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**Surface modification of silver and copper nanoparticles to prepare nanocomposites with antibacterial properties.**

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Herein, copper and silver nanoparticles were plasma treated in a RF plasma reactor. The modifications were carried out with air and with acrylic monomers in order to modify the surface of the nanoparticles. The variables used during the treatment, were plasma power and treatment time. Potassium bromide in powder was also modified in order to obtain the chemical structure of the polymer deposited during the treatment. The plasma treatment was carried out in order to increase the compatibility of nanoparticles towards polymeric materials.

The nanoparticles were analyzed by infrared analysis, thermogravimetric analysis, electronic microscopy and dispersion in solvents. Nanoparticles treated with acrylic monomers were coated with a thin polymer. The antibacterial properties of the nanoparticles were tested with *Pseudomonas aeruginosa*. The results showed that plasma treatment did not affect the antibacterial properties of nanoparticles.

Treated nanoparticles were mixed through melting with polymers such as Nylon, polypropylene and PET, the obtained nanocomposites prepared in films, were exposed to air plasma in order to remove the last layers of polymer and to leave the metallic nanoparticles more free to interact with the environment. The nanocomposites were also tested for antibacterial properties.

**Keywords**

silver  
copper  
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treatment