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Studies on the controlled morphology and wettability of polystyrene surfaces by electrospinning or electrospraying

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Abstract

Polystyrene (PS) surfaces with various morphologies have been produced by electrospinning or electrospraying, such as beads with different sizes and shapes, bead-on-string structures with different aspect ratios of the beads and fibers with different diameters and shapes. Both the solution properties and the electrospinning conditions affected the PS surface morphology obtained. The results of water contact angle (CA) measurement indicated that the surface morphology could affect the wettability distinctively. It was found that CA values of PS surfaces comprised merely fibers were in the range of 140° – 150° . The CA values of PS surfaces comprised bead-on-string structures were usually about 150° . However, the CA values of PS surfaces consisted of particles could reach up to 160° , which shows a superhydrophobic property. A bilayer fibers-on-beads surface was verified to be stable and superhydrophobic.



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Keywords

Polystyrene; Electrospinning; Wettability

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