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Photophysics of Titania Nanoparticle/Quantum Dot Hybrid Structures*

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Received January 18, 2020
Revised January 18, 2020
Accepted April 20, 2020

The efficiency of the electron transfer in hybrid structures based on quantum dots of different architectures was studied. Electron transfer efficiency was estimated by two independent methods from the side of the electron donor (quantum dot) and acceptor (Titania nanoparticles). Structures based on core CdSe QDs with small diameter demonstrate the highest efficiency of electron transfer and ROS generation. The presence of the dark fraction of QDs in the ensemble reduces the functionality of hybrid structures and limits their practical applicability.

Keywords: hybrid structures, quantum dots, luminescence quenching, electron transfer, reactive oxygen spesies.

* The 2nd international school-conference for young researchers „Smart Nanosystems for Life“, St.Petersburg, Russia, December 10–13, 2019.

Полный текст статьи опубликован в „Optics and Spectroscopy“ 2020 V. 128. N 8.