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A novel strategy for fabricating robust superhydrophobic fabrics by environmentally-friendly enzyme etching

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Abstract

Superhydrophobic silk fabrics were prepared using an environmentally friendly enzyme-etching approach, followed by the modification with methyltrichlorosilane (MTCS) via a simple thermal chemical vapor deposition (CVD) process at 70 °C. The effects of the concentration, treatment time and temperature of enzyme on the etched surface properties were discussed. The composite superhydrophobic silk fabrics demonstrated excellent self-cleaning ability, relatively unscathed effecting their intrinsic properties such as the luster, softness, color and style of the fabrics. Furthermore, these treated fabrics demonstrated excellent mechanical durability after silane-treatment as evidenced by the cyclic abrasion and laundering tests. The composite superhydrophobic cotton fabrics

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