

DYNAMIC TRI-AXIAL COMPRESSION EXPERIMENTS

Student: John Black

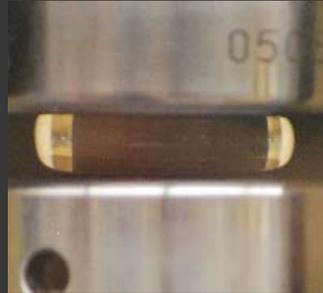
PI: Dr. Wayne Chen

Sponsor: TARDEC (DoD)



Research Objectives

- Determine how material response is affected by strain rate and confinement pressure
- Example of PMMA:



Unconfined
0.001/s strain rate
Ductile response



Unconfined
~500/s strain rate
Failed at PSD ~225 MPa

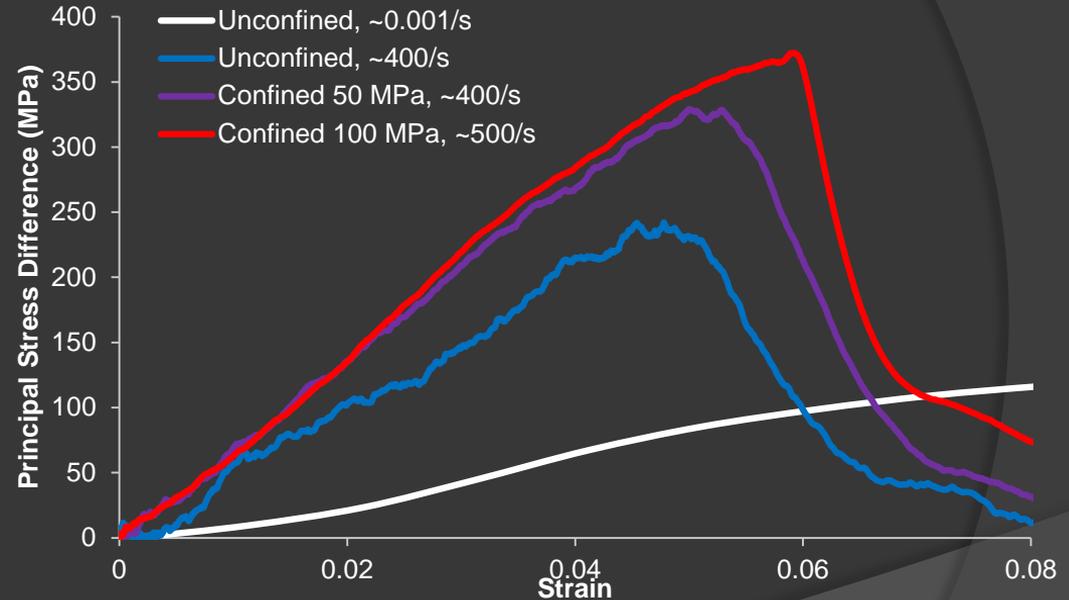


100 MPa confinement
~500/s strain rate
Failed at PSD ~360 MPa

Research Findings

Materials:

- Sand
- Cor-Tuf concrete
- PMMA
- Polycarbonate
- Glass



Stress vs. strain of PMMA for various confinements and strain rates

Dynamic Tri-axial Compression Experiments

The experimental setup modifies a Kolsky bar by adding pressure chambers to axially and radially confine specimens before and during impact. As a result, the effect of strain rate and confinement pressure upon the material response may be determined.

Sponsor(s): TARDEC (DoD)

Faculty Investigator(s): Dr. Wayne Chen

Graduate Student(s): John Black

