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1 **Fabrication of cotton fabric with superhydrophobicity and flame**
2 **retardancy**

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8 A B S T R A C T

9 A simple and facile method for fabricating the cotton fabric with superhydrophobicity
10 and flame retardancy is described in the present work. The cotton fabric with the
11 maximal WCA of 160° has been prepared by the covalent deposition of amino-silica
12 nanospheres and the further graft with (heptadecafluoro-1, 1, 2, 2-tetradecyl)
13 trimethoxysilane. The geometric microstructure of silica spheres was measured by
14 transmission electron microscopy (TEM). The cotton textiles before and after
15 treatment were characterized by using scanning electron microscope (SEM) and X-ray
16 photoelectron spectroscopy (XPS). The wetting behavior of cotton samples was
17 investigated by water contact angle measurement. Moreover, diverse performances of
18 superhydrophobic cotton textiles have been evaluated as well. The results exhibited
19 the outstanding superhydrophobicity, excellent waterproofing durability and flame
20 retardancy of the cotton fabric after treatment, offering a good opportunity to
21 accelerate the large-scale production of superhydrophobic textiles materials for
22 new industrial applications.

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