MMPS21 Electronic and magnetic properties of correlated materials with strong spin-orbit coupling

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Mots-clés : Spin-orbit coupling, material science, correlated systems

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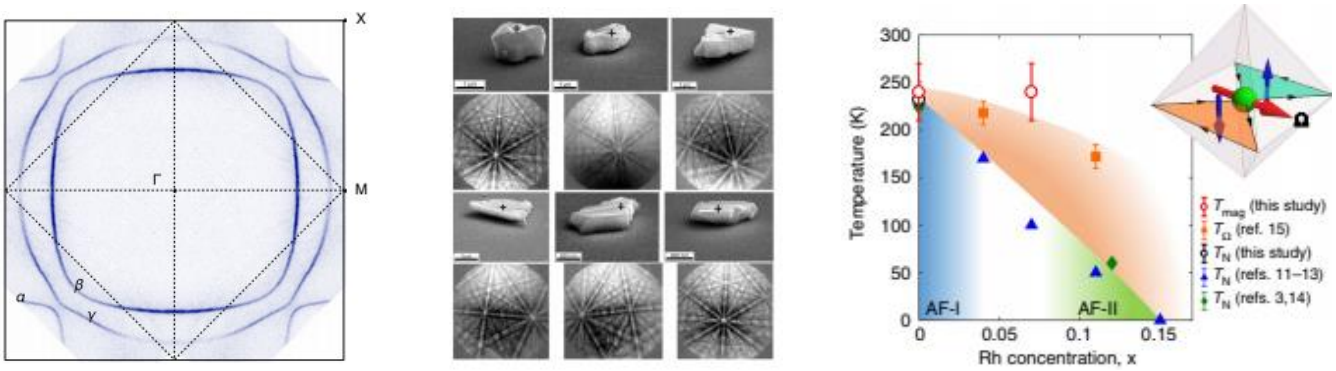
Résumé :

Materials with strong spin-orbit coupling have attracted a lot of interest for several years due to their remarkable topological, magnetic, and electronic properties which render them promising candidates in the quest of suited materials for topological superconductors, spintronics applications or quantum computation.

Recently, the scope of this research field was widened towards correlated materials with 4d or 5d elements – like ruthenates or iridates – where new unconventional collective phenomena have been observed as a result of both electronic correlations and the inherent strong spin-orbit coupling. Today, the synthesis and characterization of such correlated materials with strong spin-orbit coupling, their analysis with elaborate scattering techniques and the realistic modeling of their magnetic and electronic properties spurs a lot of research both in theory and in experiment.

With this colloquium, we aim at bringing together different communities both of strongly correlated material science and of solid state chemistry who are interested in systems with strong spin-orbit coupling, putting special emphasis on the physics of 4d and 5d transition metal oxides. We welcome experimental and theoretical contributions from both fields and specifically encourage young scientists to apply.



Figures **:** (Left) Angle-resolved photoemission of the Fermi surface of Sr2RuO4 [Tamai et al. PRX 9, 021048 (2019)], (center) growth facets of SrIrO3 single crystals [Fruchter et al. Cryst. Eng. Comm. 21, 3822 (2019)], and (right) hidden magnetism as detected by neutron scattering in Sr_2IrO_4 [Jeong et al. Nat. Comm. 8, 15119 (2017)].