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KEY WORD: PIEZOELECTRIC / 0-3 CERAMIC-POLYMER COMPOSITES / LEAD ZIRCONATE TITANATE /
POLYVINYLIDENE FLUORIDE

PIYALAK NGERNCHUKLIN : FABRICATION OF 0-3 PIEZOELECTRIC LEAD ZIRCONATE
TITANATE-POLYVINYLIDENE FLUORIDE COMPOSITES.

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Recently there have been several attempts to use piezoelectric ceramic for medical applications such as ultrasonic diagnostic and ultrasound therapy. The disadvantage of piezoelectric ceramic for those applications is impedance mismatch to human body. The combination of ceramic-polymer composites would be the solution for transmitting signal to human body. The variety of ceramic-polymer composites was studied. In this study the proper methods for preparing 0-3 piezoelectric ceramic polymer composites were investigated. Lead Zirconate Titanate (PZT) was used as piezoelectric ceramic and polyvinylidene Fluoride (PVDF) was used as polymer. The fabrication of composite has been done by conventional technique and hot-press. The effect of solvent, ethanol and Methyl Ethyl Ketone (MEK) on dissolving PVDF and mixing of PZT and PVDF was investigated. It was found that MEK could dissolve PVDF and coated on the surface of ceramic particles as detected by SEM. In addition, process fabrication by hot pressing at 150 °C decreased porosity, resulting in an increase density of the sample.

Department Materials Science

Field of study Ceramic Technology

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