

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

0-3 Connectivity of PVDF/BST Piezoelectric Composites KITTIKUN KOHPAIBOON, HATHAIKARN MANUSPIYA, The Petroleum and Petrochemical College, Chulalongkorn University — Film mechanical sensors, one of the piezoelectric applications, which are focused on this research, are used to measure or detect various mechanical quantities. Film mechanical sensors are primarily based on polymers which are flexible, easy to fabricate and superior in dielectric breakdown strength but have low dielectric permittivity. To compensate this disadvantage, ceramics possessing high dielectric permittivity are introduced. This work extended the range of material properties by fabricating the barium strontium titanate ($\text{Ba}_{0.7}\text{Sr}_{0.3}\text{TiO}_3$) /PVDF composite film. A certain weight fraction of 0.3, 0.5 and 0.7 of barium strontium titanate ($\text{Ba}_{0.7}\text{Sr}_{0.3}\text{TiO}_3$) powder which is environmentally friendly was embedded in a matrix of polyvinylidene fluoride (PVDF) before compression molding into 100-200 μm thick sheets. The microstructure of the composite was observed using scanning electron microscopy (SEM). Subsequently, thermal properties for 0-3 composites at differential weight fraction of the ceramic were studied. The dielectric constant of composites at %wt 0, 0.3, 0.5 and 0.7 at 1 KHz are 4.28, 8.45, 20.5 and 28.9, the dissipation factor at 1 KHz are 0.01, 0.05, 0.12 and 0.14 respectively.

Kittikun Kohpaiboon
The Petroleum and Petrochemical College, Chulalongkorn University

Date submitted: 28 Nov 2006

Electronic form version 1.4