**Transition**

**Dr Sam Coates**

In my work, I study unique structures called 'quasiperiodic' patterns. These patterns are highly organized but don't follow regular, repeating designs. They can be found naturally in various materials in nature, from metallic alloys and oxides, to liquid crystals and polymers.

To create a wide range of quasiperiodic patterns, I use a technique called 'high-dimensional projection.' Imagine shining a light on a 3D cube, which produces a 2D shadow, or projection. We can apply a similar method to 'project' cubes from higher dimensions, like 4D or 5D, to produce quasiperiodic 2D ‘shadows’ or patterns.

I use this technique to design and explore new materials with unique quasiperiodic structures. My image of research shows a transition from a regular, repeating pattern on the left which was created using a 3D cube, to a quasiperiodic pattern on the right, which has been created using a 6D cube.