

Abstract Submitted  
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**Surface Plasmon Resonance Effects in Responsive Polyelectrolyte/Gold Nanoparticles Hydrogel Thin Films<sup>1</sup>** IHOR TOKAREV, IRYNA TOKAREVA, VENKATESHWARLU GOPISHETTY, SERGIY MINKO, Clarkson University — In this study, we explored localized surface plasmon resonance excited in gold nanoparticles coupled with continuous and macroporous stimuli-responsive hydrogel thin films. The 100-nm-thick porous hydrogel film with vertically aligned cylindrical pores decorated with spherical Au nanoparticles (synthesized in the hydrogel) and placed on Au islands (prepared on a glass substrate) enabled the highly-sensitive optical detection of changes in the swelling degree of hydrogel induced by an external stimulus (pH). The strong optical response of our sensing platform is attributed to the electromagnetic coupling between the nanoparticles and islands that is highly sensitive to the inter-particle spacing. The transformation of a chemical signal into the optical effect can be used for analytical applications.

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Ihor Tokarev  
Clarkson University

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