INTEGRIRANI KEMIJSKI SUSTAVI
Seminar 1

Synthesis of CdS Nanoparticles*
VIRTUAL LAB

Preparation of CdS Nanoparticles/Journal of Chemical Education

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1. Synthesis and characterisation of CdS nanoparticles

Fig. 1. (a) Pictorial representation of the synthesis of quantum-sized CdS in reverse micelles; and (b) detail of “water-in-oil” reverse micelle formed by CTAB as surfactant and n-pentanol, as cosurfactant.
2. VELIČINA NANOČESTICE I ENERGIJSKI NIVOI ELEKTRONA

Quantum dots: A Primer

pročitati uvod!
3. Pobuda elektrona – relaksacijski mehanizmi u molekulama (Jablonski dijagram) i nanočesticama
4. IZRAČUN VELIČINE NANOČESTICA
(model efektivne mase i empirijski TEM model)

Effective mass model

\[ E_{\text{g\ nano}} = E_{\text{g\ bulk}} + \frac{h^2}{8m_0r^2} \left( \frac{1}{m_e^*} + \frac{1}{m_h^*} \right) - \frac{1.8e^2}{4\pi\varepsilon\varepsilon_0r} \]

\[ r \ (\text{nanočestice}) = ? \]
Applications of quantum dots as probes in immunosensing of small-sized analytes

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Fig. 1. Dependence of fluorescence emission wavelengths of quantum dots on their chemical composition.
5. Primjena kvantnih točaka u imunosenzorima

3. Funkcionalizacija površine kvantne točke

Fig. 4. Typical particle size of an antibody (A), a QD functionalized by ligand exchange with dihydrolipoic acid (B) and a QD coated with amphiphilic polymer (C).

5. Biokonjugacije (5.1. Primjena aktivnog estera)