

Abstract Submitted  
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**Cocaine detection using piezoresistive microcantilevers**<sup>1</sup> BERNADETA SRIJANTO, Department of Electrical Engineering, University of Tennessee, CHRISTINE P. CHENEY, DAVID L. HEDDEN, ANTHONY GEHL, THOMAS L. FERRELL, Department of Physics, University of Tennessee — Sensitive and inexpensive sensors play a significant role in the analysis of drugs and drug metabolites. Specifically, reliable *in vivo* detection of cocaine and cocaine metabolites serves as a useful tool in research of the body's reaction to the drug and in the treatment of the drug addiction. We present here a promising cocaine biosensor to be used in the human body. The sensor's active element consists of piezoresistive microcantilevers coated with an oligonucleotide-based aptamer as the cocaine binder. *In vitro* cocaine detection was carried out by flowing a cocaine solution over the microcantilevers. Advantages of this device are its low power consumption, its high sensitivity, and its potential for miniaturization into an implantable capsule. The limit of detection for cocaine in distilled water was found to be 1 ng/ml.

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