

# Abstracts

## **A DNA detection system based upon a high Tc SQUID and ultra-small magnetic particles**

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*S. Tanaka, Z. Aspanut, H. Kurita, C. Toriyabe, Y. Hatsukade and S. Katsura. "A DNA detection system based upon a high Tc SQUID and ultra-small magnetic particles." Applied Superconductivity Conference 15.2 (2004 Applied Superconductivity Conference Part 1): 664-667.*

A high Tc SQUID system for biological molecules (DNA) detection is developed. This system is based on a hybridization process. Two strands in a DNA molecule are held together by hydrogen bonds between base pairs like a ladder. The two strands are referred to as being complementary each other. HPV33 (Human Papillomavirus Probes 33) was prepared as a DNA. One strand (Sample DNA) was labeled with Fe<sub>3</sub>O<sub>4</sub> ultra-small magnetic particles and the other (probe DNA) was anchored on a glass slide. Then they were hybridized each other on the slide. After washing the excess sample DNA, the hybridized DNA was evaluated in the presence of excitation ac field by high Tc SQUID. The signal was initially proportional to the concentration of the sample DNA and then saturated. It means that the hybridization occurred successfully between the sample DNA and the probe DNA.

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