NEW VISIBLE LIGHT DONOR-ACCEPTOR CHARGE TRANSFER COMPLEXES FOR CATIONIC POLYMERIZATION

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Cationic polymerization has become more important in the coating market due to its rapid curing and high wavelength sensitivity without oxygen inhibition. Charge Transfer Complex (CTC) formation appears to be an efficient strategy to initiate cationic polymerization in the visible range [1]. In this study, we designed and used four photosensitizer dyes, namely (3E)-1,1′-bis(2-ethylhexyl)-6,6′-dipyren-1-yl-3,3′-biindole-2,2′(1H,1′H)-dione (ISOIV), (3′E)-1,1‴-diethyl-1′,1″-bis(2-ethylhexyl)-1H,1‴H-5,6′:3′,3″:6″,5‴-quaterindole-2′,2″(1′H,1″H)-dione (ISOV), (3E)-6,6′-bis(9-ethyl-9H-carbazole-3-yl)-1-[(2R)-2-ethylhexyl]-1′-[(2S)-2-ethylhexyl]-3,3′-biindole 2,2′(1H,1′H)-dione (ISOVIII), and 3,3'-(6-bromokinoksalin-2,3-diil)bis(9-etil-9H-carbazole) (TPDC6) as electron donor components of CTCs with iodonium salts. In our group, these dyes were previously group as sensitizers in dye-sensitized solar cell (DSSC) applications [2, 3]. The formation of CTCs was successfully demonstrated by UV-Vis, FTIR, fluorescence-emission, and cyclic voltammetry investigations. Both ISOVIII (91%) and TPDC6 (83%) exhibited better initiations efficiencies arising from the strong donating carbazole units present in the structure.

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