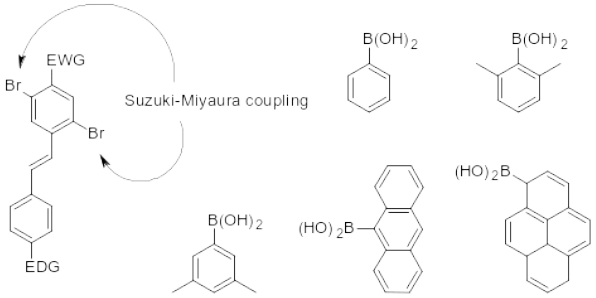
SUZUKI-MIYAURA COUPLED STILBENES WITH VARIOUS ACCEPTORS AND DONORS

Pauk K.[1], Imramovský A.[1], Vala, M.[2], Luňák, S.[2]

[1]*Institute of Organic chemistry and Technology, Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic.*
[2]*Brno University of technology, Faculty of chemistry, Brno.*

Materials, based on organic conjugated molecules, exhibiting efficient solid-state fluorescence (SSF) have been widely applied in various modern technologies [1]. The design of new organic solid-state fluorophores have to bear in mind intermolecular non-radiative decay processes which affect the resulting efficiency of fluorescence in the condensed phase and effective reduction of these processes is essential [2]. Therefore the series of all-trans push-pull stilbenes with various electron-withdrawing/electron-donating groups were synthetized. However the distance between the individual molecules plays an important role in understanding the relationship between structure and resulting luminescence. In respect of this fact, various lateral bulky groups were selected for the subsequent Suzuki-Miyaura coupling. The fluorescence in polar and non-polar solvents and solid-state was studied. The dependence of the excitation energies and reorganization accompanying excitation on the presence and electronic strength of an acceptor substituent were studied theoretically using time-dependent density functional theory.

Figure 1: Various boronic acids used in our synthesized molecules.



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