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Synthesis and characterization of chiral bis-benzo[1,2-*b*:4,3-*b*']dithiophenes

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Thiophene-containing fused aromatic compounds are a versatile class of π-conjugated systems with applications 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 materials science,[2] and as π-spacers in push-pull organic chromophores for photovoltaic applications.[3] Moreover, **BDT** is a key intermediate for the synthesis of inherently chiral helical systems such as tetrathia[7]helicenes.[4] In our ongoing studies on the synthesis and functionalization of **BDT**s,[5] we have developed a strategy to prepare new chiral atropoisomeric heterobiaryl derivatives **2**-**4** starting from bromides **1** (Figure).

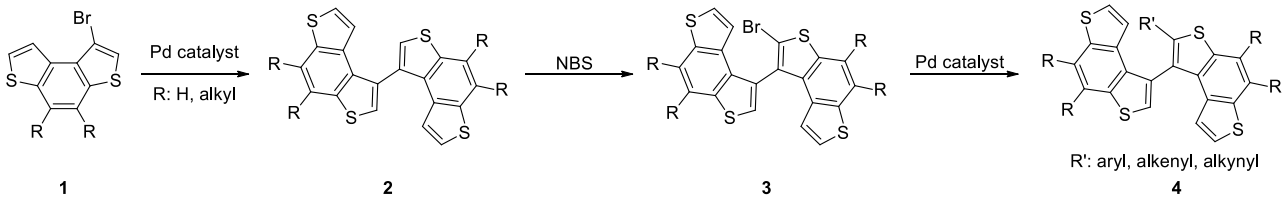

Figure: general synthesis of chiral bis-benzo[1,2-*b*:4,3-*b*']dithiophenes.

The configurational stability of these systems have been fully elucidated by experimental and theoretical studies, and thanks to their chiroptical properties, some of these atropoisomers will be exploited as useful intermediates for the enantioselective synthesis of the corresponding tetrathia[7]helicene derivatives.

References:

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