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**THz conductivity of  $\text{BaCo}_{0.2}\text{Fe}_{1.8}\text{As}_2$  and  $\text{Fe}(\text{Se},\text{Te})$  superconductor**  
A. MAEDA, D. NAKAMURA, Dep. Basic Sci., Univ. Tokyo, T. KATASE, Materials and Structures Laboratory, Tokyo Institute of Technology, H. HIRAMATSU, ERATO-SORST, Japan Science and Technology Agency, H. HOSONO, Materials and Structures Laboratory, Tokyo Institute of Technology, Y. IMAI, T. AKIIKE, R. TANAKA, Dep. Basic Sci., Univ. Tokyo, I. TSUKADA, Central Research Institute of Electric Power Industry — Ac complex conductivity is investigated for Fe-based superconductors,  $\text{BaCo}_{0.2}\text{Fe}_{1.8}\text{As}_2$  (122) with  $T_c = 17$  K and  $\text{Fe}(\text{Se},\text{Te})$  (11) with  $T_c = 10$  K. For the 122 material, typical features of a superconductor were seen in the frequency dependence of conductivity,  $\sigma$ . In particular, we find a structure corresponding to superconductivity gap,  $2\Delta$ , whose magnitude is 3meV at low temperatures, leading to  $2\Delta/k_B T_c = 4.1$ . Although the material is known to be a multi-band superconductor, this value is in good agreement with the smaller gap found in an ARPES measurement[1]. For the 11 material, we have not succeeded in obtaining a clear gap structure, probably because of lower  $T_c$ , at present. We are now trying to measure microwave conductivity by a broadband technique[2], the result of which will be presented.

[1] K. Terashima *et al.*, PNAS 106 (2009) 7330.

[2] H. Kitano *et al.*, RSI 79 (2008) 074071, *ibid*, PRB 73 (2006) 174522, T. Ohashi *et al.*, PRB79 (2009) 184507.

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