

## CYTOCOMPATIBILITY OF GOLD NANO-PARTICLE GRAFTED SUBSTRATE

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### Abstract

Metal nanoparticles have attracted extensive interest because of their unique electronic, optical, and catalytic properties. The integration of metal nano-particles into thin films is particularly important for various applications, for example in biological sensing and in the preparation of optoelectronic nano-devices [1,2]. The surface of glass substrate was plasma treated, coated by gold nano-structures and subsequently grafted with nanoparticles. The samples were plasma treated, sputtered with Au nano-structures, subsequently grafted with biphenyl-4,4-dithiol (BPD) and then by gold nano-particles. The wettability, optical and chemical properties and surface morphology were studied by several analytical methods. The adhesion and proliferation of vascular smooth muscle cells (VSMCs) on the samples were investigated in-vitro as well. Grafting of gold nanoparticles with the dithiol increases the UV-Vis absorbance, the surface becomes more hydrophobic, rougher and more rugged compared to pristine, sputtered and only dithiol treated surface. Gold nano-particles bound over dithiol and Au nano-structures cause better cell proliferation than purely BPD treated or pristine glass.

**Keywords:** Glass surface treatment, nanoparticles grafting, surface characterization, cell adhesion and growth

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### LITERATURE

- [1] V. Svorcik, Z. Kolska, O. Kvitek, J. Siegel, A. Reznickova, P. Rezanka, K. Zaruba, *Nanoscale Res. Lett.* 2011;6:607-613.
- [2] L. Bacakova, E. Filova, M. Pařizek, T. Ruml, V. Švorčík, *Biotechnol. Adv.* 2011;29:739-767.

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