20. SYMMETRY AND ITS GENERALIZATION

20.1-7 The geometric symbols of 227 crystallographic point groups of the Four Dimensional Euclidean Space
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We define the point symmetry operations (PSO) of the n-dimensional Euclidean space and in particular we stress upon elementary, nonelementary, degenerate and nondegenerate PSO. Then we clearly specify their geometric supports. This notion thus introduced has suggested a symbol to all the 227 four-dimensional crystallographic point groups which extends the Hermann-Mauguin notation. This symbol will allow to find all the elements of the point group. For instance, for the crystal system n° 7 "parallelogram-square orthogonal" and called "tetragonal monoclinic" by Brown, Bollow, Nebüser, Wondratschek & Zassenhaus (1978), we suggest:

4, n, m for the polar (1) group 07-06 of the tabulation of Brown et al.
2.14, n, m for the group 07-07 of the same tabulation.
The 32 polar crystallographic point groups in E4 have the same symbol as the point group of E5 which has generated it.


20.1-8 CLEBSCH-GORDAN COEFFICIENTS FOR THE SPACE GROUP OF GARNETS. By M. SUFFCZYNSKI,
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The Clebsch-Gordan coefficients for the irreducible representations of the space group of garnets are computed. The wave vector selection rules at the symmetry points are written out in full, and blocks of the Clebsch-Gordan coefficients are enumerated. Tables of Clebsch-Gordan coefficients for decomposition of Kronemerker squares of the irreducible representations at the symmetry points on the surface of the Brillouin zone into the representations at the zone centre are presented.

20.1-9 PERIODIC DISCRETE BICOLOURED HENOMERIC PATTERNS. UNICOLOURED AND BICOLOURED HENOMERIC COLUMNS, by T. ROMAN, Institut de Petrol șă Gaze, Ploiești, R.S. România

1. The classification refinement of the periodic discrete patterns made in some articles by B.Grünbaum (Seattle, U.S.A.) and C.O.Shephard (Norwich,England) - e.g. [1] - is only a particular case of periodic discrete bicoloured henomeric patterns. Instead of the 46 classical ones-v. [2] T. Weber, Z.Kristallogr. 123, p.165-187 (1961) is here applied to the bicoloured patterns. Taking into account the bicoloured motifs stabilizer (induced group), we show that there exist 143 types of periodic discrete bicoloured henomeric patterns instead of the 46 classical ones. [1] The results called on the periodic discrete patterns types, are:

- p1-1 classical; pg-2 classical; pm-5 classical
- 5 new: cm-3+3; p6-2+2; pgg-2+2; pmg-5+10; p3m-5+15; pm3l-2+16; p6m-3+6; pg6-2+6; p4m-5+20; p6m-3+15

2. The plane development of the cylindrical henomeric columns may be of the types of PSO: Pmmp from [1]. Using the methods from [3] T. Roman, Z.Kristallogr. 128, p.500-514 (1969) we have the result: there are 54 classes of cylindrical henomeric (unicoloured) discrete columns. The 17 new classes are to be added: one at each of the classes: 3, 4, 5-6, 9-11, 13-15, 16 and three at the class 17, from [3].

3. The crystallographic restrictions for columns are: the cylinder axis is a helicoidal one of order 1, 2, 3, 4 or 6 or a reflection-reflection axis of order 2, 4 or 6. We show that there exist 194 crystallographic types of henomeric (unicoloured) cylindrical columns. The 70 classical ones can be deduced from the 17 new classes of columns from [3]; from the 17 new classes (see §2) are deduced the 70 new crystallographic types: one for each the figures 15-26; 29-42; 55-66; three for each of the classes 34-37, 40-43, 45-49, 53-54; eight for the class 61 nine for each of the classes 61-67; ten for each of the classes 51-57.