

# Nanolevel Functionalization Problems of Natural Fiber Textiles

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Having the ability to control the surfaces of a natural fiber offers great rewards that go far beyond pure economics as natural fibers are renewable and biodegradable resources.[1] The processes of vacuum evaporation and magnetron sputtering of ultra thin metal layers on natural fibers textile is carried out.

Technologies comparison results show that metal layer on the surface of fabrics obtained by magnetron sputtering are more even, adhesion with surface are better than for the same textile by vacuum evaporation. It is hard to achieve even and

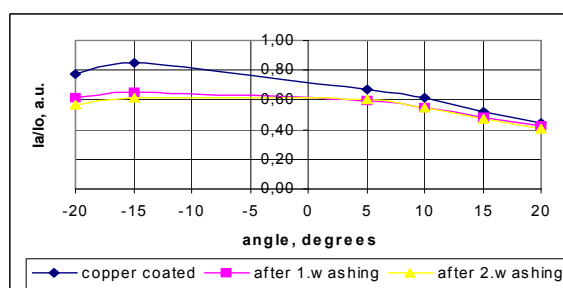


Fig.1 Comparison of reflected light of coated samples before and after washing.

stable metal coating of natural fiber textile surface, because they offer unique challenges as not only are their cross sections irregular, but their surfaces are chemically and physically heterogeneous, the ability of a particular construction textile fabric to hold treatment depends and on surface cleanness, so that's why it is necessary to develop textile pre-treatment technology. Research results show that: after immersing in 80 % acetone solution for 5 min and after surface modification by low pressure plasma surface adhesion increase twice.

To get a detailed insight into the changes of the textile surface properties and develop a tool for comparative analysis the surface of samples was examined with laboratory laser complex (indirect method of surface examination), by measuring reflected and passing light. From graph Fig.1. are seen that metal coating made by magnetron sputtering is influenced by first washing (necessary to continue investigation to find solution of this problem), second washing haven't influenced coating, reflected and passing light results show the same. It meets our expectations that indirect method can be used for surface examination during exploitation of textile.

## References

1. Brown, P.J.; Stevens, K.. Nanofibres and nanotechnology in textiles, Woodhead Publishing Series in Textiles No.67., ISBN 1-84569-105-9, UK, 2007