SYNTHESIS OF FUNCTIONALISED M-TERPHENYLS AND CHEMOENZYMATIC SEPARATION OF ATROPISOMER

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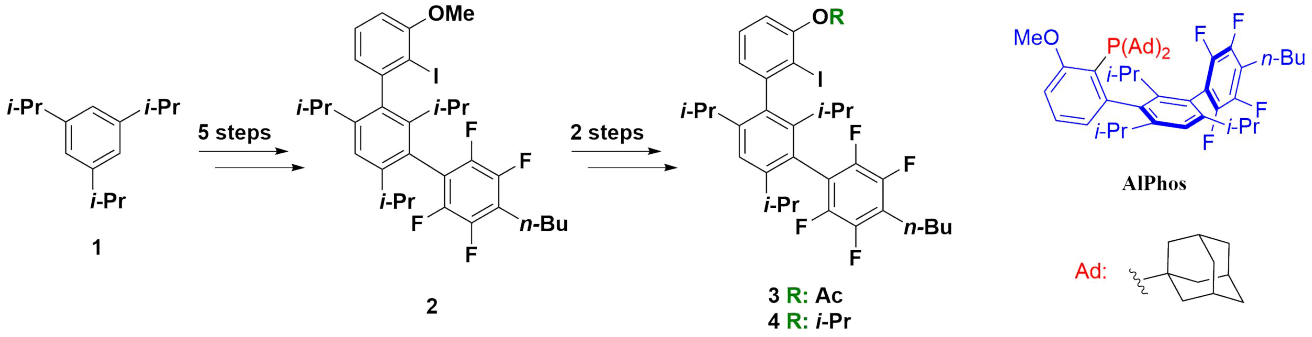

Fig. 1. General scheme for *m*-terphenyl synthesis. Stucture of phosphine ligand **AlPhos**

Fluorinated aromatic substances are widely used in medicine[1] and agriculture[2]. However, their synthesis remains complicated with commonly used methods being non-selective, requiring harsh conditions and resulting in modest product yields for sensitive substrates. A possible solution to these problems is the use of transition-metal catalysis. Its application in C-F bond formation remained elusive until relatively recently and is still requiring more research to be done.[3] Thus, our team is developing new ligands, based on the structure of **AlPhos**[4] (Fig. 1. right side), for palladium (0/II) catalysed C-F cross-coupling reactions, with the aim of expanding the (hetero)aromatic substrate range of these reactions. These ligands consist of a di-*tert*-alkylphosphine (Fig. 1. colored red) coupled with a *m*-terphenyl backbone (Fig. 1. colored blue). My work covers the synthesis and modification of the *m*-terphenyl backbone.

Furthermore, these *m*-terphenyl backbones possess axial chirality. Synthetic methods for atropisomer separation are usually difficult, require specialised equipment and reagents.[5] Different esterases have been successfully used to separate (hetero)biaryl atropisomers with high enantioselectivity and good yields, although *m*-terphenyl compounds have yet to be studied.[6] This work will bring a better understanding on how different esterases interact with highly hydrophobic atropisomeric substrates such as acetate **3**.

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