



A One Day Course on
**Monitoring and Modelling Seismic Rock Mass Response
to Mining**

24 June 2012, ARMA, Chicago



08h30 | **Seismic Sources, Ground Motion and Seismic Hazard**, Dr Aleksander Mendecki: Planar & complex sources, static & dynamic parameters, rupture & slip velocity. Strong Ground Motion (SGM), PGV, PGA, frequency, duration, Arias Intensity, vulnerability of u/g & surface structures. Size distribution, m_{max} , GM hazard, forecasting seismic hazard for mines.

10h00 | **Modelling Seismic Sources & Deterministic Hazard**, Dr Ernest Lötter: Source models, the higher order moment/potency tensor, estimation of slip velocity and velocity and direction of rupture propagation. Deterministic hazard - modelling SGM (u/g & at surface), including directivity effects, complexity of the source and heterogeneous properties of the medium.

11h30 | **Geology, Mining and Seismicity - Numerical Integration**, Dr Dmitriy Malovichko: Travel times and full waveform location. Focal mechanism & moment/potency tensor - visualization & inversion. Source mechanisms - slip on a structure, pillar burst and abutment failure, rock fall, blast. Source mechanisms and stress field, case studies of larger seismic events in mines.

14h00 | **Active and Passive Seismic Monitoring in Mines**, Dr Richard Lynch: In-situ repeatable high-precision measurements of seismic velocity variations, coupling to rock mass properties, piezoelectric sources, sensor/source configuration, embedded pre-stacking, measuring absolute velocity vs velocity change. Case studies (response to blasting, cave tracking), interpretation.

15h30 | **New Seismic Monitoring Technologies**, Dr Richard Lynch: Seismic sensors, desirable frequency band, and dynamic range, tap-test. Communication options, triggering, association and graceful decline. Data base, data accessibility and security, system admin. Automatic seismogram processing and visualisation. Integrated passive and active monitoring technology.

For more details & registration contact Rynelle.Eksteen@IMSeismology.org, or www.imseismology.org