Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

**Effect of out-of-plane disorder on electronic Raman spectra of Bi2212 single crystals** TAKAHIKO MASUI, NAOKI MURAI, Department of Physics, Graduate School of Science, Osaka University, MOTOYUKI ISHIKADO, Japan Atomic Energy Agency, SHIGEYUKI ISHIDA, Department of Physics, University of Tokyo, HIROSHI EISAKI, National Institute of Advanced Industrial Science and Technology (AIST), SHIN-ICHI UCHIDA, Department of Physics, University of Tokyo, SETSUKO TAJIMA, Department of Physics, Graduate School of Science, Osaka University — Out-of plane disorder in cuprate superconductor is known to suppress Tc without serious increase of residual scattering of conduction carriers. This is quite advantageous for spectroscopic measurements. In this study we have measured electronic Raman spectra of optimally-doped Bi2212 single crystals with different degree of out-of plane disorders. In the superconducting state, the B1g electronic Raman spectra, which detect maximum of d-wave superconducting gap, show coherence peaks. Interestingly, the peak energies are independent of Tc for lower Tc samples. On the other hand, the peak position for a higher Tc sample shifts to higher energy. This is clear contrast with the B2g electronic Raman spectra, which detect nodal region of the superconducting gap. The strange polarization dependence of superconducting Raman spectra could be a clue to understand the doping dependence of the superconducting Raman responses in cuprates.

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Date submitted: 07 Nov 2012 Electronic form version 1.4