ENERGETIC MATERIALS, ROCK CHARACTERIZATION AND GEOMECHANICS (EMRGE) RESEARCH CENTER

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The Energetic Materials, Rock Characterization and Geomechanics (EMRGe) Research Center provides a multidisciplinary environment for researching energetic materials and geomechanics in a joint effort of subterranean exploration and national defense to address the many complex challenges in subsurface engineering disciplines.

Areas of research include:

- Reagent design for mineral pressing applications, froth flotation, ionic liquids
- Engineering geophysics, ground penetrating radar, electrical resistivity tomography
- Modeling, simulation, and optimization for sustainable mining systems
- Enhanced oil recovery and water management, particle-gels, hydrogel, and nano-fluidics
- Numerical geomechanics, petroleum related geomechanics modeling
- Geophysical exploration of the Earth's interior, geophysics, seismology, rock physics
- Rock mechanics, acoustic emissions, mine hazard prevention and controls, seismic based void detection
- Space mining, rock excavation, mining methods development, mine design
- Mining health and safety, ground control, underground communications
- Explosives engineering and technology, explosive taggants, shock physics
- Geophysical subsurface imaging, seismic interpretation, seismic anisotropy
- Lidar scanning, landslides, autonomous navigation
- Energetics, rock dynamics, ground control , coal dust explosion suppression

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