

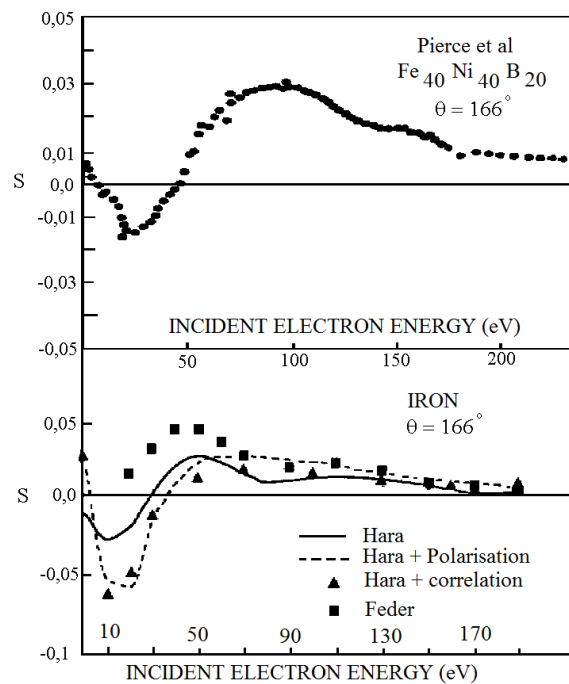
# Spin Polarisation Exchange Scattering from Nickel and Iron

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It is well known that the structure information through the use of Spin Polarised Low Energy Electron Diffraction (SPLEED) is highly sensitive to the interaction potential between the primary electrons and the electrons of the target, especially to the exchange interaction. Since the electrons in SPLEED penetrate the surface only a few lattice spacing, it is extremely sensitive to the spin structure of a magnetic surface. The early study of Feder [1] on Fe(110) provides a strong indication in this direction. The main objective of this work is to use the insights of our recent work [2,3] to study the spin polarisation of the exchange-correlation potential. The differential cross sections for electron scattering from atoms with net spin, namely nickel and iron, have been calculated together with studying the energy/wave vector dependence of the exchange scattering from surfaces of nickel and iron in glasses by calculating differential cross sections and the spin asymmetry using Dirac equation. Comparison of predictions with observed spin dependent scattering intensities in amorphous magnetic alloys will give insight into surface magnetisation in these systems[4].



## References

- [1] R. Feder , Solid State Comm. 31,821 (1979).
- [2] S. Y. Yousif Al-Mulla, J. Phys. B:At. Mol. Opt. Phys. 37, 305 (2004).
- [3] S. Y. Yousif Al-Mulla, Eur. Phys.J.D 42,11 (2007).
- [4] D. T. Pierce et al , Phys. Rev.26, 2566(1982).