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**Spin-polarized tunnelling across single or double ferrite-based spin-filters** SYLVIA MATZEN, JEAN-BAPTISTE MOUSSY, CEA-Saclay, RICHARD MATTANA, KARIM BOUZEHOUANE, CYRILE DERANLOT, FREDERIC PETROFF, UMP CNRS/Thales, JAGADEESH MOODERA, GUOXING MIAO, Francis Bitter Magnet Laboratory, CEA-SACLAY, FRANCE TEAM, UMP CNRS/THALES, FRANCE TEAM, FRANCIS BITTER MAGNET LABORATORY, MIT, USA TEAM — The generation of highly spin-polarized electron currents at room temperature is the basis of most spin-based device technologies. One approach known as spin filtering, has the potential of generating 100% spin-polarized currents by the spin selective transport of electrons across a ferromagnetic tunnel barrier. In this work, we investigate the spin-polarized tunnelling characteristics of ferrites (CoFe2O4, NiFe2O4 and MnFe2O4), which are exciting candidates for spin filtering at room temperature. Tunnel junctions containing epitaxial ferrite tunnel barriers have been grown by oxygen plasma-assisted molecular beam epitaxy. Their structural, chemical and magnetic properties having previously been optimized by a number of in situ and ex situ methods, we focus on the spin-polarized tunnelling in the ferrite-based systems using different measurement techniques and we propose an unconventional device combining two ferrite magnetic tunnel barriers in order to get large tunnelling magnetoresistance without the necessity of magnetic electrodes.

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