

Ion Beam Sputtering Deposition of Inorganic-Fluoropolymer Nano-Coatings for Real-Life Applications

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Abstract : In recent years antimicrobial coatings are receiving increasing attention due to their high demand in medical applications as well as in healthcare and hygiene. Research and technology are constantly involved to develop advanced finishing which can provide bacteriostatic growth without compromising the other typical properties of a textile as durability and non-toxicity, just to cite a few. Here we report on the antimicrobial coatings obtained, at room temperature and without the use of solvents, by means of the ion beam co-sputtering technique of an Ag target and a polytetrafluoroethylene one. In particular, such method allows to conjugate the well-known antimicrobial action of silver with the anti-stain and water-repellent properties of the fluoropolymer. Moreover, different Ag nanoparticle loadings (φ) were prepared by tuning the material deposition conditions achieving a fine control on film thickness and their antimicrobial/anti-stain properties.

Keywords : antimicrobial, ion beam sputtering, nanocoatings, anti-stain

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