

THIOPHENE-BRIDGED BIS-NAPHTHALIMIDIC STRUCTURES (EVEN AND ODD) WITH N-TYPE AND AMBIPOLAR OFETS APPLICATIONS

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A brand new series of thiophene bridged bis-naphthalimides has been obtained. These molecules can act as semiconductors and have an even or an odd number of thiophene rings, so that they vary their molecular dipole moments, which have some influence in their molecular packing. With theoretical calculations, the stability of their derivative π -dimers (either parallel or antiparallel) has been elucidated. Results indicate a face-to-face parallel molecular packing for these semiconductors, regardless of their estimated molecular dipole moments. The results obtained are reasonable regarding the field-effect mobilities that have been measured in a bottom-gate top-contact transistor architecture; no direct correlation between performances and dipolar moments is shown. Ambipolar field-effect mobilities have been recorded for the systems of greatest length (2NDI-4T and 2NDI-5T).

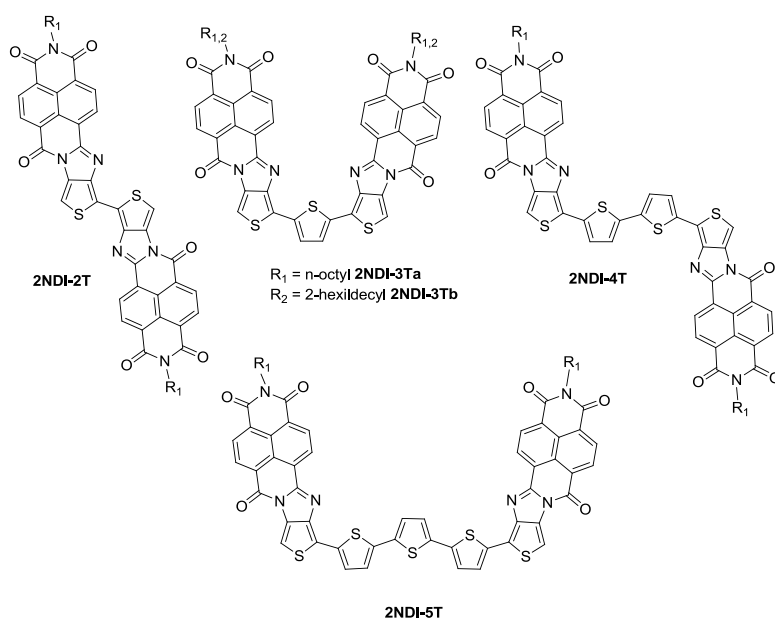


Figure 1. Molecular formula of the naphthalimide-oligothiophene assemblies studied.