytechnic University, Jiazhou, China
2016	Darcy Professor, Utrecht University, Netherlands
2016 – 2023	Adjunct Professor, Northeastern University, Shenyang, China
2014 – 2020	Adjunct Professor, Chinese Academy of Sciences, Wuhan, China