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Symmetry and Crystal Design. Joseph W. Lauher, Frank W. Fowler, Dept. of Chemistry, State Univ. of New York, Stony Brook, NY 11794, USA.

Two years ago, a new volume of the *International Tables for Crystallography*, "*Volume E Subperiodic Groups*" was published. This wonderful book, edited by V. Kopsky and D. B. Litvin, has yet to make the New York Times best seller list, but it should never-the-less find its place on the desk of every crystal engineer or supramolecular chemist.

Supramolecular chemistry is all about assemblies of molecules. Discrete assemblies of molecules are described by their point group, molecular crystals by their space groups. But to understand and design a molecular crystal we must also describe one- and two-dimensional assemblies. For these we need the subperiodic groups of Volume E. The rod groups, three dimensional groups with one-dimensional translation, describe one-dimensional assemblies or α-networks of molecules. The layer groups, three-dimensional groups with two-dimensional translation, describe two-dimensional molecular assemblies or β-networks.

Crystal design can thus follow a simple thought process. A molecule is designed to form intermolecular bonds with one or more other molecules. The symmetries of the resulting intermolecular bonds determine the group symmetry and translation dimensionality of the molecular assemblies. The molecular assemblies in turn self-assemble to give more complex structures of higher order symmetry, ultimately leading to a crystal.