

# Development of Magnetic Sensor Array and System for Multifunctional Biomedical Detection and Screening

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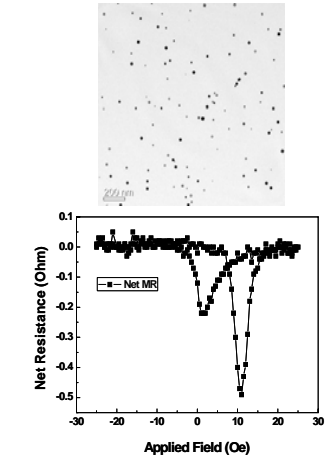
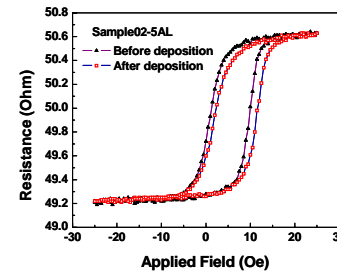
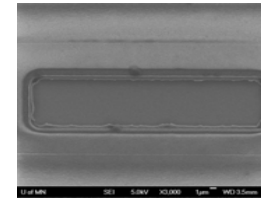
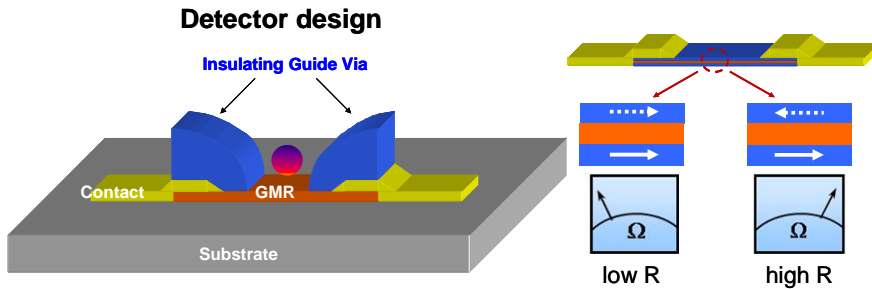
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NNIN Facility utilized: Characterization Facility

Collaborators: Prof. Sang-Hyun Oh (ECE); Prof. Chengguo Xing (Medicinal Chemistry); Prof. Weishou Hu (CEMS)

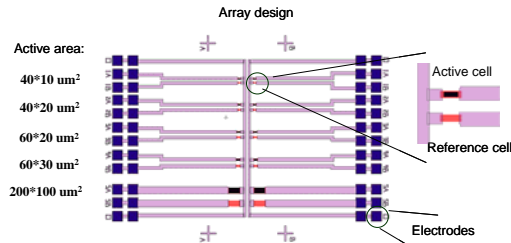
- Detection of the superparamagnetic particles binding with biomolecules using magnetic sensors
- Potential applications: pathogen detection, proteins and small molecular screening
- Signal of the nanoparticles has been detected for either bare nanoparticle deposition or streptavidin-biotin binding biosensing system

## How GMR works?

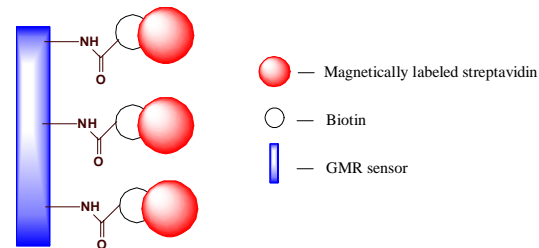
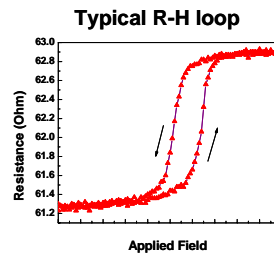


Sensitivity: 0.6 micro Ohm per particle

Sensitivity: 0.24 Ohm/Oe



GMR sensors with different active area.  
Reference cell is used to cancel the environmental noises.



X. Yao, Y. Li, H. Im, M. Castro, W. Hu, S.-H. Oh and J.P. Wang. "Construction of a Magnetic Biosensor for Pathogen Detection", The 6th Annual LifeScience Alley Conference and Expo, St. Paul, MN, Dec. 2007. The College of Biological Science Award; The 7th Annual Design of Medical Devices (DMD) Conference

Y. Li, Xiaofeng Yao, Balasubramanian Srinivasan, Yunhao Xu, Chengguo Xing and Jian-Ping Wang "magnetic biosensor for screening small molecular ligands against protein targets", Scientific and Clinical Applications of Magnetic Carriers Conference, accepted, May 2008