

# ENERGY HARVESTING WITH MULTILAYER PIEZOELECTRIC CERAMICS AT LOW FREQUENCIES

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Energy harvesting from piezoelectric materials is the main concern to renewable energy for these twenty years. There are some methods for obtaining energy from vibration sources. One of the methods is continuous vibration induced. Some special designs were tried and been very successful to increase useful energy such as moonie and cymbal. These designs were joined with multilayer piezoelectric ceramic actuator effect in this study. In the experiments, 10x10x 2 mm size have 26 layers of multilayer ceramic actuators were used and clamped between two plates. FEM modelling studies of the ceramic multilayer actuator were made. Vibration was generated with shaker, signal generator and piezoamplifier. Multilayer ceramic actuator was vibrated its resonance frequencies about 50-150 Hz. Experimental and modelled results were matched. Then cymbal structure was obtained with brass endcaps. This structure vibrated and measured the electrical charge.