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Crystallization and recrystallization behavior study on biopolymer composites with polymer grafted halloysite nanotubes[1] YA-TING HSIEH, KEN KOJIO, ATSUSHI TAKAHARA, Institute for Materials Chemistry and Engineering, Kyushu University — We study the crystallization and recrystallization behavior of poly(lactic acid) (PLA) in PLA/halloysite composites. Specifically, we are interested in finding the additional effect of interface properties variation in composites except for enhancing filler dispersion. Halloysite nanotubes are grafted with polymer to create different surface properties at their surface. These polymer grafted halloysite nanotubes are then spread into PLA via solvent mixing. Using differential scanning calorimeter, we track and analyze the influence of halloysite surface properties on the crystallization and recrystallization behavior of PLA composites under several conditions. We also present investigations of polarizing optical microscopy, in-situ Fourier transform infrared spectroscopy, and in-situ synchrotron X-ray diffraction measurements. The investigations provide insight into interface effect on PLA composites.

[1]The synchrotron WAXD measurements were performed on BL02B2 beamline at Spring-8 with the approval of the Japan Synchrotron Radiation Institute (JASRI) (Proposal No. 2015B1541)

Ya-Ting Hsieh
Institute for Materials Chemistry and Engineering, Kyushu University

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