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Comparison of photochromic properties and thermal stabilities of fulgide, fulgimide, and benzimidazole[1,2-a]pyrrolidine-2-one derivatives

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Abstract: New thermally stable photochromic fulgimides and benzimidazole[1,2-a]pyrrolidin-2-one derivatives of furylfulgide and thienylfulgide were prepared and their photochromic properties were investigated. Thermal stabilities of some of the new isomers in an alcoholic solution and in PMMA (poly (methyl methacrylate)) polymer films, and pyrolytic behaviors in inert atmosphere with TGA were compared. The colored form of fulgimide and that of benzimidazole[1,2-a]pyrrolidin- 2-one derivatives showed large bathochromic shifts for visible absorption maximum compared with the colored form of corresponding fulgides. The imides and benzimidazole[1,2-a]pyrrolidin-2-one derivatives of fulgide displayed better thermal stability than corresponding fulgides.

Key Words: Photochromism, fulgide, fulgimide, benzimidazole[1,2-a]pyrrolidin- 2-one, thermal stability, quantum yield.

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