Electron State and Lattice Effects in Cuprate High Temperature Superconductors

- The True Story Revealed by Fermi Surface and Unconventional Lattice Effects -

October 27-28, 2005
Headquarters and Information Technology Collaborative Research Center
National Institute of Advanced Industrial Science and Technology (AIST)
Tsukuba, Japan

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PROGRAM

Thursday, October 27

10:00-10:15 Opening (H. Oyanagi)

Morning session (Chair: A. Bussmann-Holder, C.S. Ting)
The Emerging true story

10:15-10:45 K.A. Müller
From single to bi-polarons with Jahn-Teller character and metallic cluster stripes in hole doped cuprates (Special lecture commemorating the 20th anniversary of HTSC)

10:45-11:15 H. Kamimura
Theory of copper oxide superconductors

11:15-11:45 A. Bishop
Multiscale functionality in transition metal oxides and related soft matter

11:45-12:10 Y. Tomioka
An effect of quenched disorder on the phase diagrams of perovskite manganites

12:10-12:35 D. Mihailovic
Jahn-Teller driven femtosecond structural dynamics in cuprates and selenides

12:45-14:15 LUNCH

Afternoon session I (Chair: A. Lanzara, T. Mizokawa)
Electron states revealed by state-of-the-art ARPES

14:15-14:40 T. Mizokawa
Angle-resolved photoemission spectroscopy as a probe of inhomogeneous electronic states: Fermi surface, magnetism, and local lattice distortion in cuprates and ruthenates

14:40-15:05 T. Yoshida
Material dependence of the electronic structure in high-\(T_c\) cuprates
15:05-15:30   A. Lanzara
Electron-lattice interaction and renormalization effects in cuprates: a view from photoemission spectroscopy

15:30-15:45   K. Ji
Theoretical study on anomalous isotope effect in ARPES of Bi2212

15:45-16:00   COFFEE BREAK

Afternoon session II (Chair: T. Tohyama, J. Karpinski)
Electron states: overdoping limit

16:00-16:25   Y. Koike
Electronic state in the overdoped regime of the high-$T_c$ cuprates studied by µSR and magnetic susceptibility: possible phase separation

16:25-16:50   T. Masui
The effect of carrier-overdoping on the Raman spectra in Ca-substituted YBCO single crystals

Afternoon session III (Chair: H. Kamimura, A. Bishop)
Electron states, to our best knowledge

16:50-17:15   M. Oda
Role of nodal Fermi arc in high-$T_c$ superconductivity

17:15-17:40   C.S. Ting
Superconductivity with antiferromagnetic order in electron-doped cuprates

17:40-18:05   T. Yanagisawa
Density wave, superconductivity and spectra in cuprates

18:05-18:30   T. Tohyama
Electron-hole asymmetry in electronic and charge excitations of high-$T_c$ cuprates

18:30-18:55   K. Yamaji
Two superconducting parameter domains of the moderate-U Hubbard model for high-$T_c$ superconductors

20:00-22:00   BANQUET
Friday, October 28

Morning session I (Chair: A. Bianconi, S. Sugai)
Electron-lattice effects, a true story

9:00-9:25   H. Keller
Unconventional isotope effects in cuprate superconductors

9:25-9:50   A. Bussmann-Holder
Polaron formation and spin/charge ordering in high temperature superconducting cuprates

9:50-10:15  K.M. Kojima
Magnetic field effect on the optical spectra in high T_c superconductors

10:15-10:40  M. Arai
Overview of neutron inelastic scattering experiments on high-T_c superconductors and future prospect with newly constructing high intensity sources

10:40-11:10 COFFEE BREAK

Morning session II (Chair: I. Bozovic, H. Keller)
Electron-lattice effects, confirming the true story

11:10-11:35  A. Bianconi
Feshbach shape resonances for high T_c superconductivity

11:35-12:00  S. Sugai
Carrier density dependent quasi-particle peak and phonons in La_{2-x}Sr_xCuO_4

12:00-12:15  C.H. Lee
Sr Concentration dependence of a spin gap in La_{2-x}Sr_xCuO_4

12:15-12:40  J. Karpinski
Influence of magnetic and non-magnetic substitutions in MgB_2 single crystals on superconducting properties and structure

12:40-14:10  LUNCH

Afternoon session I (Chair: D. Mihailovic, D. Pavuna)
Inhomogeneity: signatures of complex interactions
14:10-14:35  S. Kashiwaya
Local tunneling spectra of single layer Bi-based cuprates

14:35-15:00  T. Kakeshita
Optical response in high-T\textsubscript{c} cuprate through inhomogeneous picture on CuO\textsubscript{2} plane

15:00-15:25  T. Sasagawa
Stripes-induced novel lattice-effects in high-T\textsubscript{c} superconductors

15:25-15:45  H. Eisaki
Effect of out-of-plane disorder on T\textsubscript{c} in high-T\textsubscript{c} copper oxide superconductors

15:45-16:00  K. Tokiwa
Coexistence of superconductivity and antiferromagnetism in a Hg-1245 multilayered superconductor

16:00-16:30  COFFEE BREAK

Afternoon session III (Chair: H. Oyanagi, Y. Krockenberger)
Thin film physics: search for the missing ingredient

16:30-16:55  I. Bozovic
Strong electron-phonon coupling in high-temperature superconductors

16:55-17:20  D. Pavuna
Superconductivity and direct ARPES on ultra-thin HTSC films: electronic properties and the role of compressive vs tensile strain

17:20-17:45  M. Naito
Superconductivity in undoped cuprates

17:45-18:10  Y. Krockenberger
Lattice effects and phase diagram in electron doped cuprate superconductors

18:10-18:30  CLOSING

20:00-22:00  DINNER