## Pressure-induced magnetic phase transitions in selected lanthanide and actinide compounds

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The ground state properties of *f* electron compounds depend critically on the competition between different interactions, whose balance can be strongly modified by an external perturbation, such as pressure, magnetic field or a change in the chemical composition. Pressure, in particular, offers a direct way of changing the interatomic distances without artificially altering the electronic structure of a compound. Its effect can be dramatic and have severe consequences on the electronic and magnetic properties of 4*f* and 5*f* systems, as will be shown by selected examples of Sm(4f) and U(5f)- based compounds. In the case of SmS, which is a divalent (and therefore non magnetic) semiconductor at ambient conditions, pressure induces first an isostructural transition to a semiconducting intermediate valent state ( $v \sim 2.7$ ), followed by the closure of the charge gap and the onset of long range magnetic order. On the contrary, in the Kondo insulator UNiSn, where the U(5f) moments are ordered at ambient conditions, pressure induces first a complete metallisation at ~9 GPa and then (~18 GPa) a collapse of the magnetic order. These results will be presented and discussed in the framework of theoretical models taking into account the competition between the RKKY exchange interaction, the Kondo effect and the degree of hybridisation of the *f* electrons with those of the outer shells.