Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Investigation and Characterization of Polymer/Inorganic Bulk Composites KAYA WEI, GEORGE NOLAS, Univ of South Florida — In the last decade polymers have been considered for thermoelectric applications primarily due to their specifically unique combination of properties that are atypical of inorganic material, including mechanical flexibility, low cost, low temperature and cost processing, and general non-toxicity. By incorporating inorganic compounds into a polymer matrix, enhanced thermoelectric properties have been achieved. As an extension of our previous work on PEDOT:PSS/$Bi_{0.5}Sb_{1.5}Te_3$ polymer/inorganic bulk composites with different $Bi_{0.5}Sb_{1.5}Te_3$ concentrations, we optimized the electrical conductivity by doping the polymer in order to further improve the thermoelectric properties of these composites. We will also discuss a new approach to process bulk polymer/inorganic composites. In addition, we observed better transport in dense, bulk polymers processed using spark plasma sintering compared with that of using hotpress. The transport properties were characterized in order to understand the transport in heavily-doped polymer/inorganic composites, characterized by localized charge regions, in light of the interest in polymers for thermoelectric applications.

Kaya Wei
Univ of South Florida

Date submitted: 10 Nov 2016 Electronic form version 1.4