

Fabrication of HTS SQUID Sensors for the Application in a High S/N Ratio Magnetocardiograph System

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YBCO dc superconducting quantum interference device (SQUID) magnetometers based on bicrystal Josephson junctions on $10 \text{ mm} \times 10 \text{ mm}$ SrTiO₃ substrates have been fabricated. The pickup coil of the device was designed to have 16 parallel loops with 50 μm line width. We have modified coupling scheme of the conventional pickup coil design intending to enhance the coupling efficiency. We could obtain optimised direct coupled YBCO SQUID magnetometer design having field sensitivity B_{\square} of 4.5 nT/ μm and magnetic field noise B_N of about 30 fT/Hz^{1/2} with $1/f$ corner frequency of 2 Hz measured inside a magnetically shielded room. Preliminary results of magnetocardiograph measurement using the HTS SQUID magnetometers show signal to noise ratio of about 110, which is a quality of a commercial MCG system based on Nb-SQUIDs.