

Contribution to the synthesis of Organic Electro-optic Materials

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Electro-optic modulators play a key factor in the rapid conversion of signals in the electric to the optical domain, allowing nearly light-speed communication.^[1] Classic modulators, made from silicon, fail to reach a modulation of more than 100 GHz. In contrast, organic based electro-optic materials utilizing π -electron systems could theoretically achieve bandwidths in the terahertz region.^[2] This work aims to design nonlinear optical chromophores with a central TIPS-anthracene building block in the form of a D- π -A system using DFT calculations and synthesize them using common methods.

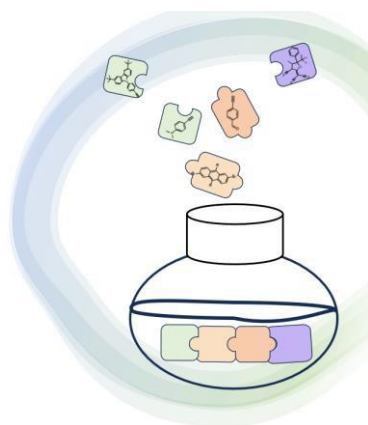


Figure 1: Selection of potential D- π -A system building blocks

The different building blocks are picked according to their performance in computational calculations in various combinations of target molecules.

References:

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- [2] M. Lee, H. E. Katz, C. Erben, D. M. Gill, P. Gopalan, J. D. Heber, D. J. McGee, Science 2002, 298, 1401–1403.
- [3] 2002, 298, 1401–1403.