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Original article

A supramolecular bottlebrush polymer assembled on the basis of cucurbit[8]uril-encapsulation-enhanced donor-acceptor interaction

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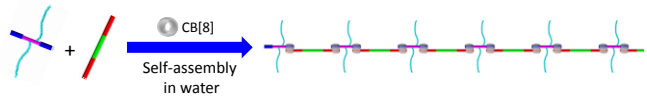
Graphical abstract



A supramolecular bottlebrush polymer has been constructed in water through cucurbit[8]uril-mediated self-assembly of a rigid electron-deficient building block and an electron-rich monomer which bears two tetraethylene glycol chains.

ABSTRACT
A supramolecular bottlebrush polymer has been constructed in water through the self-assembly of a rigid electron-deficient building block and an electron-rich monomer which bears two tetraethylene glycol chains, driven by CB[8]-encapsulation-enhanced donor-acceptor interaction. The as-formed supramolecular bottlebrush polymer has been characterized by ^{1}H NMR titration experiment, UV-vis spectroscopy, DLS and 2D ^{1}H NMR DOSY.

Keywords:
Self-assembly
Supramolecular polymer
Cucurbit[8]uril
Donor-acceptor interaction
Bottlebrush polymer

1. Introduction

Supramolecular polymer originates from the merging of supramolecular chemistry and polymer science [1]. Different from the classic polymers in which building parts are linked by covalent bonds, in supramolecular polymers, their components are connected through weak intermolecular interactions such as hydrogen-bonding [2-4], coordination interaction [5], host-guest interaction [6-9],