**Physico-Chemical nanomaterials science**

**Poly(maleic anhydride *alt*-1-tetradecene) derivatives control zeta potential and hydrodynamic size of encapsulated quantum dots**

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Semiconductor quantum dots (QDs) have unique photophysical properties such as narrow and size-dependent emission spectra, broad absorption profiles, and high quantum yields, which makes it possible to replace traditional organic fluorophores for molecular, cellular, and *in vivo* imaging [1, 2].

The aim of this work was to study how values of ζ-potential and hydrodynamic size of encapsulated QDs in modified polymer correlate in different media.

Poly(maleic anhydride *alt*-1-tetradecene) (PMAT) was modified with bi-functional molecules containing various charged groups in different proportions using standard EDC-chemistry. Hydrophobic QDs CdSe / ZnS was encapsulated and purified according to [3].

It is shown that reverse hydrodynamic diameter (measured by DLS) is a cubic function of ζ-potential of QDs in pH range from 4.5 to 9.5 and ionic strength up to 0.4 M. This can be explained by decrease in the electrostatic repulsion component of the QDs diffusion coefficient when ζ-potential approaches zero.

We demonstrate that for a correct interpretation of the physicochemical characteristics of QDs it is necessary to examine ζ-potential and hydrodynamic diameter together, since there is an inversely proportional relationship between them.

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