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**Deposition of metallic nanoparticles on polymers by atmospheric plasma for further metallization**

Kira Rosanova, Jost Degenhardt, Jörg Ihde, Ralph Wilken

Fraunhofer IFAM, Bremen, Germany

kira.rosanova@ifam.fhg.de

This study presents results obtained by applying an environment friendly plasma technology for deposition of metallic particles layer (Ag, Pd, Pt etc.) on polymer and composite surfaces at atmospheric pressure and ambient temperature. One of the major advantages of the developed technology is its applicability to the thermosensitive materials, which was successfully demonstrated for a wide range of polymers.

The new developed ARC-PVD atmospheric pressure plasma technology is aimed to replace the chemical bath process commonly used during the metallization of polymers at the stage of the polymer surface preparation by an ecologically neutral dry atmospheric pressure plasma process. This is essential as the currently involved surface preparation baths require a usage of toxic environmental unfriendly chemical compounds while the usage of some of these compounds, like Cr VI, is severely restricted by recent EU regulations.

Using the new technology for deposition of Pd catalyst nanoparticles on the polymer surface followed by an electrolessplating process, a successful metallization of PA66, PA6; PBT and other polymers was achieved. It produces a smooth metalized layer on a polymer surface with a typical thickness between 50 nm and 1  $\mu\text{m}$ .

**Keywords**

metallic particles

metallization of polymers

atmospheric plasma

Arc-PVD

Pd catalyst