

SYNTHESIS AND CHARACTERIZATION OF A NEW PHOTOSENSITIVE BENZOFURAN CHALCONE METHACRYLAMIDE MONOMER

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ABSTRACT

New methacrylamide monomer, containing pendant benzofuran chalcone moiety, was synthesized by starting from 1-(3-amino-1-benzofuran-2-yl)-3-phenyl prop-2-en-1-one and methacryloyl chloride in the presence of triethyl amine. The polymer was characterized by UV, FT-IR, H-NMR and ¹³C-NMR spectra and gel permeation chromatography. The photosensitive properties of the polymer were characterized by using UV-visible spectroscopy. In UV-VIS spectra of the polymer, two absorption peaks at 325.67 and 395.95 nm are observed due to $\pi^*-\pi$ transition related to $>C=C<$ of the chalcone moieties. The absorption intensity of $>C=C<$ bond is decreased significantly with the irradiation in less than a few minutes at room temperature. The disappearance of the C=C bond in the chalcone moiety suggests that a photo-reaction is taking place in the polymer. This behaviour is very much dependent on the chain length of the chalcone moiety. The thermogravimetric analysis result indicates that the polymer undergoes single thermal state decomposition. The thermal stability temperature of the polymer is 270 °C. The glass transition temperature of the polymer was found to be 160 °C. This high T_g value of the polymer may be due to the presence of

bulky and rigid pendant chalcone units and the short side chains which facilitate chain entanglement.

Keywords: Chalcone, Methacryloyl chloride, functional monomer, benzofuran.