Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Finite mass enhancement across bandwidth controlled Mott transition in $NiS_{2-x}Se_x$[1] GARAM HAN, Center for Correlated Electron Systems, Institute for Basic Science (IBS), Seoul 151-742, Korea, W. S. KYUNG, Institute of Physics and Applied Physics, Yonsei University, Seoul 120-749, Korea, Y. K. KIM, Center for Correlated Electron Systems, Institute for Basic Science (IBS), Seoul 151-742, Korea, C. M. CHENG, K. D. TSUEI, National Synchrotron Radiation Research Center, Hsinchu 30076, Taiwan, K. D. LEE, N. HUR, Department of Physics, Inha University, Incheon 402-751, Korea, H.-D. KIM, C. KIM, Center for Correlated Electron Systems, Institute for Basic Science (IBS), Seoul 151-742, Korea — One of the most important and still debated issues in the strongly correlated electron systems is on the metal insulator transition (MIT) mechanism. In the bandwidth controlled Mott transition (BCMT) scenario, which Mott originally proposed, MIT occurs through a mass divergence in which the effective mass of the quasi-particle (QP) diverges approaching the MIT. The interpretation is supported by dynamic mean field theory (DMFT) model calculations. However, few direct observations have been made yet due to various experimental restrictions. In this talk, I present systematic angle resolved photoemission studies on the MIT in $NiS_{2-x}Se_x$, which is a well-known BCMT material. We observed not only the bandwidth shrinkage but also the coherent quasi-particle peak (QP) which is not of the surface origin. In addition, we experimentally showed the mass of the QP remains finite approaching the MIT.

[1]This work was supported by IBS-R009-D1

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Date submitted: 06 Nov 2015 Electronic form version 1.4