

Seminář odd. 26

Tenkých vrstev a nanostruktur

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TÉMA

Optical trapping of silica nanoparticles in air

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Tightly focused electromagnetic radiation (an optical beam) can be used to capture a small particle without physically touching it. This technique, which has led to a Nobel prize in physics and a whole new industry in biotechnology, could allow for example to explore new physical regimes when it is combined with cooling the particle to its quantum ground state. Nevertheless, the possibility of trapping small particles in vacuum (optical levitation) is still not well explored. Most progress on optical nanoparticle control has been in liquids, while optical control in air has proven more challenging.

During my postdoctoral stage, I have built an optical setup for optical trapping of nanoparticles (around 100 nm in diameter) in air using tightly focused IR laser beam. In this talk, I will present you some of the basic aspects of the optical trapping using single laser beam, the main challenges of this approach and the results on trapping of silica nanoparticles. Namely, the influence of the air pressure on the movement of the nanoparticles will be discussed.

