

Growth of polymeric micro-rod from amphiphilic molecules

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Design of a molecule is a fascinating work if we succeed in synthesizing the molecule with controlled functionality. In this study we designed and synthesized an amphiphilic molecule that contains amide bond at center and pyrrole rings at both ends. From 1-(2-carboxyethyl) pyrrole and adipic acid dihydrazide a novel amphiphilic molecule was synthesized. This molecule has a functionality to make strong hydrogen bond through neighboring amide bonds as well as electron-conductive pyrrole rings which also can do pi-pi stacking interactions contributing to the self-assembly. This newly synthesized molecule self-assembled to form straight rod structure in micrometer scale especially when they were prepared in selected organic solvents. This micro rod is expected to be used as a conducting micro-wire by itself, and organic templates for the deposition of other organic and inorganic substances.