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Surface modification of cotton and silk fabrics by SF_6 plasma¹ SATREERAT HODAK, THIDARAT SUPASAI, Department of Physics, Faculty of Science, Chulalongkorn University, VARONG PAVARAJARN, Chemical Engineering Department, Faculty of Engineering, Chulalongkorn University, BOONCHOAT PAOSAWATYANYONG, Department of Physics, Faculty of Science, Chulalongkorn University — Hydrophobic properties are of the interest in fabric and textile manufacturers. We have used SF_6 plasma to modify the surface of cotton and silk fabrics. We have found that SF_6 plasma enhances the hydrophobic property of both types of fabrics. The water contact angle of SF_6 -treated fabrics increased from 20 degrees up to 140 degrees. The measured absorption time was found to depend upon the treatment time and RF power, only at the low SF_6 pressure of 0.005 and 0.05 torr. At higher pressure, all samples achieved high absorption time of about 200 min, regardless of the RF power and treatment time. The morphology changes of fabrics after plasma treatment were characterized by scanning electron microscopy and atomic force microscopy. After plasma treatment, the rms surface roughness of the fibre increased from about 20 nm to 40 nm. From X-ray photoelectron microscopy analysis, we found that the higher the F/C atomic ratio leads to the longer the absorption time or the improved hydrophocity of the fabric.

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