

Novel Planarized Triarylamines as Building Blocks for Organic Electronics

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Electron donating moieties in functional organic materials are frequently based on arylamines. Our research group showed earlier that increasing planarization of triarylamines causes a decrease of donor strength, which therefore allows to control donor properties of the materials. Moreover, for fully planarized indolo[3,2,1-*jk*]carbazole (ICz) also weak acceptor character was observed [1]. Based on these findings, we developed a strategy to incorporate pyridine-like nitrogen atoms into the ICz scaffold (figure 1, NICz) to further increase the acceptor strength. A comprehensive synthetic approach allowed for the preparation of all six possible mono, as well as six different double substituted NICz isomers [2]. Characterization revealed that not only the amount of nitrogen, but especially its position within the scaffold decisively impacts the photophysical and electrochemical properties, as well as the alignment within the solid state [2, 3]. Hence, targeted positioning of the nitrogen atoms allows to fine-tune the materials properties.

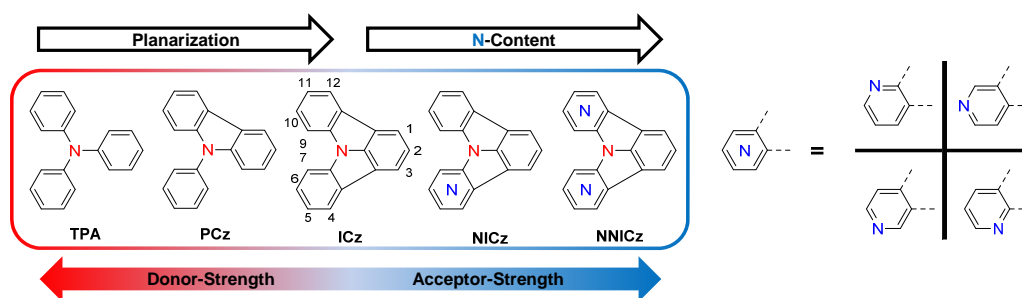


Figure 1: Concept of donor- / acceptor-strength control by planarization and nitrogen incorporation [2].

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[2] T. Kader, B. Stöger, J. Fröhlich, and P. Kautny, *Chem. Eur. J.* 2019, 25, 4412-4425.

[3] T. Kader, B. Stöger, J. Fröhlich, and P. Kautny, *Acta Cryst.* 2019, B75, 97-106.