Abstract

Recently FeAs based materials RFeAsO (R = rare-earth metals) and AFe2As2 (A = alkali metals) have been discovered. These materials undergo long ranged magnetic ordering at high temperatures (100-200 K). It was found that when the magnetism is suppressed (by pressure or chemical substitution) high critical temperature (Tc) superconductivity emerges in the vicinity of complete suppression of magnetism. This points to an unconventional mechanism for superconductivity like in the high-Tc cuprates. A structurally related family of Fe-chalcogenide materials have been found which have great importance because of their simple structures and nontoxic components among other Fe-based superconductors mentioned above. FeSe shows superconductivity but FeTe, which is iso-structural to FeSe, does not show superconductivity. It shows anti-ferromagnetic ordering at low temperature. In this work we aim to study evolution of magnetism and superconductivity in FeT e1-xSex materials