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In classical crystallography, crystals have a structure in which atoms are arranged periodically. In 1984, however, Shechtman *et al.* reported 5-fold rotational symmetry without translational symmetry in a Bragg reflection image of a rapidly quenched Al-Mn alloy [1]. The finding indicates that there is a solid-state other than crystals and amorphous solids where atoms are aligned in a quasiperiodic manner. The quasicrystal structure can be explained as a cross-sectional structure of a high-dimensional periodic crystal, with another extra "complementary space" required to describe the atomic structure. This project aims at establishing a new concept of substances, "hypermaterial", which is a high-level concept that includes the existing concept for substances, and also at creating a new theory that incorporates the concept of hypermaterial.

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[1] D. Shechtman, I. Blech, D. Gratias, J. W. Cahn, *Phys. Rev. Lett.* **53** (1984) 1951.

**Fig.1:** The image of X.

**Fig.2:** The figure of Y.