

Abstract Submitted  
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**Diffuse coplanar surface barrier discharge – basic properties and its application in surface treatment of nonwovens**<sup>1</sup> DUSAN KOVACIK, JOZEF RAHEL, JANA KUBINCOVA, ANNA ZAHORANOVA, MIRKO CERNAK, Department of Experimental Physics, Faculty of Mathematics, Physics and Informatics, Comenius University, Mlynska dolina, 842 48 Bratislava, Slovakia — In recent years, low temperature atmospheric pressure plasma surface treatments have become a hot topic because of the potential of fast and efficient in-line processing fabrication without expensive vacuum equipment. A major problem of atmospheric pressure treatment in air is insufficient treatment uniformity because, particularly at the higher plasma power densities, the air plasma has the tendency of filamentation and transition into an arc discharge. Diffuse coplanar surface barrier discharge (DCSBD) plasma source has been developed to overcome these problems. This type of discharge enables to generate macroscopically homogeneous thin ( $\sim 0.3$  mm) plasma layer with power density of some  $100 \text{ W/cm}^3$  practically in any gas without admixture of He. It was found that the ambient air plasma of DCSBD is capable to make lightweight polypropylene nonwoven fabrics permanently hydrophilic, without any pinholing and with low power consumption of some  $1 \text{ kWh/kg}$ .

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Dusan Kovacik  
Dept of Experimental Physics, Faculty of Mathematics,  
Physics and Informatics, Comenius University, Mlynska dolina,  
842 48 Bratislava, Slovakia

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