

Abstract

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Title of thesis: AFM in Pharmaceutical Technology 3

The theoretical part deals first with the construction of AFM microscope, the principle of the method, determining the surface topography and regimes which can be used. Described therein are distinct advantages over previous traditional methods but also its pitfalls. Next, I compare the results of measurements using AFM and declared size and devote also determine the shape of the particles.

Experimental part is focused first on the detailed description of sample preparation for AFM measurement of nanoparticles. This procedure was followed by practical use to characterize the magnitude of the four types of commercially available nanoparticles Chromeonov (Sigma-Aldrich) using atomic force microscopy. The laboratory prepared Ag-nanoparticles could not be evaluated due to of technical and methodological reasons.

The magnitude of the measured results nanoparticles were processed in histograms, which provide a description of the distribution of the measured values of the nanoparticle size.

I found that compared to the size of the nanoparticles declared by the manufacturer are values obtained by measuring the AFM are always by ca tens percent, e.g. substantially smaller.

I tried to use AFM method for evaluation of the shape of the nanoparticles, but when this method is primarily intended for scanning the surface of particle theevaluation of shape obviously failed, so this method is not appropriate for this purpose.

Keywords: AFM, nanoparticles, Gwyddion, PD Chromeon