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Magnetic detection of biotin-streptavidin binding using InAs quantum well μ-Hall sensor KHALED ALEDEALAT, K. CHEN, Department of Physics and MARTECH, Florida State University, G. MIHAJLOVIC, Materials Science Division, Argonne National Laboratory, P. XIONG, Department of Physics, MARTECH and INSI, Florida State University, G. STROUSE, Department of Chemistry and Biochemistry and INSI, Florida State University, P.B. CHASE, Department of Biological Science and INSI, Florida State University, S. VON MOLNÁR, Department of Physics, MARTECH and INSI, Florida State University, M. FIELD, G.J. SULLIVAN, Teledyne Scientific Company LLC — Magnetic sensors are a key component in any high-sensitivity, rapid-response, and portable platform for magnetic biosensing. InAs quantum well micro-Hall sensors have shown high potential for such a role due to their low noise level and capability to detect single micron- sized or smaller superparamagnetic beads suitable for biosensing[1]. Here we present successful selective biotinylation of InAs micro-Hall sensors and directed self-assembly of 350 nm streptavidin-coated superparamagnetic beads via the biotin-streptavidin interaction. Two Hall crosses with three and two beads produced detection signals with S/N ratio of 21.3 dB and 18.4 dB respectively. In addition, our progress for *in situ* detection of micron-sized magnetic beads using microfluidic channel will be presented. [1]G. Mihajlovic et al., APL 87, 112502 (2005) This work was supported by NIH NIGMS GM079592.

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