

Superspace approach applied to the Y series of hexagonal ferrites. Ivan Orlov*, Alla Arakcheeva and Gervais Chapuis, *Ecole Polytechnique Fédérale de Lausanne, CH-1015, Switzerland.*

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Hexagonal ferrites, a group of ferromagnetic layered structures with exceptional diversity, is based on six compounds which are closely related to $\text{BaFe}_{12}\text{O}_{19}$ (magnetoplumbite) [1]. They can all be derived by stacking three building blocks S, R and T, having 2, 3 and 4 oxygen layers respectively. These blocks behave as rigid structural units and stack along the c axis in a variety of ratios and permutations, often rising to structures of 'biological magnitude' [2]. We succeeded to describe the structures built by all combinations of T and S blocks by a single structural model in 4-dimensional superspace with single composition-dependent parameter. This model is supported by electron diffraction simulation where the continuously variable character of the diffraction diagram indicates that various stacking sequences might be interpreted as modulations applied to a common basic structure.

[1] P.B.Braun, *Philips Res. Rept.* **12**, 491 (1957)

[2] J.A.Kohn, et al. *Science*, **172**, 3983, 519-525 (1971)