

Tailored Synthesis of Oligo(Arylene Ethynylene)s to Tune Their Optoelectrical Properties

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Sequence-defined conjugated molecules are of interest in materials science, in particular to gain insight into structure-property relationships.^[1] Our group showed sequence-definition in uniform pentamers of oligo(phenylene ethynylene) by applying stepwise Sonogashira cross-coupling reactions.^[2] To streamline the synthetic process, an iterative strategy consisting of a decarboxylative cross-coupling and a saponification of an alkynyl carboxylic ester was established subsequently.^[3] To this point, we can customize the oligomers efficiently and have full control of each repeating unit. Hence, we synthesized molecules of oligo(arylene ethynylene) patterns towards optoelectronic properties assisted by quantum mechanical calculations and report their modelling guided synthesis and properties.

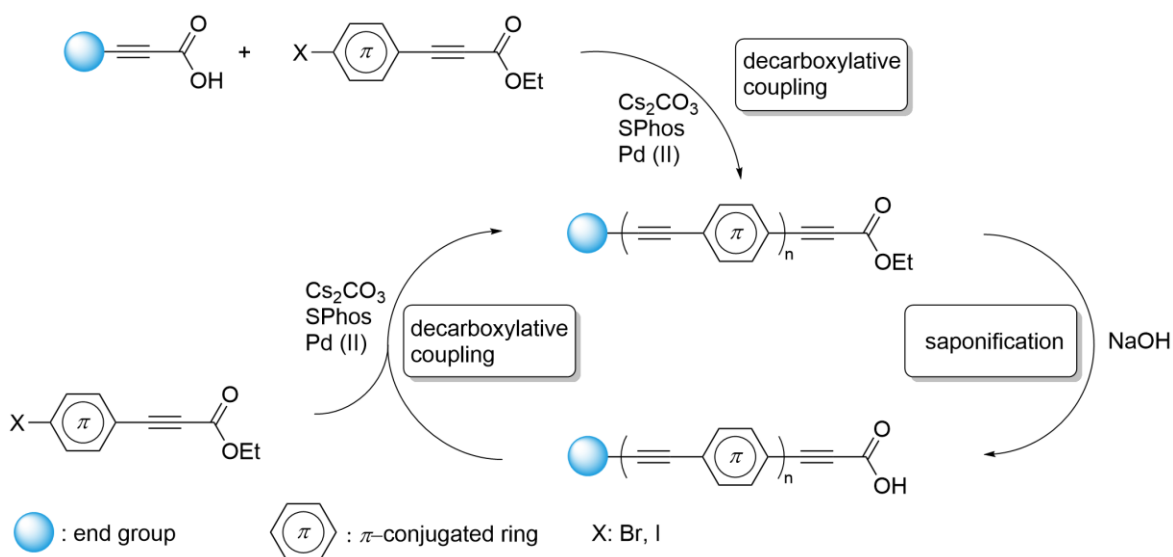


Figure 1: Schematic illustration of sequence-defined synthesis towards uniform OAEs based on a two-step iteration cycle of a decarboxylative cross-coupling and a saponification of an alkynyl carboxylic ester.^[1]

References:

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