Highly Spin-polarized $Co_{1-x}Fe_xS_2$ Thin Films for Spintronics

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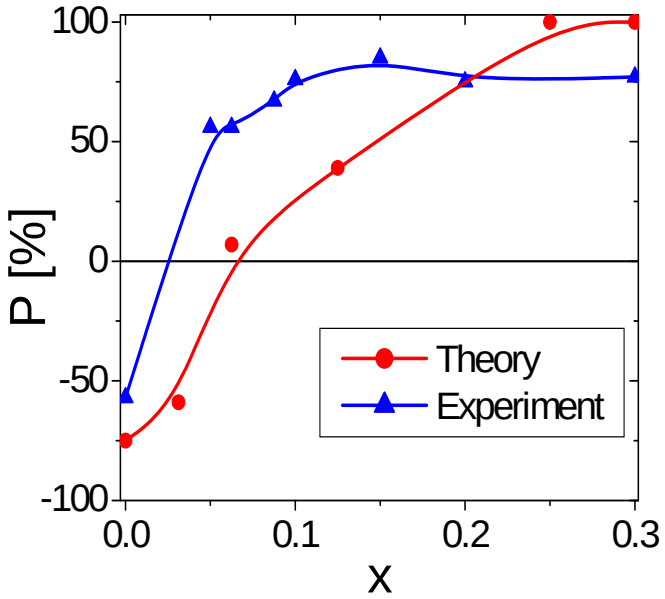
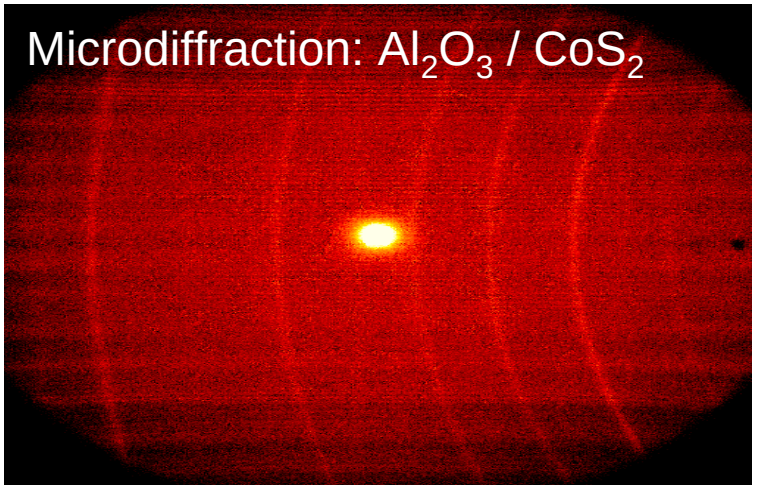
NNIN Facilities utilized: Characterization Facility & Nanofabrication Center

- High, tunable, spin polarization films for spintronic applications
  - Composition control over magnitude and sign of polarization (-56% < *P* < + 85%)
  - Ideal for spin injection into GaAs



- Thin film deposition by sulfidation of epi CoFe and crystal growth by chemical vapor transport
  - Single phase polycrystalline films
  - Composition controlled by sulfidation temp.



- Publications (2008)
  - "*Synthesis and characterization of highly spin-polarized single-phase Co1-xFexS2 films*", M. Manno, R. Frakie and C. Leighton, in press, J. Appl. Phys., (2009).
  - "*The surface stability of CoS2(100)*", N. Wu, R.F. Sabirianov, C-G. Duan, W.N. Mei, D. Wisbey, Y.B. Losovyj, M.Manno, L. Wang, C. Leighton, E. Cai, J. Zhang and P.A. Dowben, J. Phys. Cond. Mat. **20** 215231 (2008).
  - "*The kinetic energy dependent effective Debye temperature for CoS2(100)*", N. Wu, D. Wisbey, T. Komesu, Z.X. Yu, M. Manno, L. Wang, C. Leighton and P.A. Dowben, Phys. Lett. A **372** 2484 (2008).