Magnetically Labeled Immunoassay System using High-T_C SQUID

J. Choi, J. I. Lee†, N. H. Hur†, Y. K. Park, I. S. Kim

Bio-signal Research Laboratory, Div. of Metrology for Quality Life, Korea Research Institute of Standards and Science, Yuseong P. O. Box 102, Daejeon 305-600, Korea

†Department of Chemistry, Sogang University, Seoul 121-742, Korea

We have developed a high sensitive magnetic immunoassay system using high-T_C SQUID (Superconducting Quantum Interference Device) and silica-coated ferrite nanoparticles. Unlike a conventional optical method, magnetically labeled immunoassay can provide a higher reliability because almost all antigens/antibodies are non-magnetic. In this system, the antibody was labeled with silica-coated ferrite nanoparticle with diameters of ~50 nm for remanence measurement, and then the specific antibody-antigen interaction was used for measuring the signal flux of the magnetic nanoparticles labeled on the antibody. In the conference, the design and setup of the sensing detector using high-T_C SQUID will be described.

Keywords : SQUID, magnetic nanoparticle, antibody-antigen interaction.