Surface Treatment of Materials for Variable Applications and Surface Properties and Characterization

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Many materials of general interest, which they are frequently employed in common life, industry, biotechnology, tissue engineering studies, medicine, have many excellent properties, but their inert nature may limit their wider usage in some cases. Many modification techniques have been therefore developed to improve surface properties of variable substrates for other applications. For a long time we study surface properties of a wide range of substrates (polymers, glass, silicate powders, etc.). Surfaces of studied materials are firstly activated by chemical or physical ways and than variable chemical compounds (e.g. nanoparticles, nanostructures or nanolyers) are grafted or deposited on. Surface properties are characterized before and after individual activation or modification steps by many techniques (microscopies, spectroscopies, goniometry, electrokinetic analyses, X-ray diffraction, etc.). Some of tested samples are also tested for antimicrobial activities and/or for cell adhesion and proliferation for their potential usage in tissue engineering. This paper presents a survey of techniques for preparation of nanostructured materials for usage in electronic, optics or medicine and selected results.

Keywords: Surface Modification, Surface Properties, Surface Characterization, Surface Activation, Grafting

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