Abstract Submitted
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Single Molecule Lifetime Studies of Small Clusters of Semiconductor Nanocrystals DOUGLAS SHEPHERD, Physics Department, Colorado State University, KEVIN WHITCOMB, Chemistry Department, Colorado State University, PETER GOODWIN, Center for Integrated Nanotechnology, Los Alamos National Laboratory, MARTIN GELFAND, Physics Department, Colorado State University, ALAN VAN ORDEN, Chemistry Department, Colorado State University — Enhanced fluorescence intermittency has been reported in single molecule fluorescence experiments on small clusters of semiconductor nanocrystals[1], and single Mn^{2+} doped semiconductor nanocrystals[2]. This behavior is attributed to electronic coupling between nanocrystals in the clusters. We report here on further studies of small clusters of semiconductor nanocrystals utilizing single molecule time-correlated single photon counting, which provides insight into the nature of the coupling. According to this analysis, clusters typically blink on a microsecond to millisecond time scale; whereas, isolated nanocrystals blink on much longer millisecond to second time scale. 1. Yu, M. and A. Van Orden, *Enhanced Fluorescence Intermittency of CdSe-ZnS Quantum-Dot Clusters.* Physical Review Letters, 2006. **97**(23): p. 237402-4 2. Yanpeng Zhang, C.G., Javed Muhammad, David Battaglia, Xiaogang Peng and Min Xiao, *Enhanced Fluorescence Intermittency in Mn-Doped Single ZnSe Quantum Dots.* Journal of Physical Chemistry C, 2008. **112**(51): p. 20200-20205

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