

APPLICABILITY OF STILBENE DERIVATIVES AS PHOTSENSITISERS FOR BIMOLECULAR PHOTOINITIATING SYSTEMS IN 3D PRINTING APPLICATIONS

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Photopolymerization processes are currently used in modern technologies to create polymeric coatings materials. The photopolymerization process is gaining more and more popularity because of the many advantages of this process. Photopolymerization is usually very fast, which is its fundamental advantage in practical applications, such as producing solvent-free polymer coatings applied on different products, such as furniture, electronic components, and packaging materials for the chemical industry.

The research aimed to check spectroscopic properties of 9 new derivatives of 1,2,3,4,5-pentafluoro-6-[(E)-styryl]benzene and test their suitability for the role of photosensitizers in bi-component systems that initiate the processes of cationic and radical photopolymerization with light in the range UV/Vis. For monitoring photopolymerization processes, a real-time FT-IR method was used; this method allowed to determine the degree of conversion of monomer functional groups as a function of time.

The conducted research found that tested derivatives' absorption characteristics allow using them as photosensitizers in bi-component initiating systems. All of the stilbene derivatives show sensitizing effects in the case of photopolymerization processes using UV-Vis light. Stilbene derivatives can be used in light-initiated 3D printing, which is currently a very innovative way of creating 3D models. High photosensitivity of studied compounds in UV/Vis range allows for efficient initiation of photopolymerization processes which influences the high quality of obtained products.

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