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A study on hydrophobicity of polymer micro-nano patterns generated by reactive ion etching(RIE) with nanoparticle mask

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Super-hydrophobic surfaces, which possess a water contact angle higher than 150° and a water sliding angle lower than 5°, have attracted great attention in recent years for their appealing performances in water repellency, anti-fog, and self-cleaning. In this work, we fabricated 'micro-nano' structures of perfluoropolyether bisurethane methacrylate(PFPE) on glass substrate using imprint lithography technology and reactive ion etching(RIE) process with gold nanopaticle mask. The hydrophobicity of the PFPE micro and micro-nano patterns were systematically investigated based on the results from scanning electron microscopy(SEM) and contact angle measurements.