

Cat.No.M60-2656

CRYSCUBE

Cubic Inversion-type Crystal Structure Model

Purpose

This crystal structure model is constructed from eight transparent cubes which contain cut Styrofoam shapes. The cubes are linked in such a way that the surfaces can be inverted infinitely. Thus it is possible to observe the crystal lattice from various points of view, facilitating a better understanding of crystalline structures.

Specifications

Body-centered crystal lattice model	: 72x72x72mm, 140g
Face-centered cubic lattice mode	: 72x72x72mm, 140g
Salt-form crystal lattice model	: 72x72x72mm, 140g
Diamond-form crystal lattice model	: 72x72x72mm, 140g

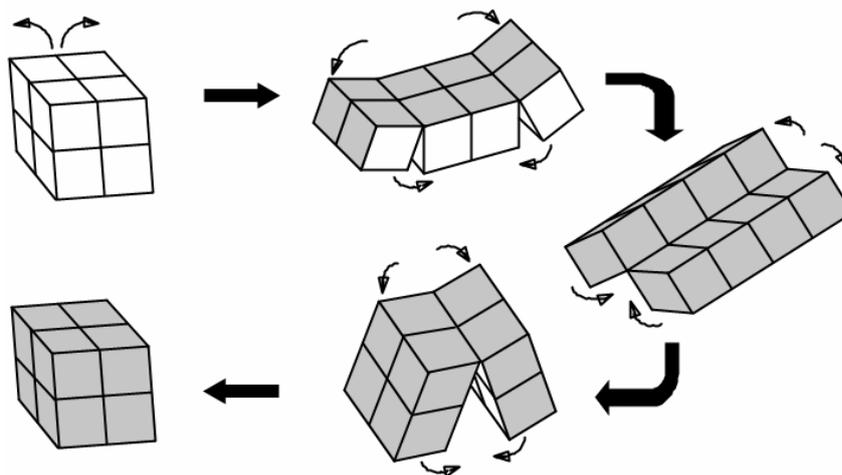
Accessories

Acrylic mirrors : 105x180x2mm, set of 2

Experimental procedures

1. How to invert the CRYSCUBE

Invert the CRYSCUBE as shown in the figure below.



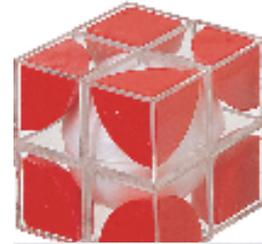
2. Observing the CRYSCUBE

To observe the crystal lattice disposition, arrange the CRYSCUBE into a rectangular configuration. During inversion, you can observe the continuous atomic globe array. Please the CRYSCUBE between the two mirrors, which have been arranged to form an L-shaped corner. The continuous crystal structure can then be observed.

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3. Details of the crystal models

- ①. Body-centered cubic lattice model (red/white). The red and white atomic globes are equivalent. Inverting the cube alternately places the red and white globes at the center of the cube. Note that there are eight coordinates against the center globe.



- ②. Face-centered cubic lattice model (green/white). Inverting the model reveals two configurations. The rectangular configuration is a typical example in which the green 1/8 sections are coordinates at each corner. Inverting the cube will place the green globe at the center cube (almost the same configuration as the face-centered cubic model). Observing this shape aids in understanding that there are 12 coordinates and that the model is structured with high density.



Note: The green color of the atomic globe is for identification only. Both the green and white atomic globes are equivalent.

- ③. Salt-shaped crystal lattice model (yellow/white). Inverting the model reveals two configurations. One is a face-centered cubic configuration with a large negative ion (the white globe) at the center. In the other configuration, a small positive ion (the yellow globe) is at the center. In both cases, the atomic globe located at the center is surrounded by six oppositely charged ions. Since these two configurations are equivalent, it can be observed that a salt-shaped crystal is a compound consisting of an equal number of positively and negatively charged ions.



- ④. Diamond-type crystal lattice (white). Forming the model into a rectangular configuration reveals two coordinates. The first coordinate is a metal-type structure with an atomic globe at the center. The second coordinate is an adamant-type structure with no atomic globe at center.



How the CRYSCUBE is linked?

The cubes are linked with 18mm-wide polyethylene tape (cellophane tape) allowing the CRYSCUBE to be configured as shown in the accompanying figure. A torn link can easily be repaired by attaching a new piece of tape.

