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Alkyl- and Alkylthiothiophene Substituted Triazines as Building Blocks for Columnar Liquid Crystals

Vanessa M. Bellemore
*University of Windsor, bellemov@uwindsor.ca*

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Alkyl- and Alkylthiophene Substituted Triazines as Building Blocks for Columnar Liquid Crystals

Columnar discotic liquid crystals are self-organizing compounds with anisotropic properties. Triazines substituted with three 5-membered ring heterocycles are interesting core structures for the preparation of dyes and organic semiconductors because of their star-shaped and co-planar structures. These aromatic cores are capable of pi-stacking, which aims towards close packing for efficient charge transferring in organic materials. These organic semiconductors will ideally have high solubility, have a HOMO-LUMO gap of approximately 2 eV and be inexpensive to synthesize. Presented here is the synthesis of 1,3,5-triazine substituted with 2-alkylthiophenes and 2-alkylthiothiophenes. The functionalized thiophenes are generated in a one-pot approach, stannylated, and finally cross-coupled to cyanuric chloride via a Stille-coupling reaction.