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Microwave Surface Impedance Measurements of $SrFe_2(As,P)_2$ Single Crystals HIDEYUKI TAKAHASHI, YOSHINORI IMAI, ATSUTAKA MAEDA, Department of Basic Science, the University of Tokyo, KENTARO KITAGAWA, KAZUYUKI MATSUBAYASHI, MASASHI TAKIGAWA, YOSHIYA UWATOKO, Institute for Solid State Physics, the University of Tokyo — Various pairing symmetries have been proposed concerning Fe-based superconductors both theoretically and experimentally. It was reported that LaFePO[1] and $BaFe_2(As,P)_2$[2] have line nodes in their superconducting gap. It is in sharp contrast to other Fe-based compounds such as LiFeAs[3] and Fe(Se,Te)[4]. To confirm whether line nodes in gap function is a common feature among P doped systems, we measured the microwave surface impedances of $SrFe_2(As,P)_2$ single crystals ($T_c \sim 30K$).

Single crystals were grown by self-flux method. The surface impedances were measured using a cavity perturbation technique. The imaginary part of surface impedance, which is proportional to London penetration depth in the superconducting state, shows a power law, $\lambda(T) - \lambda(0) \propto T^n$. The power law indicates low-energy quasiparticle excitation, and an exponent slightly smaller than 2 does not exclude the possibility of the existence of line nodes.

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