A need exists to characterize energetic / inert particulate composite materials due to their prevalent use in the defense sector.

Thermomechanical behavior in response to high frequency mechanical excitation (1-100 kHz) is not well understood.

Contact harmonic excitation resulted in temperature rises of approximately 2-4°C per minute, with a maximum surface temperature of 100°C. Particle/binder interactions and viscous heating were observed as components of heat generation across the 1 to 80 kHz frequency range of interest.

At resonances below 20 kHz, heat generation primarily concentrated within the sample. Conduction observed between fixture components at higher frequency resonances.

High frequency vibration induces heating in explosive materials.