Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

The Detection of Protein via ZnO Resonant Raman Scattering Signal GUIYE SHAN, GUOLIANG YANG, Drexel University, SHUANG WANG, YICHUN LIU, Northeast Normal University — Detecting protein with high sensitivity and specificity is essential for disease diagnostics, drug screening and other application. Semiconductor nanoparticles show better properties than organic dye molecules when used as markers for optical measurements. We used ZnO nanoparticles as markers for detecting protein in resonant Raman scattering measurements. The highly sensitive detection of proteins was achieved by an antibody-based sandwich assay. A probe for the target protein was constructed by binding the ZnO/Au nanoparticles to a primary antibody by eletrostatic interaction between Au and the antibody. A secondary antibody, which could be specifically recognized by target protein, was attached to a solid surface. The ZnO/Au-antibody probe could specifically recognize and bind to the complex of the target protein and secondary antibody. Our measurements using the resonant Raman scattering signal of ZnO nanoparticles showed good selectivity and sensitivity for the target protein.

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Date submitted: 27 Nov 2007 Electronic form version 1.4