IN THE LIMELIGHT: THE NEW PHOTOACID GENERATORS FOR LIGHT-INDUCED CATIONIC POLYMERIZATION

Joanna Ortyl[a,b], Mariusz Galek[b]

[a] Faculty of Chemical Engineering and Technology, Cracow University of Technology, Warszawska 24, 31-155 Cracow, Poland
[b] Photo HiTech Ltd., Life Science Park, Bobrzyńskiego 14, 30-348 Cracow, Poland

Nowadays, the most modern technologies of polymer materials manufacturing are based on photochemically initiated processes. Light wavelengths from ultraviolet (UV) to visible light (Vis) are used. The synthesis of polymeric materials using these processes is one of the most efficient methods. Therefore, it is currently a ubiquitous and rapidly developing technique. The growing interest in photopolymerization systems based on the cationic mechanism encourages searching for new types of cationic photoinitiators because their properties determine the efficiency and rate of photopolymerization. The matching of the absorption characteristics of the initiators to the emission characteristics of Vis-LED lamps will enable better utilization of energy by increasing the photolysis rate of iodonium salts, thus increasing the initiation rate of the photopolymerization process.

Real-time FT-IR was used to monitor the photopolymerization processes for epoxy and vinyl monomer. Thanks to this method, it was possible to determine the degree of conversion of monomer functional groups. The spectroscopic characteristics of photoinitiators investigated, their photostability, and their efficiency in generating strong protic acid during photolysis was determined.

The suitability of new compounds for the role of cationic photoinitiators in the photopolymerization of vinyl and epoxy monomers has been investigated. It has been shown that all the investigated derivatives show effective action when a Vis-LED type light source of visible range with maximum emission of lmax = 405 nm and lmax = 420 nm is used.

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