

MSP 6P THE STUDY OF SOME LUMINESCENT MATERIALS ON THE BASIS OF ORGANIC COPOLYMERS GRAFTED WITH ISOTHIOCYANATOCHALCONES AND PHTHALOCYANINE DERIVATIVES

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Novel polymeric materials grafted with chalcone [1,2] and phthalocyanine [3] derivatives were synthesized and their luminescent properties were investigated. As polymer matrix 4-aminostyrene (AST) copolymer with styrene (ST) and butylmethacrylate (BMA) was used in the synthesis of chalcone-containing materials. Poly(epoxypropylcarbazole) (PEPC) compositions with metalphthalocyanines were used in elaboration of phthalocyanine containing polymeric materials.

The polymer analog transformation of AST copolymer with ST and BMA into a luminescent material was realized by treatment of copolymer solution in chloroform with isothiocyanatochalcone [1,2]. This chemical transformation was realized at 60°C for 2 hours. The chemical structure was confirmed by IR spectroscopy. Thin films ~ 15 μm thick were deposited from copolymer solutions in tetrahydrofuran. After air and vacuum oven drying at 30-40°C, luminescent properties of prepared samples were investigated.

Investigation of the luminescent properties have been carried out on a computer controlled set-up based on MDR-23 monochromator. The excitation source was basically a N₂ laser with $\lambda_{exc} = 337$ nm. The luminescence maximum is observed at 540–550 nm and it has a higher intensity than that of a luminescent composite containing micromolecular isothiocyanatochalcone and ST:BMA copolymer (1:1).

The composites prepared from Zn tetraoctyloxyphtalocyanine and thermoplastic copolymer ST:BMA or carbazole containing polymers as poly(epoxypropylcarbazole) showed a luminescence maximum at 650-700 nm.

References

1. Popușoi A., Barbă N., Dragalina G., Cuculescu E., Caraman M., Nanocompozite polimerice fotoluminescente din derivați ai chalconelor aromatice // Simpozionul Internațional “Prioritățile chimiei pentru o dezvoltare durabilă PRIOCHEM”, Ediția V, octombrie 2009, Sinaia, pag. 44.
2. Verlan V., Buzurniuc S., Robu Șt., Barbă N., Caraman M., Some fluorescent properties of organic/organic composite on the basis of luminophore compound and polymer // 3rd International Conference on Materials Science and Condensed Matter Physics, Abstracts MSCMP, 2006, p. 118.
3. Mitcov D., Robu Șt., Dragalina G., Barbă N., Sinteza și cercetarea unor coloranți ftalocianinici pentru sensibilizarea polimerilor fotoconductibili // Volumul de rezumate a XXXa Conferință Națională de Chimie, 8-10 octombrie 2008, p. 236.