



# Seminar: Energy-Water-Environment Sustainability (EWES)

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## *Formation and Extension of Localized Compaction in Porous Sandstone*

Monday, April 16, 12:00 – 1:00 p.m.  
1310 Newmark



**APRIL 16  
12:00 P.M.**

**Abstract:** In porous rock (15 – 25% porosity) shear localization is accompanied by compaction and in limiting cases bands with minimal shear offset (compaction bands) can form perpendicular to the most compressive principal stress. Because reduction in porosity reduces permeability, localized compaction can affect processes involving fluid injection or withdrawal from reservoirs, such as energy recovery, waste disposal or sequestration of CO<sub>2</sub>. This talk will review laboratory and field observations of localized compaction and present simple models for their onset and propagation.

**Bio:** Professor Rudnicki earned his BSc (1973), MSc. (1974) and PhD (1977) degrees at Brown University. After a postdoctoral fellowship at Caltech in Geophysics, he joined the TAM Department at UIUC in 1978. In 1981 he moved to Northwestern University where he is now Professor in the Department of Civil and Environmental Engineering and the Department of Mechanical Engineering. He is a Fellow of the American Society of Mechanical Engineers, the Engineering Mechanics Institute, and the American Rock Mechanics Association. He received the Society of Engineering Science Medal in 2014, the Daniel C. Drucker Medal from the American Society of Mechanical Engineers in 2011, the Brown Engineering Alumni Medal in 2008, and the Maurice A. Biot Medal in 2006 from the American Society of Civil Engineers

