LOW-DIMENSIONAL METALLIZED BIODEGRADABLE POLYMERS PREPARATION, STUDY AND APPLICATION

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Last decade metallized polymers with unconventional properties are objects of significant research interest for environmental protection, bionanotechnology, radiophysics, etc. Biocompatible, biodegradable and bacteriostatic siloxane / carbonate copolymer (commercial product, MM 50 000) was applied as a support (thickness about 1 μm) for magnetronic (I) and ion-plasma (II) deposition. These methods were developed for preparation of Cu-containing hybrid (I) or Ni and Au-coating (II). X-ray, AFM, STM and other techniques were used for metallized polymers characterization. Surface structure, optical and mechanical properties were found to be dependent on deposition time, temperature, coating thickness. For gold coatings (thickness about 80 nm) the most favourable results on durability, were obtained, its defectless area is 43 nm. Electric, magnetic and acoustic properties are demonstrated for low-dimensional metallized copolymers, their potential application is discussed.

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