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Photochemical Branching/Crosslinking of Preformed Polymers Using bis-Benzophenone[1] NICHOLAS CARBONE, Columbia University, MARY DICKSON, Columbia Universtity, JEFFREY KOBERSTEIN, Columbia University — We show that bis-benzophenone (bis-BP) is an effective method to photochemically crosslink essentially any reformed polymer system that contains abstractable hydrogen atoms. When bis-BP is mixed into a polymer and exposed to UV radiation, it abstracts hydrogen atoms from any chains in proximity, thereby initiating a cascade of free radical reactions that include several mechanisms that can lead to covalent polymer crosslinking. Herein we study the early stages of branching reactions that precede gelation by following molecular weight changes in bis-BP modified polystyrene (PS) by Gel Permeation Chromatography. Quantitative molecular weight changes in PS:bis-BP thin films are studied as a function of irradiation time, PS:bis-BP molar ratio, and film height. AFM studies are employed qualitatively to investigate the relationship between molecular weight and the degree of dewetting of thin PS films deposited on silicon wafers.

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