T and H portions of adjacent layers face each other in a non-commensurate match; the composition-conservative glide planes run through the breakpoints of the layers. Cosalite, $Pb_4In_9S_{17}$, a modified type: $Ce_{1.25}Bi_{3.78}S_8$. (4) The lillianite homologous series based on chemical twinning of "galena-like" slabs parallel to (131) of PbS. Trigonal prisms of Pb are inserted in composition planes. The adjacent slabs may be of equal or unequal thickness. Examples: lillianite, heyrovskyite, several Pb-Bi-Ag sulphosalts. (5) The pavonite homologous series similar to (4) but one set of slabs is only 1 octahedron thick and the composition planes are asymmetrically occupied by Bi in square-pyramidal coordination. ~$PbBi_4S_7$; other homologues are Cu-Bi and Ag-Bi sulphosalts, some with substantial Pb substitution; pavonite, benjaminite. Intergrowth of (4) and (5) is represented by the V-2 and V-3 phases. (6) Layered structures with crystallographic shear. This family consists of non-commensurate alternating H and T layers of various thickness, regularly offset by composition non-conservative shear planes nearly perpendicular to them. Junoite, $Pb_3{}^1/_2In_6{}^2/_3S_{13}$, proudite, nordströmite, $Bi_3In_5S_{12}$. (7) The bismuthinite-aikinite series of derivative structures.

Multiple relationships between the above series exist. The non-commensurability principle is important for (2), (3), (6) making them "broken-up" derivatives of (1). (5) and (4) can also be interpreted using the principles active in (6); (7) using the principles active in (3). Galenobismutite and (5) are special, contracted-set versions of chemical twinning. In the 2Å-shear derivatives of the above types, the pseudooctahedral coordinations of Bi are replaced by square-pyramidal ones, with long remaining Sb(Bi)-S distances, e.g. jamesonite vs. (3), $HgBi_2S_4$ or livingstonite vs. (5), bournonite vs. (7). References will be quoted on the poster.

08.1-08 SERIES OF NONHOMOGENEOUS LINEAR STRUCTURES.

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We name the nonhomogeneous linear those structure types, which one can describe by means of a sequence of certain compositionally and coordinationally different "two-dimensional" structure fragments taking turns along a certain axis (named the layering axis). The present paper deals with structure types of tetragonal and orthorhombic symmetry, formed by $BaAl_4$, CaF_2, AlB_2, $AuCu_3$, Cu, α-Fe, α-Po fragments. The structure types, consisting of two or three fragments pointed above, form the series describe by parent-structures formulas or by unit cell composition. We propose the numerical symbols, in terms of which one can describe the nonhomogeneous linear structure types. The main differences between our symbols and well known Zhdanov symbols used for homogeneous linear structures is that each numeral, indicating the number of identical fragments placed one after another in the structure, must have two labels: superscript index indicating its own fragmental symmetry and the subscript one indicating the parent-structure from which this fragment was taken. The numerical symbol describes exactly the sequence of fragments in the structure and gives information about its symmetry.

The structures consisting of fragments mentioned above belong to 22 tetragonal and orthorhombic space groups. Symmetry of over 40 structure types of intermetallic compounds always belongs to one of the 22 space groups (with exception of the cases of deformation and superstructure formation). The real structure types belongs, as a rule, to the most symmetrical groups and have the simplest numerical symbols. Our method of interpretation is useful not only for systematisation and description of the known structure types, but may be used as an instrument for determination of unknown ones. There is a simple linear dependence between the unit cell and fragmental lattice constants, moreover the coefficients in such linear equations are the numerals from the numerical symbols.

08.1-09 REGULARITIES IN BINARY INTERMETALLIC COMPOUNDS.

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Examination of all the 105 known binary structure types containing more than 5 representants* showed that 85% exhibited the following three regularities.

1. A linear d_{AB} - $\bar{R}$ dependence**.
2. A narrow spacefilling, c/a and b/a range for the given structure type.
3i. A dependence between the position of the elements in the periodic table and their equipoint occupation in the stucture.
3ii The existence of a narrow grouping, for represent. of a given structure type, in an isostoichiometric diagram of binary element-combinations.

This diagram (3ii) has been used to put forward one or two possible structure types, with a high probability of existence, for synthesised binary intermetallic compounds. For example, up until 1970 there were 811 known intermetallic compounds with no assigned structure types, and during the past ten years, the structure types of 120 have been established. By using the above diagram, the correct structure type has been proposed for 110 of these.

Footnotes: * *W.B.Pearson, Handbook of lattice spacings and structures of metals, 1967, Pergamon Press.*

** *d_{AB} is the shortest distance between the elements A and B. This distance depends upon all the lattice constants and posit. parameters.* $\bar{R} = (nR_A + mR_B)/(n+m)$: *R_A, R_B are the radii of the elements A and B (E.Teatum et al., LA 2345, June(1960)), n,m are the stoichiometric proportions.*