with the value of 5.24 g/cm³ observed for Fe_2O_3 with the corundum structure at zero pressure. Several explanations based on crystal chemical relationships have been offered for this transformation.[7,8] The high spin-low spin transition found in Co_2O_3 offers another plausible one. The Fe^{3+} ion in the low spin state has an ionic radius of 0.55 Å. From this value one can interpolate the molecular volume and the density at zero pressure of Fe_2O_3(low spin). The calculated density of this phase, 5.98 ± 0.06 g/cm³, seems to indicate that the transition observed by shock-wave in Fe_2O_3 is Fe_2O_3 (high spin) → Fe_2O_3 (low spin).

Acknowledgements – The authors would like to thank P.D. Dernier and J.J. Capponi for valuable discussions.

REFERENCES

1. All the ionic radii quoted in this paper are from: SHANNON R.D. and PREWITT C.T., *Acta Crystallogr.* **B25**, 946 (1969), **B26**, 1046 (1970).
2. JEFFERY R.N., BARNETT J.D., VANFLEET H.B. and HALL H.T., *J. appl. Phys.* **37**, 3172 (1966).
3. CHENAVAS J., JOUBERT J.C. and MAREZIO M., to be published.
4. McWHAN D.B., MENTH A. and REMEIKA J.P., *J. Phys.* (in press).
5. RICE T.M., (private communication).
6. CLARK S.P., Ed. Handbook of Physical Constants, Rev. Ed., *Geol. Soc. Am. Mem.* **97**, 153 (1966).
7. REID A.F.,and RINGWOOD A.E., *J. Geophys. Res.* **74**, 3238 (1969).
8. AHRENS T.J., ANDERSON D.L. and RINGWOOD A.E., *Rev. Geophys.* **7**, 667 (1969).

L'oxyde de cobalt Co_2O_3 a été synthétisé sous haute pression. Un affinement de la structure montre que l'ion Co^{3+} se trouve dans l'état 'low-spin'. Après recuit, cet oxyde se transforme en une nouvelle phase de structure corindon et de densité plus faible, contenant l'ion Co^{3+} dans l'état 'high spin'. L'augmentation de volume correspondant est de 6.7 pour cent.