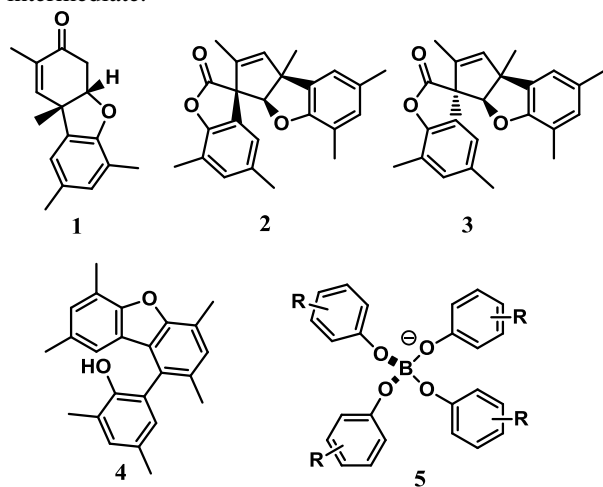


Electrochemical Synthesis of 3,3',5,5'-Tetramethyl-2,2'-biphenol on a Multi-molar Scale

Siegfried R. Waldvogel

Institute for Organic Chemistry, University of Mainz
Duesbergweg 10-14, 55128 Mainz, Germany
waldvogel@uni-mainz.de

The oxidative phenol coupling reaction of phenols exhibiting simple methyl substituents can be difficult since several by-products are formed. Such a challenging substrate is 2,4-dimethylphenol. We studied the electrochemical access to the *ortho*-coupled dehydrodimer. Anodic treatment in a basic electrolyte like most other oxidative conversions supports the formation of a molecular architecture called Pummerer's ketone (**1**) and a variety of polycyclic architectures (**2-4**). The selective *ortho*-coupling reaction was achieved by two ways which will be outlined in detail: On one hand, a borate template **5** can be used. The tetraphenoxy borates can be easily made in large scale. Due to the ionic nature of **5** no supporting electrolyte is required. This methodology can be applied to several related phenolic substrates. On the other hand, 2,4-dimethyl phenol can be directly converted utilizing boron carbon-based anodes. The synthesis on a multi-molar scale is reported providing a sustainable and elegant access to this technically relevant intermediate.



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