

Synthesis of Covalent Organic Frameworks Based on Squaraine Dye and Quinoid Form of Thiophene Having Donor-Acceptor Properties

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Covalent organic frameworks (COFs) are a class of crystalline organic porous materials.^[1,2] COFs are generally studied for gas storage and catalysis, but their optoelectronic and energy storage properties have been also explored.^[3,4] For example, thiophene-based COFs, synthesized starting from highly conjugated linkers, have shown semiconducting and luminescent properties.^[5]

Our research aims at the synthesis and properties evaluation of new thiophene-based conductive COF. The synthetic strategy involves the condensation between tritopic linkers (i.e. tris(4-thiophene-2-yl)phenyl)amine) and ditopic linkers (i.e. terephthalaldehyde) generating a methine bridge. In parallel, COF optoelectronic properties to structure relationship will be investigated by creating a new COF library, coupling the squaric acid with a series of tritopic linkers such as tris(4-aminophenyl)amine [TAPA], tris(4-aminophenyl)methane [TAPM], tris(4-aminophenyl)benzene [TAPB], and tris(4-aminophenyl)Triazine [TAPT].

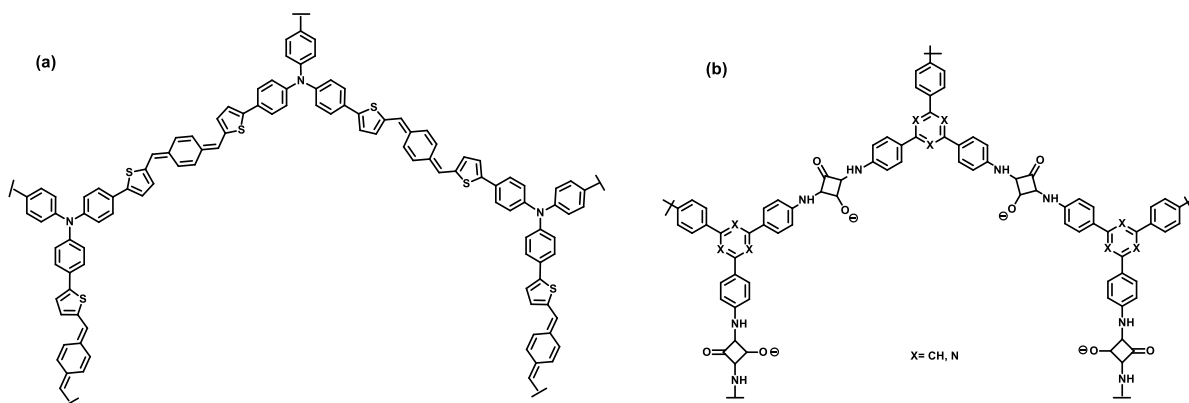


Figure 1. (a) Structure of quinoid-methine-based covalent organic framework (b) Squaraine-based covalent organic framework

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