Temperature dependent recombination dynamics in InP/ZnS colloidal nanocrystals

In this letter, we investigate exciton recombination in InP/ZnS core-shell colloidal nanocrystals over a wide temperature range. Over the entire range between room temperature and liquid helium temperature, multi-exponential exciton decay curves are observed and well explained by the presence of bright and dark exciton states, as well as defect states. Two different types of defect are present: one located at the core-shell interface and the other on the surface of the nanocrystal. Based on the temperature dependent contributions of all four states to the total photoluminescence signal, we estimate that the four states are distributed within a 20 meV energy band in nanocrystals that emit at 1.82 eV.

**General information**
State: Published
Organisations: Department of Photonics Engineering, Diode Lasers and LED Systems, Nanophotonic Devices, Center for Electron Nanoscopy
Contributors: Shirazi, R., Kopylov, O., Kovács, A., Kardynal, B.
Number of pages: 4
Pages: 091910
Publication date: 2012
Peer-reviewed: Yes

**Publication information**
Volume: 101
Issue number: 9
ISSN (Print): 0003-6951
Ratings:
BFI (2019): BFI-level 2
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 3.25 SJR 1.382 SNIP 1.167
Web of Science (2017): Impact factor 3.495
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.67 SJR 1.673 SNIP 1.249
Web of Science (2016): Impact factor 3.411
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 2.47 SJR 1.499 SNIP 1.226
Web of Science (2015): Impact factor 3.142
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 3.25 SJR 1.861 SNIP 1.492
Web of Science (2014): Impact factor 3.302
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 3.77 SJR 2.146 SNIP 1.633
Web of Science (2013): Impact factor 3.515
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 3.76 SJR 2.57 SNIP 1.739
Web of Science (2012): Impact factor 3.794
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2