

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Time-resolved WAXD studies on the crystallization of semicrystalline/graphene nanocomposites MAYA ENDOH, Stony Brook Univ, SHOTARO NISHITSUJI, Yamagata Univ, TAD KOGA, MIRIAN RAFAILOVICH, Stony Brook Univ — Graphene is one layer of carbon atoms, which has good electronic, thermal conductivity, and mechanical properties. By adding graphene to semicrystalline polymers such as polyethylene (PE) and isotactic polypropylene (iPP), the mechanical and electrical properties of the polymers are significantly improved. To further achieve high performance of semicrystalline polymer/graphene nanocomposites, it is important to investigate the relationship between the crystalline structure of the polymer and the mechanical property of the nanocomposites. In this study, the effect of graphene on the crystallization behavior of PE and iPP was investigated by using time-resolved wide angle X-ray diffraction (WAXD). The in situ WAXD results on the melt-crystallization process showed that the crystalline structures of all the samples remained the same as the pure bulk, while both the rate and degree of the crystallinity increased. We will discuss the detailed structure information along with DSC and mechanical test results.

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Date submitted: 06 Nov 2015

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