

Abstract Submitted
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Poly(Ethylene-Methacrylic Acid) Ionomers Neutralized by Solution and Melt Methods CHRISTOPHER CHAN, Department of Chemical and Biomolecular Engineering, University of Pennsylvania, KAREN WINEY, Department of Material Science and Engineering, University of Pennsylvania — Poly(ethylene-methacrylic acid) has been traditionally neutralized in the melt although other methods, including solution, are also possible. Different neutralization methods may introduce morphological differences in the polyethylene crystallites and ionic aggregates. While the crystallization of the polyethylene chains can be controlled through thermal history, the ionic aggregates form during neutralization and there is no evidence to date of morphological changes after neutralization. In this study, we examine the effect of neutralizing 50% of the acid groups in P(E-*ran*-3.87%-MAA) with a weak zinc base in solution as compared with in the melt. We have found that solution neutralization with slow precipitation as compared with melt neutralization does not affect the size and distribution of the ionic aggregates. STEM indicates spherical aggregates in a liquid-like disorder with diameter of 2.84 nm \pm 0.42 in the solution neutralized polymer as compared with 2.83 nm \pm 0.56 in the melt neutralized polymer and X-ray scattering interpreted with the Yarusso-Cooper model has parameters of 0.88 nm in diameter versus 0.89 nm.

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