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Rheological Studies on the Quasi-quiescent Crystallization of Polypropylene Nanocomposites[1] XIA DONG, TONGCHEN SUN, FENGHUA CHEN, KE WANG, QIANG FU, CHARLES C. HAN, State Key Laboratory of Polymer Physics and Chemistry, Joint Laboratory of Polymer Science and Materials, ICCAS, Beijing, China — Isothermal crystallization of isotactic polypropylene/organic modified montmorillonite binary nanocomposite (iPP/OMMT) and iPP/OMMT/PEOc (poly(ethylene-co-octene)) ternary nanocomposites were investigated by polarized optical microscope, rheometer and scanning electron microscope. The modulus change which accompanying the crystallization growth process can be clearly divided into three stages. It was found that there were different effects due to different nucleation processes (heterogeneous nucleation effect due to the presence of OMMT and the concentration fluctuation assisted nucleation effect due to the liquid-liquid phase separation), entanglement effect of iPP and PEOc chains in the ternary nanocomposite and hydrodynamic flowing effect of the amorphous phase in the three stages.

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Xia Dong

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