Abstract Submitted
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In-situ spectroscopic investigation of infrared transmissive/absorptive electrochromic devices.[1] MARIA NIKOLOU, DAVID B. TANNER, ZHUANGCHUN WU, ANDREW G. RINZLER, Department of Physics, University of Florida, Gainesville, Florida 32611, AUBREY L. DYER, TIMOTHY STECKLER, JOHN R. REYNOLDS, Department of Chemistry, Center of Macromolecular Science and Engineering, University of Florida, Gainesville, Florida 32611 — Novel transmissive/absorptive electrochromic (EC) devices have been assembled using conjugated polymers on infrared-transparent electrodes made of single-wall carbon nanotubes (SWNTs). We will present results on the design, fabrication and characterization of sandwich type EC devices using dioxythiophene-based conjugated polymers (PXDOT). The polymers were prepared on the SWNT films using a potentiostatic electropolymerization method. The transmittance of the samples was measured over the infrared through visible energy range. To extract the optical constants of the polymer, we modeled all layers of this multilayer thin film structure using a Drude-Lorentz model. From the parameters obtained, we compute optical constants which yield information about the electronic structure of the neutral and doped states of the polymer. Evidence for polaron states at low doping and bipolaron states at maximum doping will be discussed.

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