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GUANIDINE-CARBOXYLATE BONDING MOTIF IN SELF-ASSEMBLY OF AROMATIC DONOR-ACCEPTOR SYSTEMS

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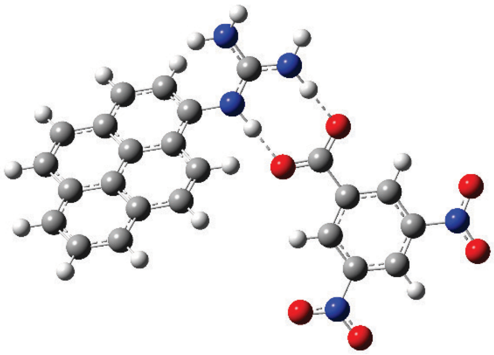
Guanidine-carboxylate hydrogen bonding motif[1] was exploited in self-assembly of aromatic electron donor-acceptor (D-A) pairs. These artificial systems are models for study of photo-induced electron transfer processes through guanidine-carboxylate bonds in more complex natural photosynthetic systems.[2] As typical electron donor systems, aromatic monosubstituted guanidines such as 1-pyrenylguanidine and 5-(4-phenyl guanidinyl)-10,15,20-triphenyl porphyrin were prepared. Synthetic procedure for conversion of aromatic amines to guanidines by *N,N′*-di-Boc-1H-pyrazole-1-carboxamidine guanylation reagent was developed. Synthesis of aromatic guanidinium chromophores was optimized by using environmentally more friendly high-speed vibration milling technique.[3,4] The fundamental physico-chemical properties of supramolecular D-A assemblies obtained via guanidine-carboxylate salt bridges were studied spectroscopically. Molecular modelling (DFT method) was employed in design of D-A systems and study of their molecular and electronic structures.



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