

Synthesis, optical emission, redox and thermal properties of 2,8-diaryl-imidazo[1,2-a][1,8]naphthyridines

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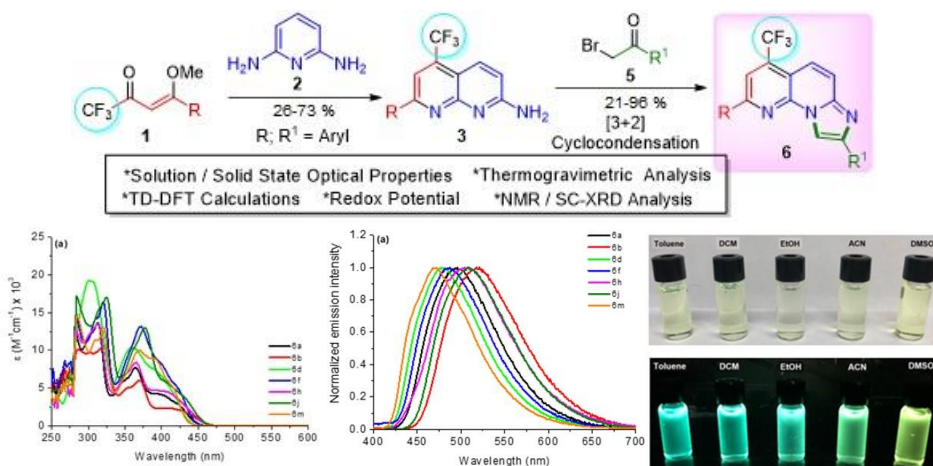
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ABSTRACT

The present work reports a study on the novel series of thirteen examples of 2,8-diaryl-4-(trifluoromethyl)imidazo[1,2-a][1,8]naphthyridines (**6**), in which 2,8-diaryl = C₆H₅, 4-BrC₆H₄, 4-OMeC₆H₄, 4-CF₃C₆H₄, and 2-naphthyl (Scheme 1) [1]. Series **6** was obtained by an intermolecular and regioselective [3+2] cyclocondensation reaction of a series of selected 7-aryl-2-amino-5-(trifluoromethyl)-[1,8]naphthyridines (**3**) with 1-aryl-2-bromo-ethanones (**5**) [2]. Aromatic amines **3** and bromo ethanones **5** were synthesized by previously reported methods, which reacted 2,6-diamino-pyridine (**2**) with 4-aryl-4-methoxy-1,1,1-trifluorobut-3-en-2-ones (**1**) to obtain **3** [3] and reactions of acetophenones **4** with elemental bromo to achieve **5** [4]. All new compounds **6** were fully characterized by ¹H, ¹³C-, ¹⁹F-NMR and IR spectroscopy, SC-XRD, and HRMS methods. The optical and electrochemical properties of heterocycles **6** were determined by UV-Vis, steady-state and time-resolved fluorescence emission (solution and solid state), TD-DFT calculations, and redox potential which showed a strong influence and dependence of the substitution position in the heterocyclic core. In addition, the TGA experiments showed good thermal stability for the new nitrogenated tricyclic system **6**.



Scheme 1. Synthesis and properties of 2,8-diaryl-4-(trifluoromethyl)imidazo[1,2-a][1,8]naphthyridines (**6**).

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