

A NOVEL NONSYMMETRICAL AZINES WITH AGGREGATION INDUCED EMISSION ENHANCEMENT

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Many organic fluorophores show good emission in dilute solutions. However, their emissions will be weakened or completely quenched when they aggregate in solid state or at a high concentration because of the strong π - π interactions. This phenomenon is called the aggregation-caused quenching (ACQ) effect. In contrast to conventional fluorophores with ACQ drawbacks, salicylaldehyde derivatives exhibit Aggregation Induced Emission (AIE). AIEgens are almost non-emissive in dilute solution, but become highly emissive in the aggregate state because of restricted intramolecular motion [1-4].

Salicylaldehyde azines are highly stable condensation products with hydrazine which display several advantages such as easy synthesis and product purifications, low costs or high melting points. They exhibit strong aggregation induced emission in aggregate/solid state which were used in various applications such as optoelectronics [5], chemosensors [6, 7] or for bio-imaging [8, 9]. Azines also exhibit keto-enol tautomerism upon photoexcitation. Tautomerism in azines is characterized by translocation of a proton with a pre-established intramolecular hydrogen bond giving birth to a phototautomer phenomenon, commonly termed as excited state intramolecular proton transfer (ESIPT) [10].

New group of nonsymmetrical salicylaldehyde azine derivatives was prepared and investigated starting from differently substituted salicylaldehydes (Fig.1.).

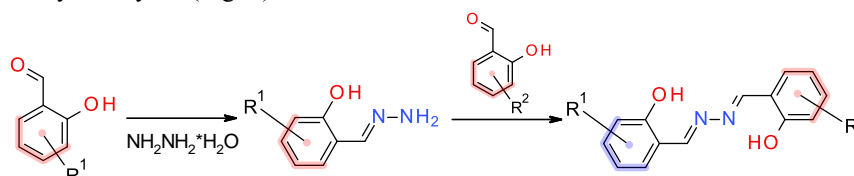


Fig.1. Synthesis pathway of nonsymmetrical azines

The introduction of two different substituents into the fluorescent core has a significant effect on the physicochemical properties of the obtained compounds.

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