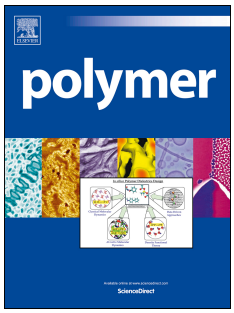
Accepted Manuscript



H-bonding tuned phase transitions of a strong microphase-separated polydimethylsiloxane-*b*-poly(2-vinylpyridine) block copolymer

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PII: S0032-3861(18)30119-8

DOI: 10.1016/j.polymer.2018.02.003

Reference: JPOL 20351

To appear in: *Polymer*

Received Date: 3 November 2017

Revised Date: 28 January 2018

Accepted Date: 3 February 2018

Please cite this article as: Shi L-Y, Lei W-W, Liao F, Chen J, Wu M, Zhang Y-Y, Hu C-X, Xing L, Zhang Y-L, Ran R, H-bonding tuned phase transitions of a strong microphase-separated polydimethylsiloxane-*b*-poly(2-vinylpyridine) block copolymer, *Polymer* (2018), doi: 10.1016/j.polymer.2018.02.003.

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ABSTRACT: The phase behaviors of a polydimethylsiloxane-*b*-poly(2-vinylpyridine) block copolymer (PDMS-*b*-P2VP, DV) tuned by the supramolecular self-assembly approach with the 1-pyrenebutyric acid (PBA) as additive were investigated. The PDMS-*b*-P2VP block copolymer ($D_{10k}V_{12.5k}$, the molecular weight of the PDMS and P2VP were 10000 and 12500 g mol^{-1}, respectively) with volume fraction of P2VP (f_{P2VP}) of 52% exhibited hexagonally perforated layer (HPL) morphology after dried from the solution, and the nanostructure transformed to gyroid structure after thermal annealing above 140 ^{o}C, which were indicated by the small-angle X-ray diffraction (SAXS) and transmission electron microscopy (TEM) results. Through solution