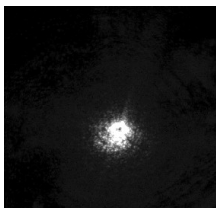


Investigation of nanoparticles solutions by optical methods

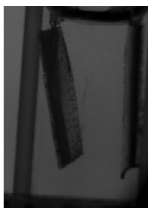
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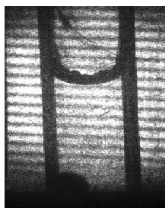
The possibility of various optical techniques using to detect the presence and estimate the concentration of SiO₂-based nanoparticles in the aqueous solutions was demonstrated. The main experimental results were obtained with the use of the small-sized holographic device. In the present work the following methods were used: 1) the light scattering observation of focused laser beam transmitted through the glass cuvette with water without SiO₂-nanoparticles additives and after nanoparticles addition into the liquid (Fig.1 a, b); 2) electrophoresis process observation in the cuvette with H₂O without particles additives and after particles addition in cuvette (Fig. 2 a, b); 3) holographic observation method of fringe pattern change for the cuvette with H₂O without and with particles additives (Fig. 3 a,b). It was found that the use of all mentioned above methods made it possible to detect the nanoparticles additives presence in investigated solutions, and that increase of the nanoparticles concentration leads to increase of the optical image changes. It was assumed that the discussed optical methods with the help of respective image processing mathematical apparatus can be used for the fast express analysis of the nanoparticles solutions.



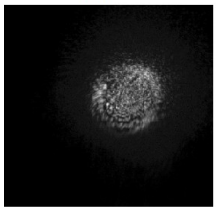
1, a



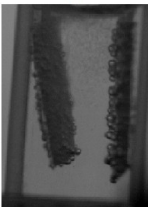
2, a



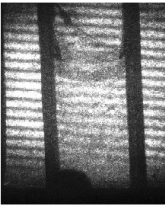
3, a



1, b



2, b



3, b