

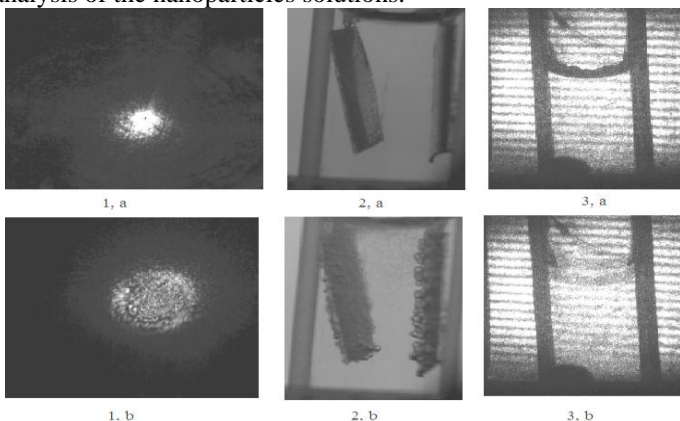
# Microscopy of Nanoobjects

## Investigation of nanoparticles solutions by optical methods

**N.A.Davidenko, I.I.Davidenko, N.G.Chuprina, N.N.Kuranda, V.A.Pavlov,  
S.L.Studzinsky**

*Chemical Department, Kiev Taras Shevchenko National University,  
Volodymyrs'ka Str., 64, Kiev-01601, Ukraine  
E-mail: ndav@univ.kiev.ua*

Possibility of application of different optical techniques to reveal presence and to estimate concentration of particles  $\text{SiO}_2$  in water solutions is demonstrated in the work. Small sized holographic setup [1] was used for the experimental investigations. Following methods were employed: 1) comparison of light scattering of focused laser beam passed through cuvette with  $\text{H}_2\text{O}$  without nanoparticles  $\text{SiO}_2$  and after their introduction into liquid (Fig.1,a and Fig.1,b respectively); 2) observation of electrophoresis process in the cuvette with  $\text{H}_2\text{O}$  without the particles and after their introduction (Fig.2,a and Fig.2,b respectively); 3) holographic technique for observation of the changes of interference stripes for the cuvette with  $\text{H}_2\text{O}$  without the particles and after their introduction (Fig.3,a and Fig.3,b respectively). All 3 methods allow to detect presence of the particles. Increase of their concentration is accompanied by increase of the changes of the optical images. One can suppose that appropriate mathematical apparatus for the images processing will let in future to use considered optical techniques for quick express-analysis of the nanoparticles solutions.



1. [http://www.youtube.com/watch?v=EZynG\\_qkGvM](http://www.youtube.com/watch?v=EZynG_qkGvM).