

Abstract Submitted
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Biolabeling Through the Use of Water-Soluble Colloidal Quantum Dots¹ CODY STOMBAUGH, Bowling Green State University — Nanomaterials continues to be a growing field of study due to their wide range of potential applications. Quantum dots are artificially synthesized crystalline clusters of atoms able to confine electron motion as a result of their incredibly small size. Recently, medical applications of nanomaterials have expanded greatly. Quantum dots are ideal for biolabeling due to their rather narrow photoluminescence emission peaks. By synthesizing quantum dots of a specific diameter, it is possible to predetermine the peak photoluminescence wavelength of a sample. Through ligand exchange and immunoconjugation of the quantum dots with proteins, it is possible to use the quantum dots as biolabels to study the inner machinations of the cellular world. These processes have a predictable effect on the properties of the quantum dots: most importantly, their photoluminescence peak wavelength. By understanding the ways in which these processes effect the quantum dots, it is possible to choose the correct quantum dots for a specific final emission wavelength. Further research is being conducted to perform bio-imaging using these processes and resolve some current limitations found therein.

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