

2-AMINO-4,6-DIPHENYL-PYRIDINE-3-CARBONITRILE DERIVATIVES AS NEW PHOTSENSITIZERS OF DIPHENYLIODONIUM SALT AND THEIR APPLICATIONS IN 3D PRINTING PHOTOPOLYMERIZATION PROCESSES

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In this work, we presented a new bimolecular photoinitiating system based on 2-amino-4,6-diphenylpyridine-3-carbonitrile derivatives as visible photosensitizers of diphenyliodonium salt. Real-time FT-IR photopolymerization experiments with cycloaliphatic epoxide and vinyl monomers showed good reactivity of the bimolecular photoinitiating systems under UV-A LED as visible light sources. Steady-state photolysis and fluorescence experiments demonstrated the ability to form initiating species. The 2-amino-4,6-diphenylpyridine-3-carbonitrile derivatives were also investigated as a type II free-radical photoinitiator with an amine. It was confirmed that the 2-amino-4,6-diphenylpyridine-3-carbonitrile derivatives, in combination with different types of additives, e.g., amine as co-initiator or in the presence of onium salt, can act as bimolecular photoinitiating systems for cationic, free-radical, and thiol-ene photopolymerization processes by hydrogen abstraction and electron transfer reactions stimulated by either near-UV or visible light irradiation.