Contribution ID: **1056** Type: **Invited Speaker / Conférencier invité**

Evolution of electronic structure on transition metal and transition metal doped titanium disulphide by high resolution photoemission spectroscopy study

Tuesday 14 June 2016 09:00 (30 minutes)

In this presentation, I will present the many-body interactions in solids studies by high resolution ARPES. High-resolution angle-resolved photoemission spectroscopy studies of Fe(110) and Ni(110) single crystals has been conducted to clarify the role of many-body interactions acting on the quasi-particles at the Fermi level at low temperatures. We have evaluated the real and imaginary parts of the self-energy for the bulk-derived majority-spin Fermi surface around the Γ point, and found two characteristic energy scales, at ~40 and ~270 meV. The former corresponds to the energy scale of the Debye temperature. As for the latter, we found that it is close to the cut-off energy of the calculated magnon density-of-states. This correspondence indicates that the energy scale is related to the magnetic excitation.

I will also present our high-resolution photoemission measurements on the transition metal doped dichalcogenides system. TiS_2 is proved to be a semiconductor with indirect gas around 600 meV. We confirmed that there is no CDW transition happen. Upon iron atoms intercalation, the strong modification of the valence band structures and the band dispersion in the intercalated com-pound are observed. The hybridization of the S derived states with Fe 3d states is thought to be predominantly the reason. The mechanism of these hybridized bands'modification has been explained well by Vienna ab initio simulation program and the projected augmented wave poten-tials; the Perdew-Burke-Ernzerhof exchange correlation functional.

Finally I will present some of our latest photoemission work in Canadian Light Source Inc.

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