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XIV/3

AFM study of bacteria treated with graphene quantum dots

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In this paper we present the results of atomic force microscopy (AFM) study of bacteria treated with a new class of carbon nanoparticles - graphene quantum dots (GQD). Electrochemically produced GQD generate reactive oxygen species when photoexcited (470 nm, 1 W), and kill two strains of pathogenic bacteria, *Staphylococcus aureus* and *Escherichia coli*. Neither GQD nor light exposure alone, were able to cause oxidative stress and reduce the viability of bacteria. Morphological defects of bacterial cells were visualized by atomic force microscope, before and after inducing photoexcited GQD. Study of AFM images provides accurate data about changes in length, width and height, as well as RMS roughness of treated bacteria.

XIV/4

**Determination of Nd-Yag laser parameters
for metal threads cleaning in textile artefacts**

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Textile samples with metallic threads from the collection of the Ethnographic Museum in Belgrade were subjected to Nd: YAG laser irradiation in order to determinate certain parameters for successfully and safely clean corrosion products without degrading the surrounding material. Application of conventional cleaning methods did not give the expected results, and the implementation of laser technology was the next step. The Nd: YAG laser energy 150mJ (1064 nm) and 50 mJ (532 nm) and pulse width 150 ps was used. The commercial, Thunder Art Laser was also used. Effects of the irradiated areas was investigated by optical and SEM microscopy and EDX analysis.

Key words: Laser cleaning, Nd:YAG laser, corrosion, metallic threads, textile.