

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Thermal Properties of specific Nonconjugated Conductive Polymers studied using Differential Scanning Calorimetry GURUDUTT TELANG, SAPANA SHRIVASTAVA, MRINAL THAKUR, Photonic Materials Research Laboratory, Auburn University, AL 36849 — Differential scanning calorimeter (DSC) has been used to measure the thermal properties of nonconjugated conductive polymers, poly(β -pinene) and trans-1,4-polyisoprene before and after doping with iodine. The measurements have been made over the temperature range of -50 °C to 110 °C. The heat capacity of poly(β -pinene) has been observed to increase upon iodine doping. The T_g of undoped poly(β -pinene) and the T_m of undoped trans-1,4-polyisoprene have been measured and were found to be 77 °C and 60 °C respectively. After doping the T_g and T_m transitions were not clearly observable. X-ray diffraction studies have shown the γ -phase crystal structure for trans-1,4-polyisoprene film in the undoped state. These results will be discussed considering the molecular and nano-structures of these materials before and after doping.

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Date submitted: 22 Nov 2010

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