



EINLADUNG zum IFP-SEMINAR

Effect of intermediate valence in the XMCD spectra of greigite
(Fe_3S_4)

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Greigite (Fe_3S_4) is a mineral that crystallizes in the same inverse spinel crystallographic structure as its counterpart oxide magnetite (Fe_3O_4). Although greigite and magnetite have similar structural and magnetic properties, the results of spectroscopy for greigite evidence important differences in magnetic and electronic structure. In particular, the measured shape of the XMCD spectra for greigite [1,2] changes significantly from the case of magnetite. We discuss a ligand-field model including the effect of the intermediate valence between Fe^{2+} and Fe^{3+} for greigite. Using this model we can give a good agreement with the measured XAS and XMCD.

References

- [1] L. Chang, R. A. D. Patrick, G. van der Laan, V. S. Coker, and A. P. Roberts, The Canadian Mineralogist 50, 667 (2012).
- [2] R. A. Patrick, V. S. Coker, M. Akhtar, M. A. Malik, E. Lewis, S. Haigh, P. O'Brien, P. C. Shafer, and G. van der Laan, Mineralogical Magazine 81, 857 (2017).