

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Continuous fluorescence from single colloidal semiconductor nanocrystals XIAOYONG WANG, MEGAN HAHN, TODD KRAUSS, Department of Chemistry, University of Rochester, New York, 14627, KEITH KAHEN, XIAOFAN REN, MANJU RAJESWARAN, Eastman Kodak Company, Rochester, New York 14650, UNIVERSITY OF ROCHESTER TEAM, EASTMAN KODAK COMPANY COLLABORATION — Photoluminescence (PL) intermittency, or “blinking”, first discovered for single CdSe colloidal nanocrystals (NCs) a decade ago, has been established as an intrinsic and unavoidable property of all colloidal semiconductor NCs. Indeed, fluorescence blinking is generally accepted as the hallmark of single fluorophore emission. By judicious synthesis of a semiconductor shell of ZnSe around a CdSe NC, we were able to completely suppress PL blinking in these NCs on time scales from milliseconds to hours. Interestingly, these NCs have a radiative lifetime of about 5 ns, 3-4 times smaller than the value routinely measured from traditional CdSe NCs. Finally, single particle PL spectra are highly unusual, and display three peaks separated by about 160 meV. Possible mechanisms for the non-blinking behavior, the short radiative lifetime, and the multiple emission peaks will be discussed.

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Date submitted: 26 Nov 2007

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