Mg, Al, Si, Ca -Bearing Magnetite from Korshunovskoe, East Siberia

Barbara Lavina[a], Alexander Polozov,[b] Robert T. Downs[c]
[a]*Dipartimento di Mineralogia e Petrologia, University of Padova, Italy.* [b]*Institute of Geochemistry Siberian Branch of Russian Academy of Sciences, Irkutsk, Russia.* [c]*Department of Geosciences, University of Arizona, Tucson, Arizona.* E-mail: barbara.lavina@unipd.it

The crystal chemistry of magnetite crystals from Korshunovskoe iron ore deposit were investigated by means of single-crystal X-ray diffraction and electron microprobe analyses. The crystals were picked from two rock samples and show significant Mg, Al, Si and Ca content The cell parameters are close to 8.392 Å, slightly smaller than for pure magnetite, and the oxygen positional parameters are close to 0.2550. After refinement, weak residual peaks were systematically founded in position 48f; possibly an indication of interstitial atoms [1]. Introducing an atom in the suggested position led to significant improvement in the refinement disagreement factors [2]. Refined site occupancies led to an estimate of about 25 electrons both in the T and M sites, consistent with the substitution in both sites of some elements lighter than iron. However the number of electrons calculated from the microprobe analyses is significantly lower, therefore some of the detected cations could not be part of the magnetite structure, however no other phases were detected from the powder diffraction profile.

[1] Fleet M.E., *Acta Cryst*., 1982, **B38**, 1718. [2] Hamilton W.C., *Acta Cryst*., 1965, **18**, 502.

Keywords: magnetite, structure analysis, interstitial atoms