

Acoustic Emission Hands-on Workshop

March 7 – 9, 2023, 434 Conf Room and Beamline 13-BM-D, Advanced Photon Source, Argonne National Laboratory (schedule is Central Time)

March 7, 2023 (no beam)		March 8, 2023 (beam time)		March 9, 2023 (beam time)	
Presentations - background (will be recorded and made available online)		In-situ deformation experiment #1 (transformational faulting in Mg ₂ GeO ₄ olivine)		In-situ deformation experiment #2 (cold compression) and discussion	
8:30-9:00	Breakfast	8:30-9:00	Breakfast	8:30-9:00	Breakfast
9:00-9:20	Opening remarks Wenlu Zhu (ISRD, U. Maryland)	9:00-9:30	Experiment preparation: detector calibration, compression	9:00-12:00	Room-T deformation of one user sample. Beamline control practice Transducer mounting (with coffee break)
9:20-9:50	GSECARS overview Mark Rivers (GSECARS)	9:30-10:00	Demo: picking AE first arrivals, rudimentary focal mechanism determination		
9:50-10:00	Coffee break	10:00-12:00	Continue hands-on practice while sample is being compressed in D-DIA Beamline control practice Transducer mounting (with coffee break)		
10:00-10:15	ANL site-wide tornado drill				
10:15-10:45	What do we look for and what it means in laboratory earthquakes German Prieto (U. Nacional Colombia)				
10:45-11:15	Coupled in-situ X-ray and ultrasonic/acoustic imaging of fracture rock under static and dynamic loading Parisa Shokouhi (Penn State)				
11:15-11:45	AE science at GSECARS Timothy Officer (GSECARS)				
11:45-12:45	Quantitative AE Analysis and examples from stick-slip experiments Greg McLaskey (Cornell U.)				
12:45-13:30	Lunch	12:00-13:00	lunch	12:00-13:00	Lunch
13:30-14:00	Station tour	13:00-17:00	In-situ deformation w/ AE detection --Heating to target temperature --Deformation control --Stress & strain measurements --AE detection/quick focal mechanism demo --Decompression (with coffee break)	13:00-18:00	Demo/discussion: AE data analysis: --Stress/strain analysis --Event location --Characters of different focal mechanisms --Q&A (with coffee break)
14:00-17:30	Demo & hands-on practice in 2 groups: --D-DIA hardware --Cell assembly preparation --Anvil and transducer preparation --GSE AE hardware setup --AE software functions overview (with coffee break)				
17:30-18:30	Hot dinner	17:00-18:00	Hot dinner	18:00-19:00	Grab N Go dinner
18:30-21:30	Demo in 2 groups: --13-BM-D experiment setup --Control software overview	18:00-19:00	Demo: Stress analysis, hypoDD event relocation	19:00	Adjourn
		19:00-21:00	Next run preparation (User sample)		

