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APRES study of the High temperature cuprates with high superconducting transition temperature (T_c >90K) WEI-SHENG LEE, WORAWAT MEEVASANA, DONGHUI LU, KYLE SHEN, GUICHUAN YU, XUDONG ZHAO, MARTIN GREVEN, ZHI-XUN SHEN, Department of Physics and Stanford Synchrotron Radiation Laboratory, Stanford University, Stanford, California, US, WANLI YANG, Advanced Light Source, Lawrence Berkeley Lab, Berkeley, California, US, AKIRA IYO, HIROSHI EISAKI, AIST, Japan — The curprates with high superconducting transition temperature, nearly optimally doped $HgBa_2CuO_{4+\delta}$ system (Hg1201, T_c=96K) and nearly optimally-doped $TlBa2Ca_2Cu_3$ $O_{8+\delta}$ (Tl1223, T_c=120K), were studied by the Angle Resolved Photoemission Spectroscopy (ARPES). These materials provide us an opportunity to examine the universal properties of the cuprates and their material dependence trend. Although they are not easy to be cleaved, we managed to measure the band dispersions and the Fermi surfaces of these materials. Interestingly, in Hg1201 system, we found the existence of a quasi-particle peak along (0,0) to (π,π) direction (nodal direction); whereas no structure was observed near the zone boundary. Contrarily, in Tl1223 system, a well-defined peak in EDCs was observed near the zone boundary; whereas no peak was observed in the nodal region. A comparison to other most studied cuprates will also be presented.

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