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Reactive Poly(Amic Acid)/ Poly(Glycidyl Methacrylate-r-Poly(ethylene Glycol) Methyl Ether Methacrylate) Blends as Gas Permeation Membranes MICHAEL BEAULIEU, JAMES WATKINS, University of Massachusetts Amherst, Polymer Science and Engineering Department — Polymers containing polar moieties, such as ether groups show an affinity for acidic gases, such as CO_2 due to dipole-quadrapole interactions. Polymer blends in which one of the components is poly(ethylene glycol) (PEG) have been studied extensively in literature as a CO_2/light gas permeation membrane, but due to the crystallization and poor mechanical properties have been difficult to incorporate PEG above 60wt%. In this study, a series of random copolymers containing both glycidyl methacrylate and poly(ethylene glycol) methyl ether methacrylate in different ratios are blended with a poly(amic acid) prepolymer made from 4, 4'-oxydianiline and pyromellitic dianhydride to create gas permeation membranes. By using a reactive blend PEG loadings above 70% have been realized with sufficient mechanical properties, and since the side chain on the PEGMA is short these blends do not suffer from crystallization.

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