20.1-05 Анализ групп симметрии кристаллов на основе их матричного представления В.А.Лиопо, Брестский педагогический институт. Брест, СССР

На основе матричного представления операций симметрии анализируется взаимодействие элементов симметрии, дан вывод точечных групп кристаллов. Показано, что макросимметрия кристалла однозначно влияет на соотношения между параметрами элементарной ячейки. Предложен аналитический метод построения и анализа кристаллографических проекций. Описана методика определения индексов граней простых форм кристаллов. Предлагается матричный способ взаимного перехода для кристаллического и обратного пространств. Приведен метод матричного представления федоровских, черно-белых, гомотетичных и предельных групп кристаллов, а так же методика расчета матричных коэффициентов тензоров второго и третьего рангов, описывающих физические свойства кристаллов различных точечных групп.

20.1-06 ON THE CLASSIFICATION SYMBOLS OF THE GROUPS OF GENERALIZED SYMMETRY, HOMOLOGY, SIMILARITY SYMMETRY AND CURVILINEAR SYMMETRY. By Z. Durski and H. Nowaczek. Department of Chemistry, Technical University, Warszawa, Poland.

For the purposes of the classification of the groups of generalized symmetry the Bőhm-Koptsik symbol $G_{rt}^{l(p)}$ is applied. This symbol describes the group of p-colored and l-fold antisymmetry in the r-dimensional space with the t-dimensional translation subgroup.
We propose to give this symbol a more general meaning, so it will concern all groups of generalized classical symmetry, homology, similarity symmetry and curvilinear symmetry. To distinguish among various kinds of symmetry, S, H, L, C letter symbols are suggested which are put in place of the letter G:

$S_{rt}^{l(p)}$ - is a symbol of generalized classical symmetry groups,
$H_{rt}^{l(p)}$ - is a symbol of generalized homology groups,
$L_{rt}^{l(p)}$ - is a symbol of generalized similarity symmetry groups,
$C_{rt}^{l(p)}$ - is a symbol of generalized curvilinear symmetry groups.

It is suggested that the symbol $cG_{rt}^{l(p)}$ should be used for the crystallographic groups with 1,2,3,4,6-fold axes, where c = crystallographic.

20.1-07 ON SOME SIMILARITY OPERATIONS IN THE THEORY OF SIMILARITY SYMMETRY. By Z.Durski, Department of Chemistry, Technical University, Warszawa, Poland.

Twenty years ago, in 1960, A. V. Shubnikov published a basis of the theory of similarity symmetry. Shubnikov described four operations of similarity symmetry and called them K, L, M, N operations.
Applying Shubnikov's geometric method, we can present still two more similarity operations: C_p - reflection through center of similarity and $\bar{L}$ - rotation about the inversion axis of similarity.
Operation C_p. Transformations through a similarity center are accompanied by k-multiply growing of the parts of figure and k-multiply growing of distances between those parts and similarity center.
Operation $\bar{L}$. This operation consist of L and C_p operations which are made at the same time, that is to say rotation about L axis through φ and K operation, and a reflection through similarity center /laying on L/. As a result of $\bar{L}$ operation, depending on the position of the initial part of figure towards C_p, two- or three-dimensional figures can be formed.
This work was made in 1980, on Xth anniversary of A. V. Shubnikov's death.

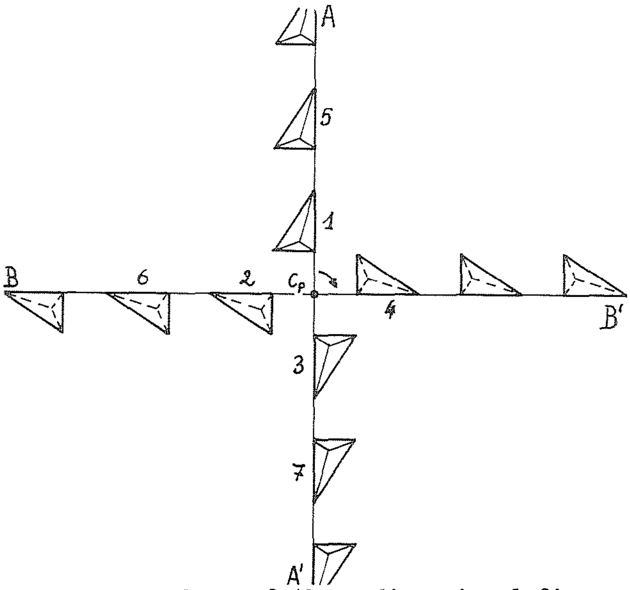

Fig. 1. The scheme of three-dimensional figure forming as a result of $\bar{L}$ operation ($\varphi=\pi/2$). On this Fig. the changes of distances and largeneses of the parts of the figure have not been taken into consideration. C_p and part 1 of figure are not laying on the one plane perpendicular to L axis. Straight lines C_pA and C_pA' from C_p point rise over the Fig. plane. Straight lines C_pB and C_pB' from C_p point descend below the Fig. plane. 1, 2, 3... parts of the figure generated one after another.