SYNTHESIS OF N SUBSTITUTED INDOLO[3,2,1-*jk*]CARBAZOLE BASED SYSTEMS FOR ORGANIC ELECTRONICS

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Our research group recently introduced indolo[3,2,1-*jk*]carbazole (ICz, Figure 1) as donor moiety in bipolar host materials for phosphorescent OLEDs. It was shown, that besides the donor properties, this molecule also holds weak acceptor properties. The acceptor strength can further be increased by incorporation of pyridine nitrogen in the indolo[3,2,1-*jk*]carbazole scaffold (NICz, Figure 1). [1] [2]

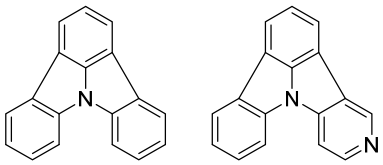

Figure 1: ICz (left), NICz (right)

Changing the positions of the nitrogen affects electrochemical properties and also leads to different orientation and packing in the crystal structure due to non-classical C-H·N hydrogen bonds. These effects will be investigated in larger NICz based systems, like shown in Figure 2.

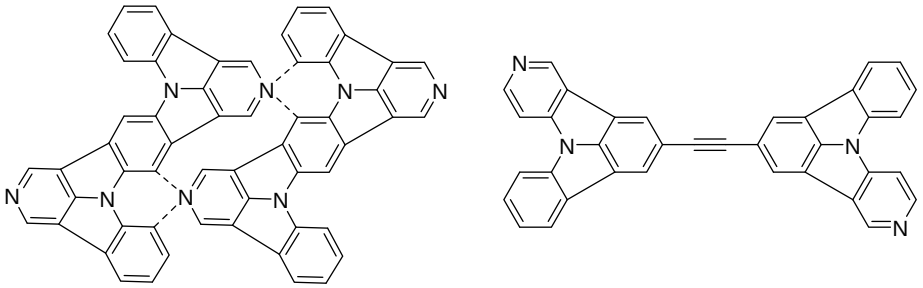

Figure 2: Examples of target molecules

Synthetic approaches towards these larger systems will be presented within this contribution.

[1] P. Kautny, D. Lumpi, Y. Wang, A. Tissot, J. Bintinger, E. Horkel, B. Stöger, C. Hametner, H. Hagemann, D. Ma, and J. Fröhlich, J. Mater. Chem. C 2, 2069. (2014).

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