

Abstract Submitted  
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**Radio-frequency electromagnetic emissions from materials under high-frequency mechanical excitation**<sup>1</sup> CHRISTIAN SORENSEN, DAVID MOORE, Los Alamos National Laboratory — Direct contact piezoelectric transducers were used to excite compacted polycrystalline dielectric material samples with high amplitude but short duration ultrasound through a frequency range of 50 kHz to 10 MHz, while near field RF emissions were measured in 12 frequency bands from 18 to 750 GHz using a suite of detectors. Emissions were observed only in three detectors, covering the 40-75 GHz, 110-170 GHz, and 170-260 GHz frequency ranges. Emission amplitudes appear to rise nonlinearly with applied ultrasound amplitude, and the emission amplitudes versus ultrasound frequency are different than the thermal responses of these samples. Data comparing thermal responses and electromagnetic emissions versus ultrasound frequency and amplitude for several sample types (oxidizers and energetic materials) will be presented.

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