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Compact Surface Plasmon Resonance Biosensor for Fieldwork Environmental Detection MARGRETHE BOYD, MADISON DRAKE, KRISTIAN STIPE, MONICA SERBAN, IVANA TURNER, AARON THOMAS, DAVID MACALUSO, University of Montana — The ability to accurately and reliably detect biomolecular targets is important in innumerable applications, including the identification of food-borne parasites, viral pathogens in human tissue, and environmental pollutants. While detection methods do exist, they are typically slow, expensive, and restricted to laboratory use. The method of surface plasmon resonance based biosensing offers a unique opportunity to characterize molecular targets while avoiding these constraints. By incorporating a plasmon-supporting gold film within a prism/laser optical system, it is possible to reliably detect and quantify the presence of specific biomolecules of interest in real time. This detection is accomplished by observing shifts in plasmon formation energies corresponding to optical absorption due to changes in index of refraction near the gold-prism interface caused by the binding of target molecules. A compact, inexpensive, battery-powered surface plasmon resonance biosensor based on this method is being developed at the University of Montana to detect waterborne pollutants in field-based environmental research.

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