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Thermal and Mechanical Properties of Poly(methyl methacrylate)/Poly(vinylidene fluoride-r-hexafluoro propylene) Blends[1] STEVEN LEE, Materials Science and Engineering, MAEVE CONWAY[2], Mechanical, Aerospace and Nuclear Engineering, DENIZ RENDE, Center for Materials, Devices and Integrated Systems, RAHMI OZISIK, Materials Science and Engineering; Rensselaer Polytechnic Institute — Poly(vinylidene fluoride), PVDF, is a highly crystalline and rigid polymer, and is used in many applications where chemical inertness, resistance to various solvents and environmental degradation are required. Copolymerization of PVDF with hexafluoropropylene (HFP) tends to decrease the amount of crystallinity, thereby, resulting in a more flexible polymer, which provides new applications for PVDF. Various studies were undertaken to investigate the structure and properties of miscible blends of PVDF and poly(methyl methacrylate), PMMA; however, no studies were performed on the blends of P(VDFHFP) random copolymers and PMMA. In the current study, we investigate the miscibility, and thermal and mechanical properties of P(VDFHFP)/PMMA blends via differential scanning calorimetry, thermogravimetric analysis, and nanoindentation. Results indicate that increasing PMMA concentration leads to decreased crystallinity and shifting of the crystallization onset temperature during cooling to lower values.

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