

MOSFET-EMBEDDED MICROCANTILEVER SIGNAL TRANSDUCTION PLATFORM FOR BIOCHEMICAL DETECTION AND DIAGNOSIS

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There is strong demand for reliable biological and chemical detection techniques that can provide enhanced sensitivity and selectivity with greater simplicity and cost-effectiveness. Researchers at the NU-NSEC developed a new metal-oxide-semiconductor field-effect transistor (MOSFET)-embedded microcantilever detection platform that provides label-free detection of molecular interactions in real-time. Demonstrations of this new platform show that it has excellent potential to sensitively detect diverse biological and chemical analytes by simple direct electrical measurements. In addition to overcoming some of the limitations imposed by traditional detection techniques, the MOSFET-embedded microcantilever platform offers a number of advantages, including: (1) full compatibility with application specific microelectronics and microfluidic devices, and (2) the capability to create high-throughput miniaturized devices. This achievement is an important step toward the development of reliable and widely deployable integrated sensor systems.

