

Controlling the lateral aggregation of perfluoroalkylated hexa-peri-hexabenzocoronenes.

Aebischer, Olivier F.; Aebischer, Annina; Donnio, Bertrand; Alameddine, Bassam; Dadras, Massoud; Guedel, Hans-Ulrich; Guillon, Daniel; Jenny, Titus A. Department of Chemistry, University of Fribourg, Fribourg, Switz. *Journal of Materials Chemistry* (2007), 17(13), 1262-1267.

Abstract

The investigation of two hexa-peri-hexabenzocoronene (HBC) derivs. carrying linear or branched perfluoroalkylated side chains is reported. Polycondensed arom. hydrocarbons (PAH) such as HBC derivs. are well known to self-organize to form highly ordered monomol. stacks, which in turn show a concn.- and solvent-dependent lateral aggregation. However, possible applications of self-assembled HBC derivs. require linear, laterally non-aggregated columnar structures. According to powder X-ray diffraction (XRD) and differential scanning calorimetry (DSC), HBC derivs. with linear perfluoroalkylated side chains show liq. cryst. (LC) properties whereas those with branched perfluoroalkylated side chains have an amorphous structure. The stacking behavior and the lateral aggregation are found to be greatly influenced by changes in the medium, as shown by fluorescence spectroscopy and cryo-SEM (cryo-SEM).