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**Electrical and Optical Properties of a Novel Nonconjugated Conductive Polymer, Polynorbornene** ANANTHAKRISHNAN NARAYANAN, ADITYA KUMAR PALTHI, MRINAL THAKUR, Photonic Materials Research Laboratory, Auburn University, AL — We report electrical and optical properties of a novel nonconjugated conductive polymer, polynorbornene which has an isolated double bond in the repeat. Electrical conductivity of this polymer increases by more than ten orders of magnitude to about 0.01 S/cm upon doping with iodine. Optical absorption measurements of the polymer film have been made at different dopant concentrations. For a lightly doped polymer, two absorption peaks: one corresponding to cation radicals and the other corresponding to charge transfer between the double bond and the dopant were observed at 4.20 eV (295nm) and 3.13 eV (396nm) respectively. FTIR spectroscopic measurements have shown a reduction in the intensity of the C=C stretching and =C-H bending vibration bands upon doping indicating formation of radical cations. Photoluminescence studies have shown an emission band with a peak at $\sim$ 425nm when excited at 300nm. Nonlinear optical studies of this novel nonconjugated conductive polymer are in progress.

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