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, Bülow, Nebüser, Wondratschek & Zassenhauss (1978), we suggest :
4, m, m for the polar (1) group 07-06 of the tabulation of Brown et al.
2⊥4, m, m for the group 07-07 of the same tabulation.
The 32 polar crystallographic point groups in $\mathbb{E}^4$ have the same symbol as the point group of $\mathbb{E}^3$ which has generated it.

(1) D. WEIGEL et R. VEYSSEYRE, Comptes Rendus 295, serie II 1982 p. 317.

20.1–8 CLEBSCH-GORDAN COEFFICIENTS FOR THE SPACE GROUP OF GARNETS. By M. Suffczynski, Institute of Physics, Polish Academy of Sciences, Lotnikow 32, Warsaw 02-668, Poland, and H.W. Kunert, Freie Universität Berlin, Berlin West.

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 Kronecker 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 Tiberiu Roman, Institutul de Petrol şi Gaze, Ploieşti, R.S.România.

1. The classification refinement of the periodic discrete patterns made in some articles by B.Grünbaum (Seattle, U.S.A.) and G.C.Shephard (Norwich,England) - e.g. [1] Z.Kristallogr.154, p.163-187 (1981) is here applied to the bicoloured patterns.Taking into account the bicoloured motifs stabilizer (induced group), we show that there exist 148 types of periodic discrete bicoloured henomeric patterns;instead of the 46 classical ones-v. [2] L.Weber,Z.Kristalogr.7o, p.3o9-327 (1929). The results,rallied on the periodic discrete patterns types, are: p1-1 classical; pg-2 classical; pm-5 classical +5 new; cm-3+3; p2- 2+2; pgg- 2+2;pmg-5+1o; pmm- 5+1o; cmm- 5+15; p31m- 1+3; p3m1-1+2;p4-3+6; p4g- 2+6; p4m-5+2o;p6- 1+3; p6m - 3+15.

2. The plane development of the cylindrical henomeric columns may be ofthe types PP1-PP2o from [1]. Using the methods from [3] T. Roman, Z.Kristallogr.128, p.3oo-314 (1969),we have the result: there are 34 classes of cylindrical henomeric (unicoloured) discrete columns who permit translations. The 17 new classes are to be added: one at each of the classes: 3,4,6-8,11,12,14; two at each of the classes 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 rotation-reflection axis of order 2,4 or 6. We show that there exist 145 crystallographic types of henomeric (unicoloured) cylindrical columns.The 75 classical ones can be deduced from the 17 classes of columns from [3]; from the 17 new classes (see §2) are deduced the 7o new crystallographic types: one for each the figures 13-24; 29-42; 56-58; 67-72; two for each of the figures 51-55; 59-66; three for each of the figures 73-75, from [3].

4. The types PPB1-PPB77 from §1 may be the plane development of the bicoloured henomeric discrete columns that admit translations.Using the methods from [4], T.Roman, Z.Kristallogr.132, p.372-384 (197o), we obtain: there exist 154 classes of these columns; the 87 new classes are to be added: one for each of the classes: 6-12, 16-29, 42-44, 55-6o; two for each of the classes: 34-41;45-54; three for each of the classes 61-67 from [4].

5. For crystallographic bicoloured columns,the restrictions from §3 may involve also anti-rototranslations or anti-rotation-reflections of the same order as above. We point out that there exist 558 crystallographic types of bicoloured henomeric columns. The 244 classical types, known from 1961-s. [5] N.Neronova,N.Belov-Kristallographiya 6 p.3-12 - have been deduced also from the 67 classes established in[4]. The 314 new types are to be added: three for each of the classes 8, 11,12,17,18,21,23,24,27,28, 42-44,55-6o; four for each of the classes 9, 1o,16,19; five for each of the classes 7,2o, 22,25,26,29; six for each of the classes 38-4o, 45-49,53-54; eight for the class 6; nine for each of the classes 61-67; ten for each of the classes 34-37, 41, 5o-52.