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High Temperature Superconducting Terahertz Emitters with Various Mesa Structures[1] KAVEH DELFANAZARI, M. TSUJIMOTO, T. KASHIWAGI, Univ. of Tsukuba, CREST-JST, WPI-MANA, H. ASAI, AIST, T. KITAMURA, Univ. of Tsukuba, CREST-JST, WPI-MANA, T. YAMAMOTO, JAEA, M. SAWAMURA, K. ISHIDA, C. WATANABE, S. SEKIMOTO, H. MINAMI, M. TACHIKI, T. HATTORI, Univ. of Tsukuba, CREST-JST, WPI-MANA, R. A. KLEMM, Univ. of Central Florida, USA, K. KADOWAKI, Univ. of Tsukuba, CREST-JST, WPI-MANA — In 2007, the first observation of the coherent terahertz (THz) electromagnetic (EM) waves from a mesa structures of intrinsic Josephson junctions (IJJs) in high temperature superconductor $Bi_2Sr_2CaCu_2O_{8+\delta}$ (Bi-2212) is reported [1]. The ac-Josephson effect as well as the cavity resonance conditions is considered as the principle mechanism of the THz radiation [1, 2]. In order to understand the cavity effect in THz radiation from IJJ mesas more clearly, we studied mesas with various geometries; various kinds of triangles [3], and pentagonal mesas with various sizes and thicknesses. The focused ion beam (FIB) milling technique is used in all mesa fabrications. In this talk, we discuss our recent progress in THz emission observation in pentagonal mesas.

[1] L. Ozyuzer *et al.*, Science **318** (2007) 1291.
[2] M. Tsujimoto *et al.*, Phys. Rev. Lett. **108**, (2012) 107006.
[3] K. Delfanazari *et al.*, Submitted (2012)

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Kaveh Delfanazari
Univ. of Tsukuba, CREST-JST, WPI-MANA

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