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Specifically Detect Vascular Endothelia Growth Factor (VEGF) with Micro Cantilever Resonator[1] JIANHUA GU, DEBIN LI, DAVID LEDERMAN, Dept of Physics, West Virginia University, JAROD KABULSKI, PETER GANNETT, Basic Pharmaceutical Sciences, West Virginia University, DANIEL FLYNN, Mary Babb Randolph Cancer Center, West Virginia University — VEGF is an important protein marker for lung cancer. Current state of the art detection strategies use enzyme linked immunosorbent assays (ELISA), where only nanogram levels can be detected in serum. We have developed a sensing method to rapidly detect VEGF based on the micro cantilever resonator technique, which has advantages over the standard ELISA method. We have covalently linked a polyclonal anti-VEGF antibody to a silicon cantilever surface. The shift of cantilever resonant frequency due to specific VEGF binding with this antibody allows us to detect the presence of VEGF in solution at detection levels of approximately one picogram or even smaller. Efforts were made to reduce nonspecific adsorption on cantilever either by covering non-specific sites on the cantilever with proteins (such as bovine serum albumin (BSA)), or by self-assembly of a protein resistant monolayer on the cantilever surface. We also used different protein samples (like VEGF-C or MMP-9) to confirm the specific detection of VEGF.

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