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MORPHOLOGY OF NANOSIZED GOLD FILMS

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Films with nanoscale thicknesses and nanoparticles are widely used in all areas of nanotechnology. Nanoparticles of gold are of great interest in physics, chemistry, biology, and medicine. Gold nanoparticles are non-toxic, chemically stable, and biocompatible with living tissue. Unlike bulk gold, nanostructures have unique properties - catalytic, ferromagnetic, and tunable optical properties. The presence of such specific properties is the basis for a more detailed study of nanoscale structures, their properties, and methods of production. In this work, nanoscale gold films on a dielectric substrate of mica and gold nanoparticles obtained by various spraying methods were studied by tunnel microscopy. A comparative analysis of the morphology of the formed nanoparticles on silicon and glass substrates was carried out. It is shown that despite the differences in morphology of thin gold films obtained by different methods and on different substrates, the films consist mainly of spherical nanoparticles. Thus, having the opportunity to compare data on the vacuum deposition mode, and surface relief, it is possible to develop technologies for obtaining a surface with a given set of properties, as well as to develop new methods of gold deposition on different surfaces. Obtained results are very important for the application in biology and medicine. They make it possible to create different types of sensors, diagnostic tests, as well as targeted delivery of medicines to treat diseases.

Topics

Session D. Biomedical optics and sensors technology

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