Abstract Submitted
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Crystallization and melting behavior of isotactic polypropylene and carbon nanotube nanocomposites[1] GEORGI GEORGIEV, Assumption College/Tufts University, YANIEL CABRERA, LAUREN WIELGUS, Tufts University, ZARNAB IFTIKHAR, MICHAEL MATTERA, PETER GATI, AUSTIN POTTER, Assumption College, PEGGY CEBE, Tufts University, TUFTS/ASSUMPTION COLLABORATION — Polymer nanocomposites (PNCs) are the most recent development in the field of polymer science and technology. Geared toward creating novel polymer based materials, PNCs are the largest commercial application for nanotubes. Spherulitic polymer crystal growth was changed by inducing new fibrillar crystals on the surface of carbon nanotubes. Upon isothermal melt crystallization at 135^{o}C, CNTs lead to monoclinic crystal growth perpendicularly to the long axis of the nanotubes, explained by the multiple nucleation centers formed at the interface of the carbon nanotube and the polymer chains. Using Microscopic Transmission Ellipsometry (MTE), the sign of the alpha crystallographic phase was determined as positive. Using Differential Scanning Calorimetry (DSC), a decrease in the Avrami exponent was measured with increase of concentration of nanotubes.

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