

Abstract Submitted
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Simultaneous observation of temperature distribution and THz emitting spectra of Bi2212 THz devices CHIHARU WATANABE, HIDETOSHI MINAMI, University of Tsukuba, TAKASHI YAMAMOTO, Quantum Beam Science Directorate, TAKANARI KASHIWAGI, KAZUO KADOWAKI, University of Tsukuba — When the intrinsic Josephson junctions in high- T_c superconductor $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ are fabricated to a mesa structure and biased by a dc-voltage, it is known to emit coherent, stable and continuous THz electromagnetic waves [1] whose frequency lies between 0.3-1 THz with the line width of 0.5 GHz and the radiation maximum power of 30 μW . Recently, we have succeeded in measuring the temperature distribution of the mesa directly while the mesa is emitting THz radiation and found an extreme temperature inhomogeneity (hot-spot) in the mesa [2]. By this way, we could determine the temperature of a mesa, as a result we could observe inhomogeneous temperature distribution, and we found that relation between THz emitting characteristics and temperature distribution. The simultaneous observation of the emission frequency by FTIR strongly indicates that the THz emission phenomenon is not influenced by the formation of the hot-spot at all. In this meeting, we would like to discuss the relations between THz emission phenomena hot-spot formation.

[1] L. Ozyuzer, *et al.*, Science **318**, 1291 (2007).

[2] H. Minami, *et al.*, in preparation.

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