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Quadratic Electro-optic Measurements in the Nonconjugated Conductive Polymer, Poly(β -pinene) at 800 nm and 1550 nm JITTO TITUS, ANANTHAKRISHNAN NARAYANAN, MRINAL THAKUR, Photonic Materials Research Laboratory, Auburn University, AL — Electro-optic effect in the nonconjugated conductive polymer, iodine-doped poly(β -pinene) measured at 633 nm has been recently reported. In this presentation, results of quadratic electro-optic measurements at longer wavelengths will be reported. The electro-optic measurement has been made using the field-induced birefringence technique in the cross-polarized geometry with lock-in detection. Films with a medium doping level of iodine have been used in the measurements. Modulation depths of about 1.1% at 800 nm and 0.06% at 1550 nm were observed for an applied ac field of about 1 Volt/ μ m and for a film thickness of about 1 μ m. More detailed measurements are in progress. The results are highly promising for applications of these materials in electro-optic modulators in the channel waveguide configuration. This exceptionally large quadratic electro-optic effect has been attributed to the confinement of this electronic system within a sub-nanometer dimension and the special electronic structure of this doped system.

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