



Temperature Gradient Handling System for Surface Plasmon Resonance (SPR) Measurements

WiSys: T150042US03

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WiSys Technology Foundation is seeking a strategic partner that markets or manufactures SPR instruments and is interested in co-development and/or collaboration. There is also interest in collaborating with a partner with expertise in microfluidics in order to further improve the existing sample handling system.

Overview

Measuring biomolecular interactions is a critical component in studies focused on nucleic acid and protein binding. For instance, in the pharmaceutical industry, it is crucial in the drug discovery and development process to understand the biomolecular interactions of potential new drug candidates. Current methods that measure the thermodynamics of binding interactions are only capable of doing so at a single, specific temperature. Taking these measurements at each temperature within a desired range is cumbersome, time consuming, and increases the net cost of the study. Although several classes of surface instrumentation have potential to provide temperature dependent measurements, each presents its own technical challenges which has therefore restricted the widespread adoption by the mainstream biomolecular community. There is a clear and unmet need for the development of a more user friendly and cost effective device that provides for improved SPR measurements.

The Invention

Researchers in the Department of Chemistry and Biochemistry at the University of Wisconsin-La Crosse have developed a surface plasmon resonance (SPR) based method for measuring, in a single experiment, the temperature dependence of binding kinetics for biomolecular interactions. The method is based on a novel sample handling system that generates a spatial temperature gradient across an SPR sensor and is label free.

Applications

- This novel sample handling system has utility as a new and improved research tool for SPR imaging and the study of protein and DNA interactions

Key Benefits

- Capable of measuring interactions over a temperature gradient within the range of 5°C to 90°C
- Ability to identify thermal denaturation profiles of a host of biomolecular interactions including the kinetics of DNA and protein binding
- Unique design of sample handling system reduces time and materials needed reducing net cost of each study

Stage of Development

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The instrumentation and sample handling systems have been constructed. Both are fully functional. The system has utility as a stand-alone instrument, however the design of the gradient



stage has potential to be adaptable with other imaging SPR systems with further development. Studies are currently underway to optimize surface chemistry and instrumentation design.

Tech Fields

- [Analytical Instrumentation, Methods & Materials : Spectroscopy](#).

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