Semiconductor hexagonal crystals composed of two atom CFUs

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http://homepage.mac.com/whitby/

References

1. Octahedron, the Universe defined by Robert William Whitby

A description of the atomic shapes and how they join which follows from the discovery that the periodicity of the atomic elements matches the periodicity of recurring form in which identical regular octahedra combine to form ever larger regular octahedra. Octahedron1stEd.pdf shows that the atomic elements are crystalline assemblies of identical regular octahedra and explores the implications of this discovery. 500 pages
http://homepage.mac.com/whitby/FileSharing103.html

2. Tetrapod structure by Robert William Whitby

Shows how a Zn-atom and an O-atom can join to form a Sr-atom homomorph. The ZnO-group can join with identical groups to form the tetrahedral structure which is called a *tetrapod*.
http://homepage.mac.com/whitby/Crystals/FileSharing215.html

3. Mn-atom doping of 100-planes of ZnSe crystal by Robert William Whitby

This document shows the atoms, the formation of the ZnSe-group, a crystalline assembly of identical ZnSe-groups, and the ways in which a Mn-atom can join to each of the crystal surfaces that are parallel to one of the three mutually perpendicular planes. It shows how a Mn-atom can join with the ZnSe-groups which define each of the two types of 100-plane. It also shows that two Ge-atoms can join as a unit which is a homomorph of the ZnSe-group.
http://homepage.mac.com/whitby/Crystals/FileSharing217.html

4. Semiconductor crystals composed of two atom CFUs by Robert William Whitby

The pairing of elements in both elemental and compound semiconductors are identical in their ability to join so that their joining He-octas and triplets are arranged as a square layer of four He-octas. The file SemiConCry.pdf shows each such pairing in both a vertexial view and a facial view and shows four identical pairs joined in a crystalline layer. The 184 page file contains 182 full page figures.
http://homepage.mac.com/whitby/Crystals/FileSharing219.html

5. Semiconductor crystals–layer-to-layer joining by Robert William Whitby

SemiconLayLay.pdf shows seventeen different types of semiconductor crystals that result from the two atom CFUs shown in Semiconcry.pdf. Each type is shown in two figures. One figure includes three depictions–a lone CFU in He-octa detail, four CFUs showing the intralayer joins, five CFUs showing the interlayer joins. The other figure shows five CFUs in three adjoining layers viewed in an edgial projection that is parallel to the layers.
http://homepage.mac.com/whitby/Crystals/FileSharing220.html

Introduction

This document shows a way in which eight of the seventeen types of two atom CFUs of Reference 5 can join as hexagonal crystals. The orange colored He-octas belong to the layer shared by the two atoms of the CFU. In each figure, the CFU is shown alone at the top; in the middle, three of the CFUs are shown both as a triplet and an inverted triplet; and, at bottom, as a two layer crystal formed by the joining of triplet with inverted triplet. The eight types include 1, 2, 3A, 3B, 3C, 3D, 4A, and 5B. Types 4B, 5A, 5C, 6A, 6B, 7A, 7B, 8, and 9 cannot make this type of crystal.

Types 1, 3D, and 5B are homomorphs of three of the four atomic elements that have a regular octahedral shape–Mg, Sr, and Ra. Their CFUs have the same relative positions in the hexagonal crystals shown herein as they do in the crystals shown in References 4 and 5.

Types 2 and 4A are homomorphs of two elements of the second column of the Periodic Table, Ca and Ba, which have a dipyramidal form.

The interlayer joins between CFUs of types 1, 2, 3A, 3B, and 3C consists of two He-octa edges; between those of types 3D and 4A it consists of three He-octa edges; and between those of Type 5B it consists of four He-octa edges. In each type, the CFU within each layer is joined to three CFUs of each adjoining layer.

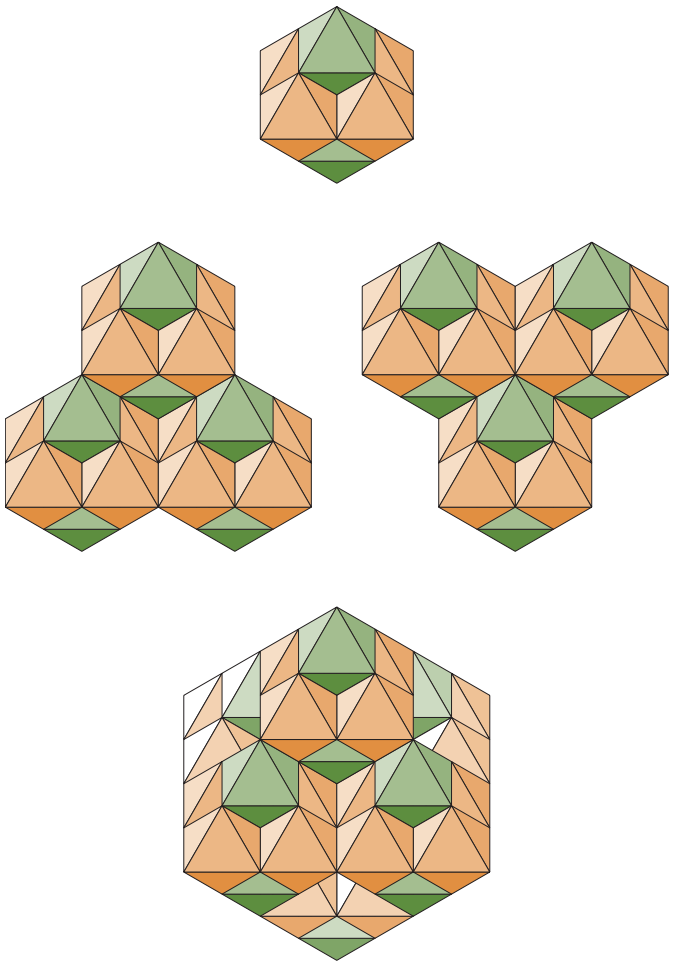

Fig. 1 Semiconductor CFU Type 1–hexagonal crystal

The semiconductor CFU Type 1 depicted at the top of the figure is a Mg-atom homomorph. The CFU can form the triplets shown in the middle. At bottom, the triplets form a regular octahedral structure. The layers established by the triplets can be extended indefinitely. The layers can stack indefinitely in the manner of the two triplets.

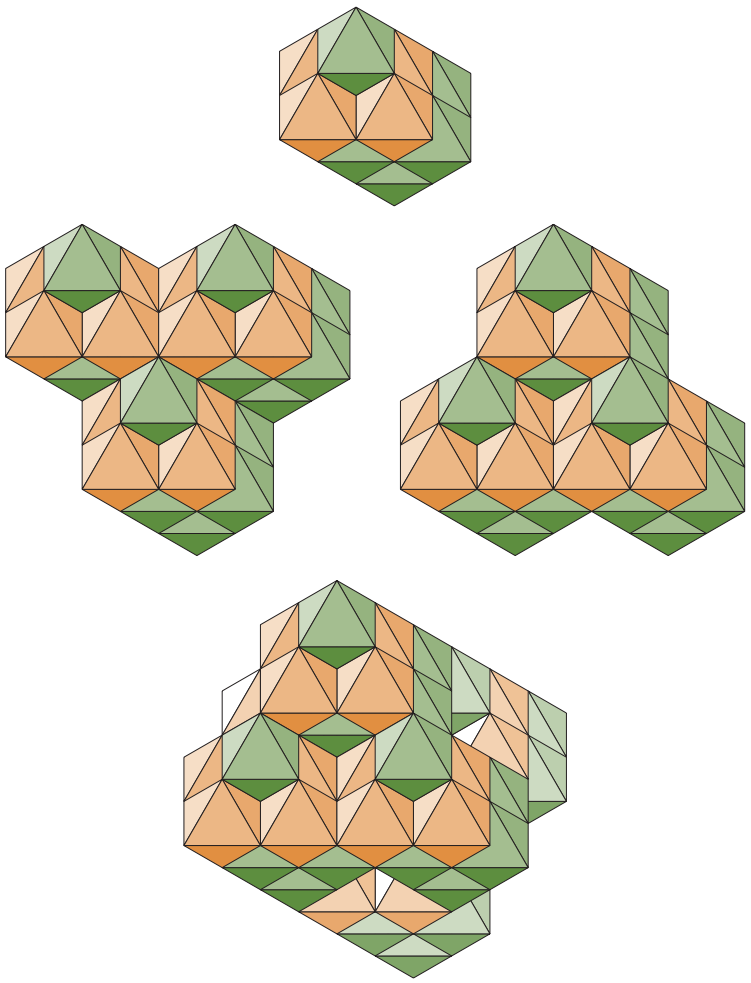

Fig. 2 Semiconductor CFU Type 2–hexagonal crystal

The semiconductor CFU Type 2 shown at the top of the figure is a Ca-atom homomorph. Like the Type 1 CFU, it can form triplets as shown in the middle of the figure. At bottom, the triplets are stacked with the joins between the CFU layers identical to those of the Type 1 CFUs.

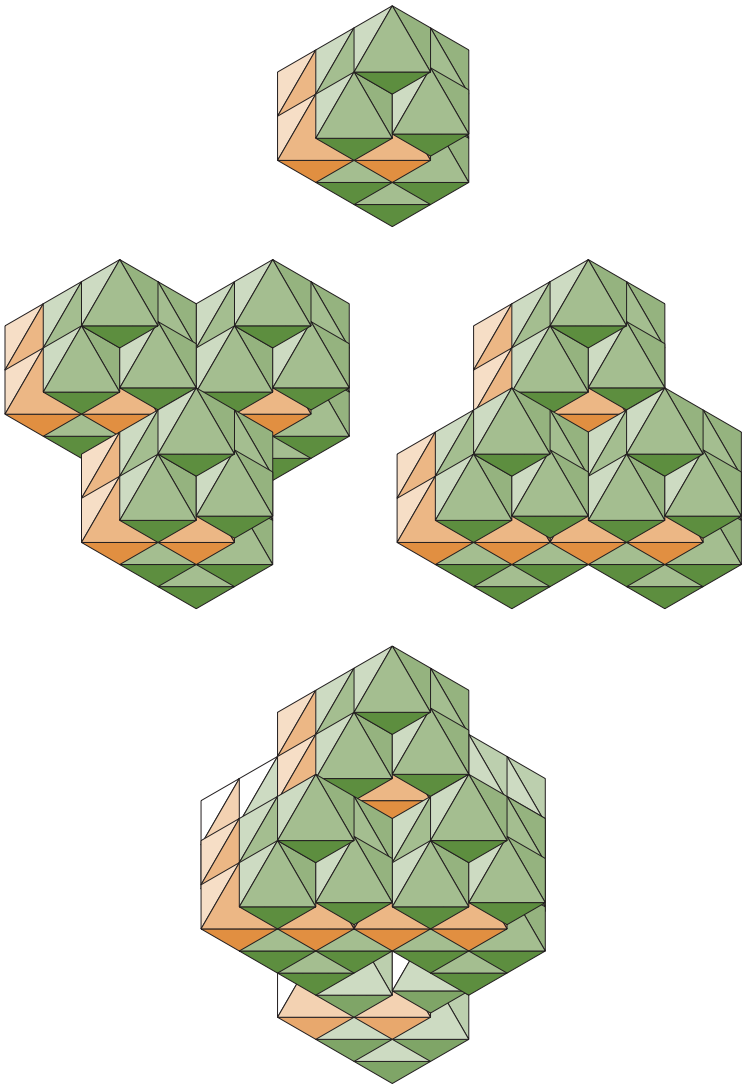

Fig. 3 Semiconductor CFU Type 3A–hexagonal crystal

The Type 3A CFU is shown at the tope of the figure; two triplets are shown in the middle; and the triplets are stacked at the bottom. The interlayer joins between the triplets are identical to those of the previous CFUs. Both the layers represented by the triplets and the stacking of the layers can be extended indefinitely.

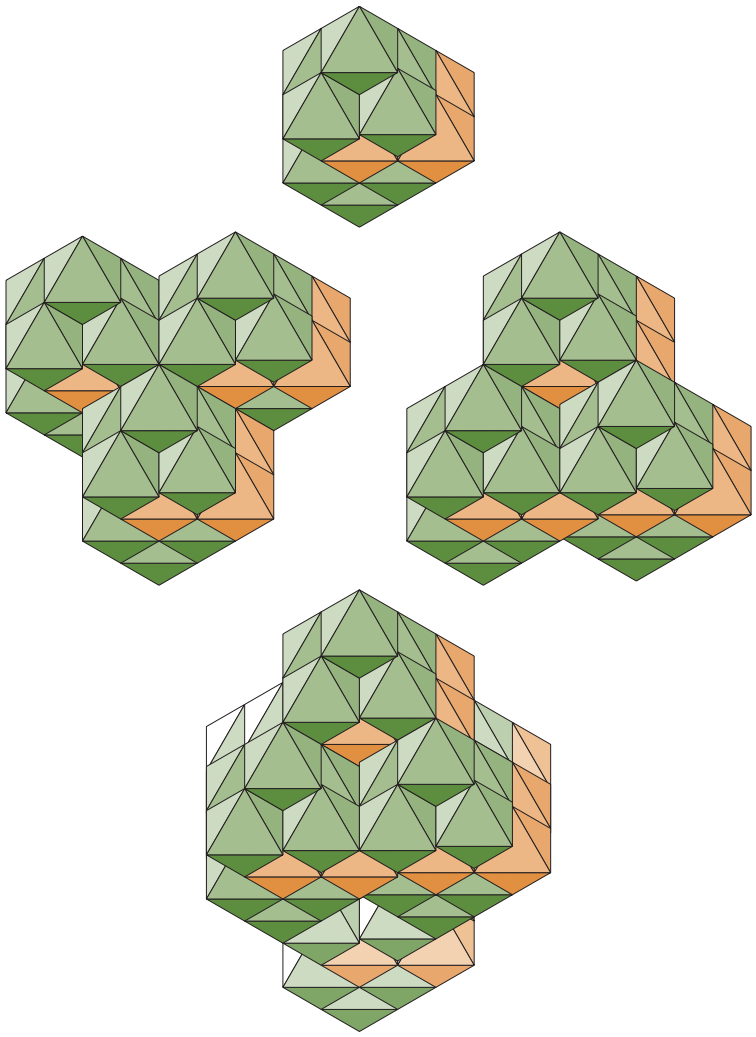

Fig. 4 Semiconductor CFU Type 3B–hexagonal crystal

The semiconductor CFU Type 3B is shown at the top of the figure. Two triplets formed by the CFUs are shown in the middle. At bottom, the triplets are stacked to show the interlayer joins.

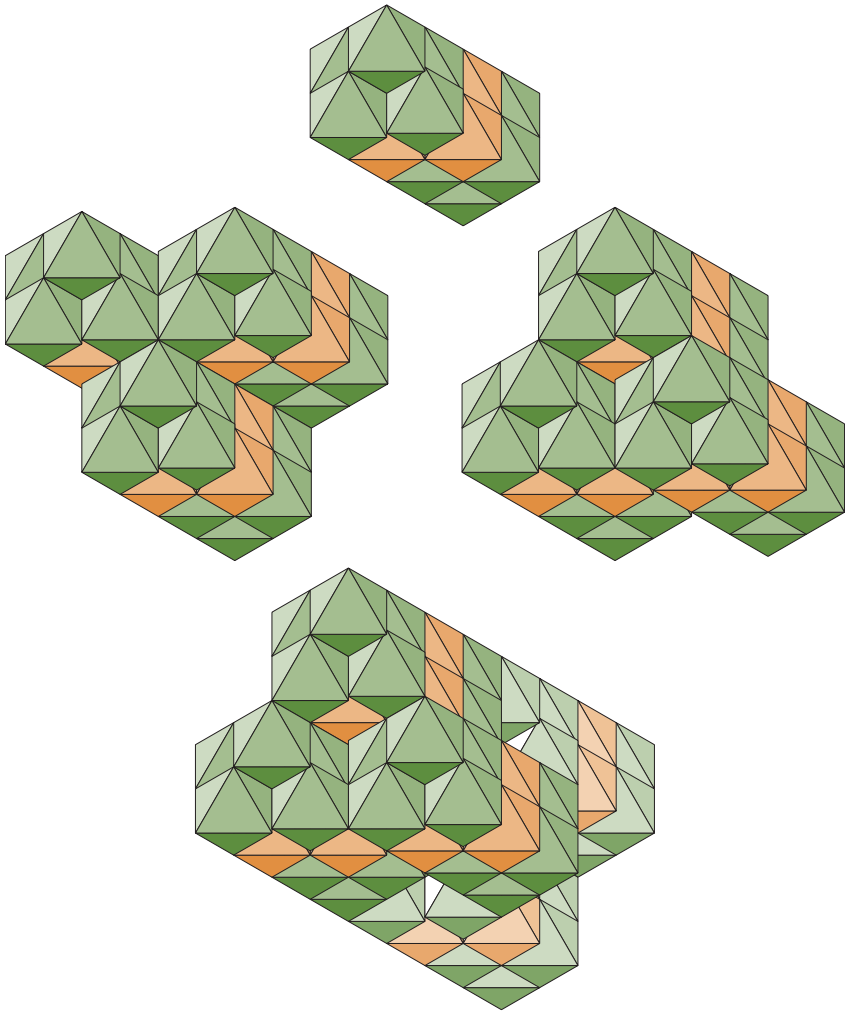

Fig. 5 Semiconductor CFU Type 3C–hexagonal crystal

The semiconductor CFU Type 3C is shown at the top. The two triplets shown in the middle represent different layers of an hexagonal crystal. At bottom, the joined triplets show the interlayer joins of the crystal.

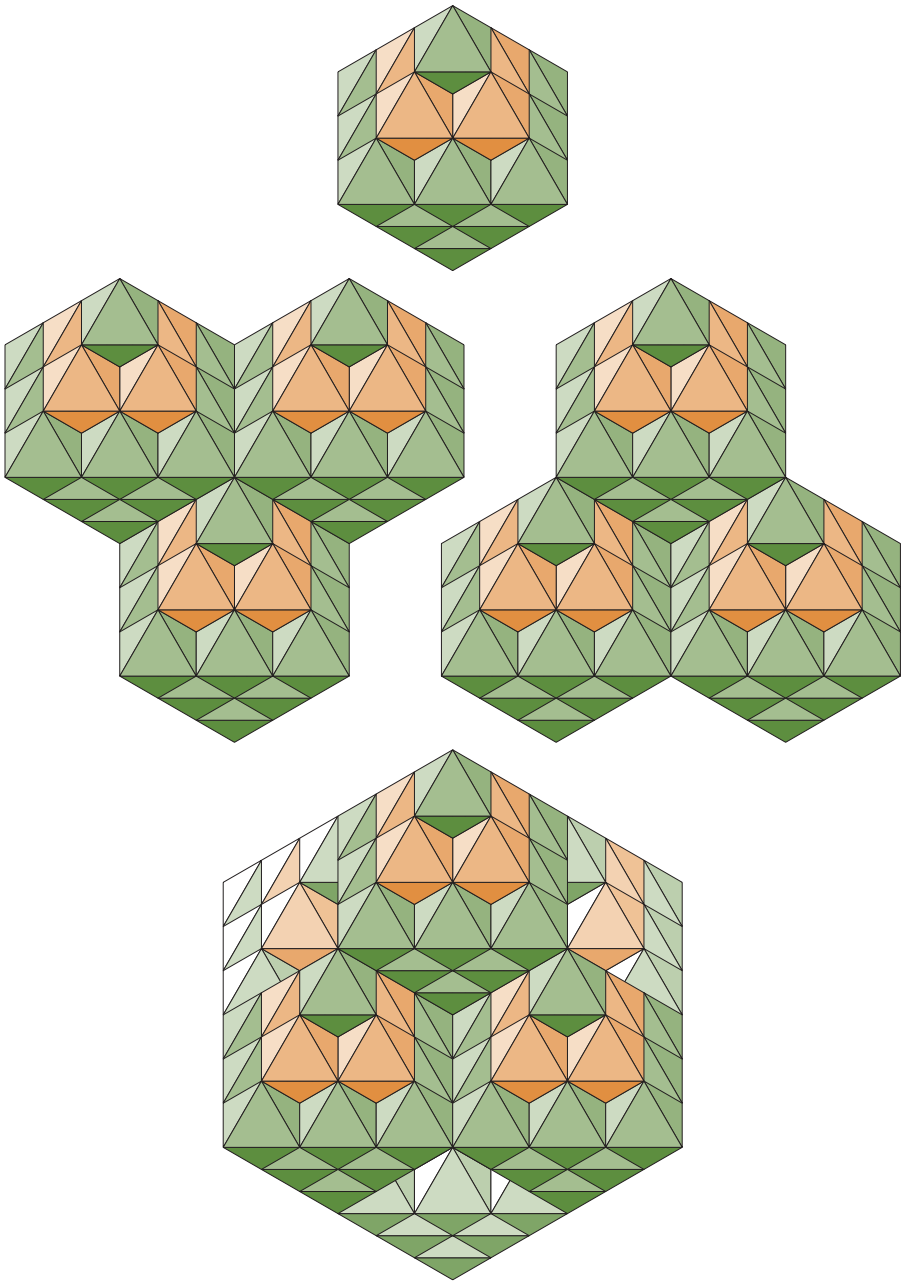

Fig. 6 Semiconductor CFU Type 3D–hexagonal crystal

The semiconductor CFU Type 3D shown at the top is a Sr-atom homomorph. It forms the triplets shown in the middle which stack as the regular octahedron shown at the bottom

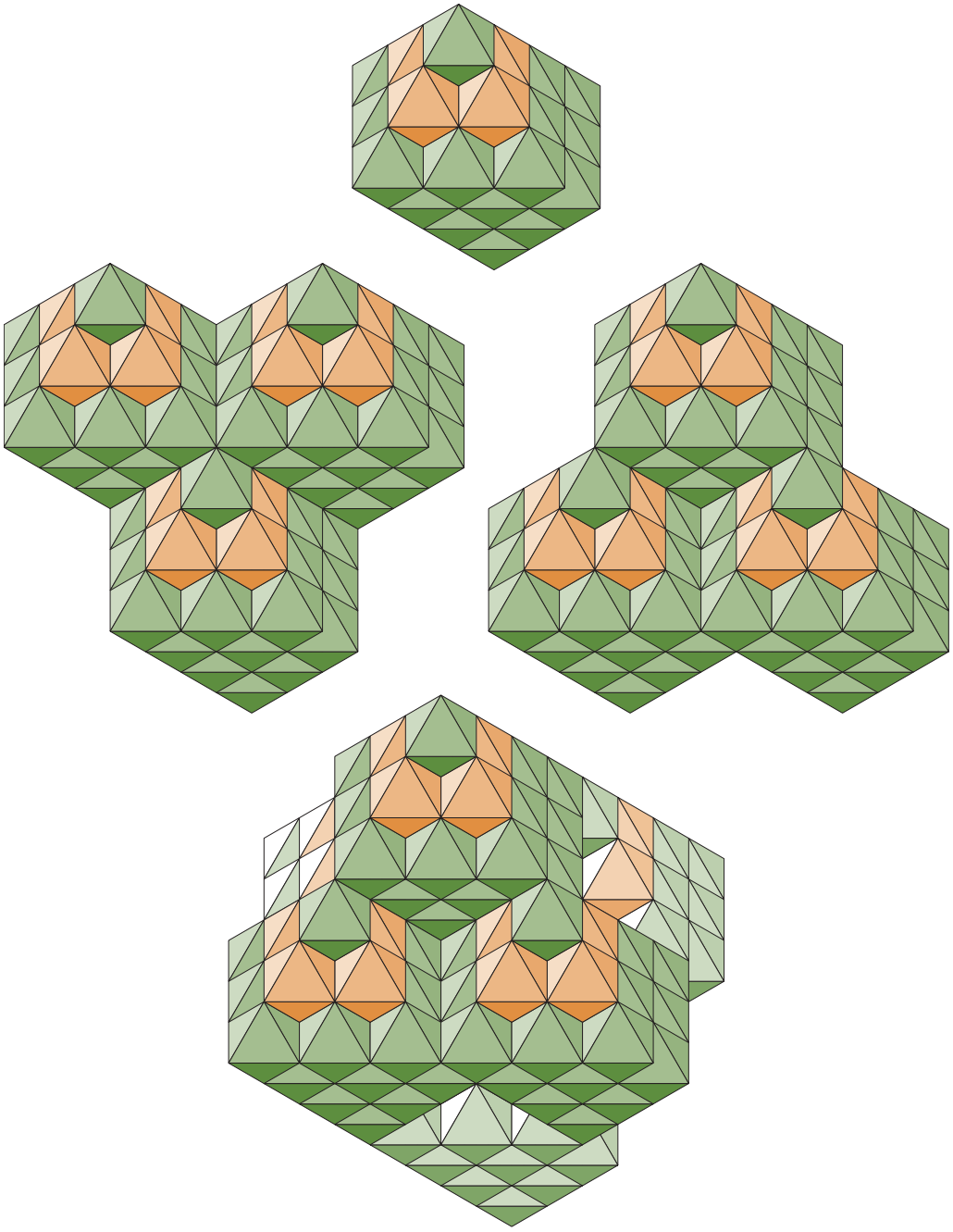

Fig. 7 Semiconductor CFU Type 4A–hexagonal crystal

The Type 4A semiconductor CFU is a Ba-atom homomorph. Its triplets represent hexagonal layers which stack in the c-axial direction in the manner shown at the bottom.

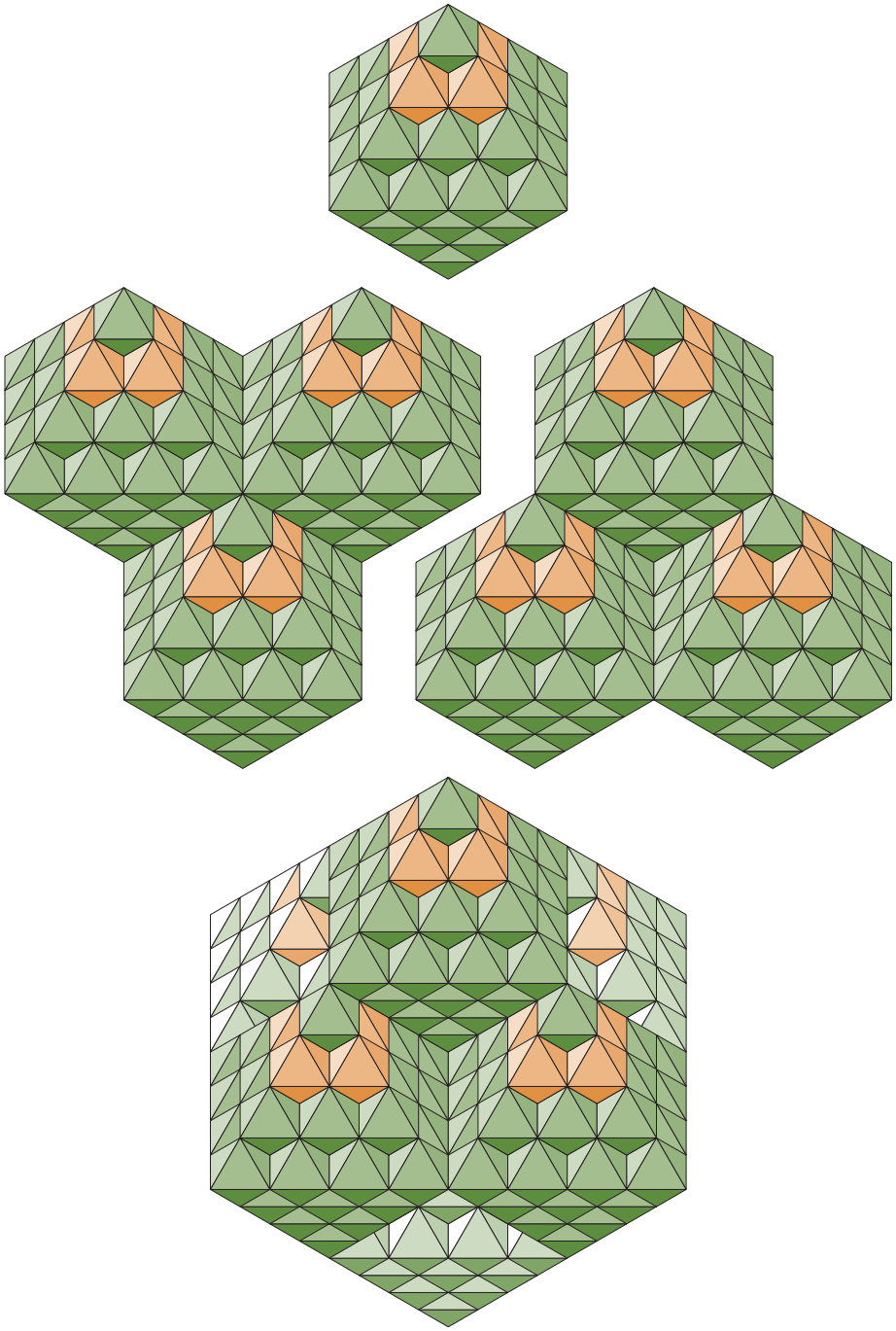

Fig. 8 Semiconductor CFU Type 5B–hexagonal crystal

The Type 5B semiconductor CFU is a Ra-atom homomorph. Its regular octahedral form produces triplets which stack as the regular octahedron shown at the bottom.