

526b Simple Bioconjugation and Separation of Luminescent CdSe-ZnS Quantum Dots by Genetically Engineered Polyhistidine-Tagged ELP-Protein L Fusions as a Sensitive Reagent for Immunoassay

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A simple platform for the direct bioconjugation and separation of highly luminescent CdSe-ZnS quantum dots (QD) was reported through metal binding coordination with genetically engineered N-terminal polyhistidine tagged elastin (ELP)-Protein L fusion. The principle of immunoassay-ready conjugates was to take advantage of the unique temperature-responsive property of ELP in combination with the high affinity of the antibody-binding Protein L domain. Simple separation of the QD-ELP-ProL complex was achieved by thermally-triggered precipitation and no interference on QD functionality was observed after several reversible transition cycles. A variety of antibodies were shown to bind to Protein L with high affinity, allowing us to perform different formats of immunoassay with versatility. We believed this simple conjugation-separation of QD with genetically engineered protein will facilitate the analysis for diverse analytes.