

Formulating Half-Metallic Anti-ferromagnetism as Doped Perovskites

Dr. Yung-mau Nie

(Dept. of Applied Materials and Optoelectronic Engineering,
National Chi Nan University, Taiwan)

The celebrating spintronics is booming for the advantages: speeding up data processing; reducing the power consumption; increasing the circuit integration density, and possessing storage non-volatility. Therefore, the upmost key technology of spintronics is the control of magneto-resistance. Half-metal materials produce nominally infinite magneto-resistance and thus viewed as promising materials for spintronics technology; however, which is conventionally magnetic for the tendency of unbalance spin structure. Half-metal Anti-ferromagnetism, a class of half-metals, is expected to further totally compensate the magnetization. Due to the demanding electronic structure to be complicated, thus there is no convincing breakthrough on experimentally synthesizing it so far. The seminar will introduce how to formulate half-metallic anti-ferromagnetism on perovskite systems by means of First-principles calculations, basing on the research collaborating with Dr. X. Hu (MANA principal investigator, NIMS) during the speaker as an MANA research associate (2007-2008). Currently, Y.-M. Nie is invited by ICYS to perform First-principles calculations on high-temperature Ni:Al alloys in the three-weeks visiting (2010/1/31~2010/2/19).