

This thesis is about two very modern scientific methods used to study the world in smaller than micro scale. The first one of them is atomic force microscopy (AFM) which is used to measure the topology of a sample at the atomic scale. The second one is micro-spectroscopy which is used to study the nature of emission spectra of nanoparticles. The goal of this thesis is to combine these two methods so that it can be used to measure in detail the size and the shape of nanoparticles and in the same time study their emission spectra.

In the first part of the thesis I present both methods, their principles, benefits and applications. In the second part I describe performed measurements, such as scale and directional calibration of measuring apparatuses cameras and selection of suitable sample carrier. At the end of the second part, I present my proposed procedure how to pair the same sample location studied by AFM and micro-spectroscopy.

The procedure consist of 20 steps and with its use it will be possible to study luminescence emission in more detail, especially for example examine its dependence on the shape and size of the nanoparticle. The ability to measure the effect of the distance between two nanoparticles on their emission spectra is also very promising.