Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Fluorescence and Bonding of Quantum Dots on DNA Origami Constructs MATTHEW KESSINGER, TIMOTHY CORRIGAN, Concord, DAVID NEFF, MICHAEL NORTON, Marshall University, CONCORD UNIVERSITY COLLABORATION, MARSHALL UNIVERSITY COLLABORATION —
Semiconductor quantum dots (QDots) have historically been of interest to the scientific community since their creation for various applications ranging from solar energy to optical labeling. In this study, bioconjugated CdSe/ZnS core/shell QDots were synthesized and functionalized with 3-mercaptopropionic acid using both traditional ligand exchange as well as newly developed *in situ* functionalization techniques used to increase the quantum yield of the QDots. Their fluorescence and bonding to both gold as well as DNA origami were investigated for use in self assembled DNA constructs. It is believed that controlling the attachment and spacing of these nanoparticles on DNA origami could be used in a variety of optical labeling and sensing applications. Commercially available biotin and streptavidin functionalized quantum dots were also examined, and subject to the same experiments with gold nanoparticles as the MPA functionalized QDots.

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Date submitted: 14 Nov 2014 Electronic form version 1.4