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Synthesis and Morphology Study of Copolymers Containing Imidazolium Group DAVID SALAS-DE LA CRUZ, University of Pennsylvania, SHARLENE R. WILLIAMS, JOHN LAYMAN, MATT GREEN, TIMOTHY E. LONG, Virginia Tech, KAREN I. WINEY, University of Pennsylvania — We report the synthesis and characterization of two copolymers having imidazolium based-ionic groups located either in the backbone or side chain. Imidazolium ionene segmented block copolymers, containing imidazolium group in the backbone, were synthesized from 1,1'-(1,4-butanediyl)bis(imidazole), 1,12-dibromododecane hard segments, and PTMO dibromide. Vinyl imidazolium random copolymers, containing the imidazolium group in the side chain, were synthesized from 1-butyl-bromide and 3-vinylimidazolium in ethyl acetate and copolymerized with methylmethacrylate. The scattering result for the imidazolium group located in the backbone reveals evidence of hierarchial structure. The driving force for the hierarchial structure is due to the incompatibility of the PTMO segments and the ionic domains. The scattering results for the imidazolium group located at the side chain suggest the formation of ionic aggregation. The ionic aggregation peak intensity broadens as the methylmethacrylate content increases in the copolymer.

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