

Abstract Submitted
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Confocal Raman Microscopy on in-situ Structural Evolution of Polyolefin Blends¹ WANSOO CHANG, BYUNGHO JEON, JONG-WON LEE, CHANG Y. RYU, Rensselaer Polytechnic Institute — Polyolefins account for more than half of world-wide consumption of plastic materials, and are typically blended with fillers and other types of polymers in applications. In particular, understanding the miscibility and phase behaviors of polyolefin blends is important for the advancement of a wide array of new applications in medicine, packaging, and other fields. We have used Confocal Raman Microscopy to take the advantages of its capability to locally probe the transformation of physical states in polymeric materials and to characterize morphology of polyolefin blends in-situ for lateral and in-depth imaging with a micron-scale spatial resolution. Upon distinct changes of Raman spectra associated with the melting of semicrystalline polyolefins, we report the in-situ morphological changes upon heating and cooling of polyethylene-polyethylene and polypropylene-polyethylene using confocal Raman microscopy with heating stage.

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