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**Blinking suppression on millisecond-to-minutes time scales in giant nanocrystal quantum dots** ANTON MALKO, University of Texas at Dallas, DAVID BUSSIAN, HAN HTOON, Los Alamos National Laboratory, SID SAMPAT, University of Texas at Dallas, JAVIER VELA, YONGFEN CHEN, JENNIFER HOLLINGSWORTH, VICTOR KLIMOV, Los Alamos National Laboratory — Fluorescence intermittency (blinking) is an intrinsic feature of molecular-like fluorophores, including nanocrystal quantum dots (NQDs). The effect complicates applications of NQDs in areas such as quantum informatics, bio-imaging, and real-time tracking. Previously we developed "giant" NQDs in which a small emitting core is overcoated with a thick shell of a wider-gap material and observed strong blinking suppression on a time scale of 100s ms and longer. In this work, we employ time-tagged correlated single photon counting to detect photoluminescence (PL) traces from individual "giant" CdSe/CdS NQDs with resolution better than 1 ms. We observe a strong dependence of the fluorescence on/off times on shell thickness and almost complete blinking suppression on all measured time scales for NQDs coated with more than $\sim$10 monolayers of CdS. Further systematic analysis of our PL traces reveal a photon statistics that differs significantly from a power-law distribution of on/off times typically observed for "regular" NQDs.

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