

Abstract Submitted
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Optical characterization of isotactic polypropylene and carbon nanotube composites using spectroscopic ellipsometry SABYASACHI SARKAR, PARVATHALU KALAKONDA, Worcester Polytechnic Institute, GEORGI GEORGIEV, Assumption College, GERMANO IANNACCHIONE, Worcester Polytechnic Institute — We report the dielectric properties of optically characterized isotactic polypropylene (iPP) and its composites with carbon nanotubes (CNTs) using spectroscopic ellipsometry. Characterization was performed at angles ranging from 50 to 70 degrees and for the spectral range between 300-1000 nm. CNT concentrations varied from 0 to 5 wt% in the iPP/CNT composites investigated. Ellipsometry is a non-invasive and non-destructive technique that enabled us to determine the dielectric properties of the materials investigated. A concentration dependency on CNT wt% was found to exist for both the refractive index and the extinction coefficient for the iPP/CNT composites. At higher concentrations however, this distinction was not very clear, suggesting that saturation levels were reached in the material. We will also discuss our efforts to separate the optical properties of bound CNT from the analyzed nanocomposites.

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