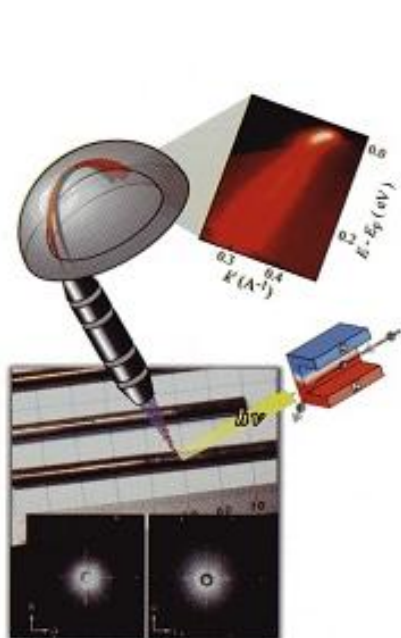
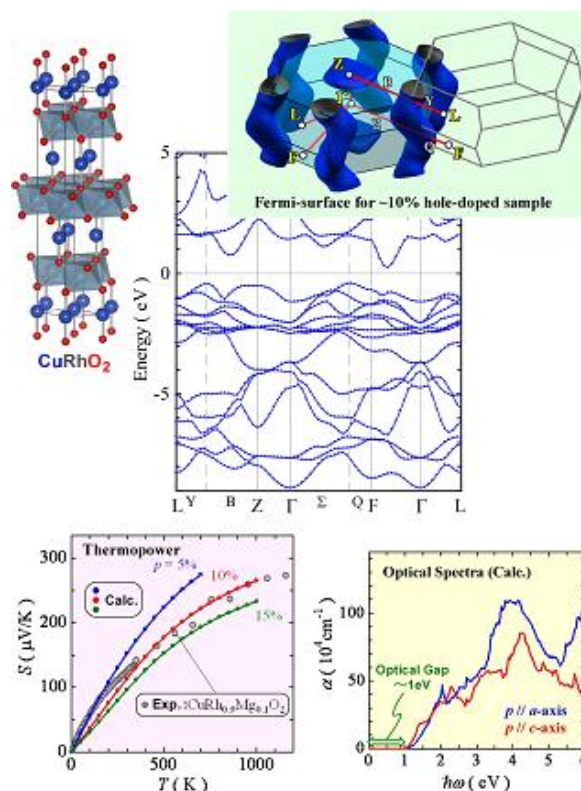


Explorations into super-functions in ceramic materials

Our goal is to understand, to utilize, and to create “super functions” in ceramic materials (e.g., high- T_c superconductivity in layered copper oxides). For these ends, we are extending our expertise to full aspects of approaches in materials science: (1) syntheses: preparations of samples with precisely controlled compositions/non-stoichiometry, and growth of large high-quality single-crystals, (2) measurements: state-of-the-art techniques of quantum observations such as electronic states by angle-resolved photoemission spectroscopy and phonon states by inelastic x-ray scattering, and (3) theoretical analyses/predictions: nano-simulations based on first principles calculations.



Growth of high-quality large single crystals of ceramic materials by a FZ technique, followed by direct observations of their electronic structures using ARPES.



Nano-simulations of electronic properties (band dispersion, Fermi-surface, thermoelectric power, optical spectra, etc.) of ceramic materials by means of first principles calculations.