Nanooptics and photonics

Nonlinear behavior of DNA-functionalized gold nanoparticles

O.Krupka[1,*], V.Smokal[1], B. Kulyk[2,3], R. Czaplicki[4], B. Sahraoui[2,*]

[1]Taras Shevchenko National University of Kyiv, Department of Chemistry, 60 Volodymyrska, 01033 Kyiv, Ukraine
[2]UNAM, University of Angers, CNRS UMR 6200, Laboratory MOLTECH-Anjou, 2 bd Lavoisier, 49045 Angers, France
[3]Department of Physics, Ivan Franko National University of Lviv, 8 Kyrylo and Mefodiy str., 79005 Lviv, Ukraine
[4]Tampere University of Technology, Department of Physics, 10 Korkeakoulunkatu, 33720 Tampere, Finland
**e-mail: oksana_krupka@yahoo.com ; [*]e-mail bouchta.sahraoui@univ-angers.fr*

Last decade brought accelerating interest in the DNA molecule. Such growing attention is particularly visible in the nanotechnology, where DNA has been used as host polymer matrix in guest-host systems [1], as a template for arrangement of functionalized nanoparticles (NPs) [2], as nanomachines, as drug-delivery system, or for sensing applications. Over the past few years, one-dimensional structures with nanoscale diameters such as nanowires, nanorods and nanotubes have attracted considerable attention due to their peculiar structure characteristics and size effect. These materials often exhibit remarkable mechanical properties, as well as electrical, optical and electromagnetic properties that are quite different from those of their corresponding bulk materials.

We report some preliminary results obtained in the fabrication of DNACTMA thin films and solution, and thin films doped with photoresponsive molecule and/or nanorods (NPs).

Acknowledgements

O. K. acknowledges the European Cooperation in Science and Technology through COST Action MP1302 Nanospectroscopy.

1. *Krupka, O.; Elghayoury, A.; Rau, I.; Sahraoui, B.; Grote, J.; Kajzar, F.//* Thin Solid Films.-2008.- 516.-P. 8932–8936.
2. *Mastroianni, A.J,; Claridge, S.A.; Alivisatos, A.P.* // J Am Chem Soc, – 2009.- 131.-P. 8455-9.