Abstract

Photochemical cross-linking studies at different temperatures (room temperature, Tg and maximum exothermal of crosslinking peak) are shown for three series of polymers containing diacetylene-groups in the main chain and polar chromophores derived from benzene, azo- and di-azobenzene, as pendant groups. We establish the optimal irradiation time and temperature that permit them being poled and cross-linked with minimal dye-degradation. The degradation process was followed by a diminution of the respective maximum absorption peak. These conditions could extend the mean life-time of the second order nonlinear optical properties, studied previously. Photochemical cross-linking at each polymer’s Tg (50-130°C) was the most convenient process. It took less than 10 min and was monitored by IR spectroscopy.

Keywords

Diacetylene; Cross-linking; Photodegradation