



**Journal of Nanoelectronics and Optoelectronics, 2012,
Volume 7, Number 7, pag. 681-687**

Red Algae *Porphyridium cruentum* Growth Stimulated by CdSe Quantum Dots Covered with Thioglycerol

**Rudic V., Cepoi L., Gutsul T., Rudi L., Chiriac T., Miscu V.,
Sadovnic D., Nicorici, A.**

<https://doi.org/10.1166/jno.2012.1416>

Abstract

CdSe nanoparticles were synthesized using colloidal methods. In order to obtain hydric colloidal solution, the surface of the quantum dots has been modified with thioglycerol. The presence of thioglycerol on the CdSe quantum dots was confirmed by infrared spectroscopy. The hydric solution of CdSe was used in biological tests. The red algae *Porphyridium cruentum* was investigated as biological object. Quantum dots were added in the microalgae cultivation medium in a quantity of 1–10 mg/l. Quantities of 4–8 mg/l have shown a stimulating effect, i.e., increasing the amount of accumulated biomass to 18, 2–47% in comparison with the control sample. The absence of toxic effects of CdSe quantum dots was indicated by the determination test of the malonic dialdehyde that manifested the lack of membrane lipoprotein oxidation. A new area of application of CdSe nanoparticles was defined, namely that of phycobiotechnology.

Keywords: antioxidant activity; cadmium selenide quantum dots; hydric colloidal solution; Porphyridium cruentum; thioglycerol