INTERNATIONAL-LIKE TABLES FOR LAYER GROUPS

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ABSTRACT

The crystallographic properties of atom arrangements whose symmetry is one of the eighty layer groups have been tabulated. The work of E.A. Wood (Bell Telephone Technical Publications, Monograph 4680 (1964)) and D.B. Litvin (unpublished (1979)) has been revised and extensively extended to bring it into the format and content of the new International Tables For Crystallography, A:Space Group Symmetry (Edited by T. Hahn, Reidel Publishing Company, Dordrecht, Holland, 1983).

The existence of what we shall call the eighty *Layer Groups* was recognized by several authors, Speiser[1], C. Hermann[2,3], Alexander and K. Herrmann[4,5], and Weber[6], in the late nineteen twenties. These and subsequent authors[7-15] have introduced a wide variety of nomenclature and notation for these eighty groups. For example, these groups have also been named *net groups*[16], *diperiodic groups*[11], and *two-dimensional (subperiodic) groups in three-dimensional space*[17].

Extensive tables of the crystallographic properties of atom arrangements whose symmetry is one of the seventeen two-dimensional space groups or one of the two hundred and thirty three-dimensional space groups are found in the International Tables For Crystallography, Volume A: Space Group Symmetry[18]. These tables contain new material and are in a new format compared with the previous tabulation in the International Tables For X-Ray Crystallography, Volume 1: Symmetry Groups[16].

In 1964, Wood[11,19] tabulated the crystallographic properties of atom arrangements whose symmetry is one of the eighty Layer Groups, called there the eighty diperiodic groups in three-dimensions, in the content and format of the International Tables For X-Ray Crystallography, Volume 1: Symmetry Groups[16]. We have tabulated the crystallographic properties of atom arrangements whose symmetry is one of the eighty Layer Groups in the content and format of the new International Tables For Crystallography, Volume A: Space Groups[18]. For each of the eighty layer groups we tabulate:

Diagrams of symmetry elements and of the general position, origin, asymmetric unit, symmetry operations, generators selected, positions, with site symmetries, coordinates, reflection conditions, maximal non-isomorphic subgroups, maximal isomorphic subgroups of lowest index, minimal non-isomorphic supergroups, and symmetry of Special Projections.

We have also reproduced Table 11.2, Layer Groups and the Reduced Superfamilies of the Seventeen Two-Dimensional Space Groups, of *Crystallographic and Metacrystallographic Groups*[20], correcting typographical errors.

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