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Low Cost and Reliable Surface Plasmon Resonance-Based Detection System for Liquid Propane Gas

Low Cost and Reliable Surface Plasmon Resonance-Based Detection System for Liquid Propane Gas

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ABSTRACT

The development and performance of a liquid propane gas sensor based on surface plasmon resonance (SPR) procedure is presented. The development of a sensor for propane and natural gas used in homes and industries is of paramount importance for the reasons of health, safety and protection of property. However, a reliable and inexpensive gas sensor is not widely available on the marketplace. The application of SPR using a nanoscale film of gold coated with special polymeric materials, in this case poly(methylmethacrylate, PMMA) or poly(3-hexylthiophene-2,5-diyl, P3HT), as the sensing media is described. The measurand is expressed as the change in the surface plasmon resonance as a function of the effective refractive index of the gold nanoparticle film-composite due to the presence of the analytical gas.

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