Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Point contact tunneling spectroscopy of a Tl2Ba2CaCu2O8 thin film DANIEL MAZUR, J. F. ZASADZINSKI, H. CLAUS, K. E. GRAY, Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439, U.S.A, Y. C. MA, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100080, China, S. L. YAN, Department of Electronics, NanKai University, Tianjin 300071, China, N. L. WANG, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100080, China — Point contact tunneling spectroscopy was used to investigate the superconducting gap of $Tl_2Ba_2CaCu_2O_8$ (Tl- 2212 cuprate) c-axis oriented thin film of near-optimal doping, with $T_C = 106$ K. The quasiparticle peaks were observed at various bias voltages in the range 30-55 mV, and the $2\_/k_BT_c$ ratio coming from our measurement is $\sim$ 6.6-12. This is the first observation of large energy gap in near-optimally doped Tl-2212 by electron tunneling. The largest values match those found in the infrared response and Raman scattering on Tl- 2212 (single crystals and oriented thin films) published by other groups. We discuss this in the context of experiments done by relevant techniques on related materials, the Tl-2201, Tl-2223 and Bi-2212 cuprates.

D. Mazur
Materials Science Division, Argonne National Laboratory, Argonne, Illinois 60439, U.S.A

Date submitted: 07 Dec 2004 Electronic form version 1.4