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Hydrogen-Bonding Assisted Supramolecular Self-Assembly of Double Discotic Supermolecues JIANJUN MIAO, LEI ZHU, Uconn — Symmetric double discotic supermolecules based on porphine (Py) and triphenylene (Tp), $Py(Tp)_4$, have been successfully synthesized via PyBOP-catalyzed amidization reactions. The Tp moieties had either C_5- or C_{12}-arms, and the spacer linking between the central Py and peripheral Tp was either C_6 or C_{10}. Thermal properties of these supermolecules were studied by differential scanning calorimetry, and self-assembled crystalline and/or liquid crystalline textures were confirmed by polarized optical microscopy. For samples with C_5-arms in Tp, only a crystal-melt transition was observed. X-ray diffraction (XRD) on shear-oriented samples showed that Py was crystalline and Tp formed columnar liquid crystal. For samples with C_{12}-arms in Tp, sequential crystal-liquid crystal-isotropic melt transitions were observed. XRD results indicated that the crystalline unit cells were orthorhombic for all samples, and amide hydrogen-bonding was responsible for their supramolecular self-assembly.

Jianjun Miao
Uconn

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