

Abstract Submitted  
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**DSC study of the isothermal crystallization of iPP-CNF nanocomposites**<sup>1</sup> DORINA M. CHIPARA, MIRCEA CHIPARA, The University of Texas Pan American — Nanocomposite materials have been obtained by dispersing vapor grown carbon nanofibers (VGCNFs) with diameters ranging between 60 and 100 nm and lengths between 30,000 and 100,000 nm supplied by Pyrograf Products, Inc (PR-24AG) within a polymer matrix - isotactic polypropylene (iPP) - type Marlex HLN-120-01 with density 0.906 g/cm<sup>3</sup> and melt flow rate at 230 °C of 12 g/10 min, supplied by Philips Sumika Polypropylene Company. VGCNFs have been purified and disentangled by reflux in dichloromethane and deionized water followed by vacuum filtering (for 24 h) and drying at 110 °C for 24h. The nanocomposites were obtained by melt mixing at 180 °C for 9 minutes with a speed of 65 rpm followed by an additional mixing at 90 rpm for 5 minutes, using a HAAKE Rheomix, Nanocomposites loaded with various amounts of VGCNFs (0%, 1%, 2.5%, 5%, 7.5%, 10%, 15%, and 20% wt.) have been prepared and investigated by TA DSC Q-500. Isothermal crystallization was investigated in detail and analyzed by using an expression derived from the Avrami equation. The effect of the filler on the isothermal crystallization of iPP is discussed in detail. The research is focused on the effect of VGCNF on the degree of crystallization of iPP, crystallization rate, and dimensionality of the crystallization process.

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