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In situ measurements of protein structural changes during adsorption JAMES FORREST, KANWARJEET KAUR, KATARINA ILIC, Dept. of Physics, University of Waterloo, BRAD HALL, LYNDON JONES, School of Optometry, University of Waterloo — Adsorption of protein onto a solid surface often leads to structural changes in the protein. The extent of denaturation upon adsorption is a fundamental problem in biomaterials. We describe the use of protein conjugated gold nanoparticle to probe changes in the protein tertiary structure upon adsorption. The changes in protein structure that can accompany adsorption give rise to detectable changes in the Localized Surface Plasmon Resonance (LSPR) of the gold nanoparticle. While not a direct probe of biological activity, the results allow one to determine in-situ the impact of adsorption on the protein tertiary structure. The technique can also distinguish the protein very near the substrate, from that much further away. This feature allows us to obtain a depth profile of protein tertiary structure.

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