Abstract Submitted
for the APR20 Meeting of
The American Physical Society

Sound Absorption and Acoustic Energy Harvesting of Piezoelectric Ceramic Composites JOSE FIGUEROA JR, St. Marys University, MARGO STARUCH, Naval Research Laboratory, NAVAL RESEARCH LABORATORY COLLABORATION — Military personnel are frequently exposed to hazardous sound pressure levels that, for long prolonged exposure, can lead to hearing loss affecting personnel performance and overall quality of life. Current hearing protection devices used by the military are not achieving proper noise attenuation. Piezoelectric materials can potentially be used to develop self-powered active noise cancelling devices or as passive noise cancelling energy harvesters. A low-cost impedance tube was designed, fabricated and validated to calculation the absorption coefficient of 1-3 PZT dice and fill polymer ceramic composites. Secondary measurements were conducted to measure the power generated by these materials. By determining the absorption coefficient for the piezoelectric ceramics and recording induced voltage, we can observe the tradeoffs in power generated and sound absorption for future device optimization.

Jose Figueroa Jr
St. Marys University

Date submitted: 27 Oct 2019 Electronic form version 1.4