

Chiral bis(benzo[1,2-*b*:4,3-*b'*]dithiophene)s: synthesis and stereochemical characterization

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Thiophene-containing fused aromatic compounds are an interesting class of π -conjugated systems in functional organic materials (1). Among them, benzo[1,2-*b*:4,3-*b'*]dithiophene (**BDT**) and its derivatives are widely studied, for instance as units in mono and polydisperse oligomers in the field of the materials science (2), and as π -spacers in push-pull organic chromophores for photovoltaic applications (3). Furthermore, **BDT** is a key intermediate for the synthesis of inherently chiral helical systems such as tetrathia[7]helicenes (4). Thus, **BDT** can be identified as a key starting molecule, which can allow access to more complex and interesting systems through a judicious functionalization of the α -positions of the thiophene rings. In our ongoing studies on the synthesis and functionalization of **BDT**s (5,6), we have developed a novel synthesis to prepare bis(benzo[1,2-*b*:4,3-*b'*]dithiophene) systems **2**, starting from bromides **1** (**Figure 1**).

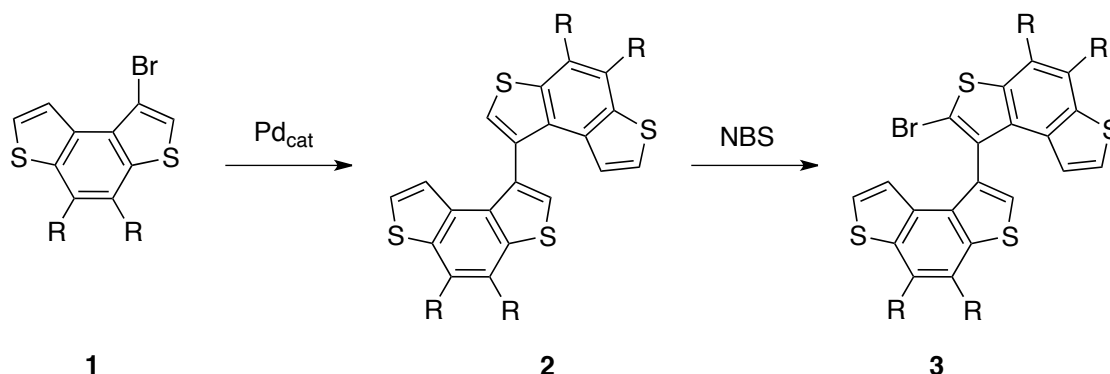


Figure 1

Compounds **2** belong to an interesting class of chiral atropisomeric heterobiaryl derivatives with C_2 -symmetry, which can be selectively functionalized into bromides **3**. The chiroptical properties of both systems **2** and **3** have been fully elucidated by experimental and theoretical studies. On the other hand, enantiopure bromides **3** represent useful intermediates for the enantioselective synthesis of the corresponding tetrathiahelicene derivatives.

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