Hello and Welcome to the Mineralogical Museum of the University of Hamburg!

This is a space, dedicated to all kinds of solid-state matter that Mother Nature created, and in particular to the beauty of crystals. A large number of crystals and rocks are categorized and stored here. The most beautiful specimen of the collection are on display for everyone to see.

Unfortunately, we cannot invite you all personally, to come to Hamburg, to visit this museum. Instead, we will take you on a short flight through the museum. Keep your eyes open for all the different shapes of the crystals. They will range from perfect cubes to long needles or faceted polyhedra.

When people come to this place they often ask: “Are these crystals cut and polished like a gemstone?” And they are surprised when they learn, that they are not. All the crystals, we will show you, grew into that particular shape they have now. Apart from cleaning they have not been treated further.

So, what forces the crystals into these shapes?

That’s the question we want to answer in this chapter. But for now, sit back and enjoy the view on the crystalline world.

* Flight through the Museum *

You may recognize this crystal from the trailer of our course. These are pyrite crystals. And what is remarkable, is of course their shininess. And what is also remarkable is their macroscopic form: Perfect cubes with extreme sharp edges!

In the last chapter you learned all about unit cells. The unit cell of pyrite is cubic. And the overall shape of these crystals can be explained perfectly well, if we realize, that crystals are nothing more than tightly packed unit cells. Thus, it is not very surprising that an arrangement of small cubes results in a large cube.

But here we have another pyrite crystal. As you can see, this is no longer a perfect cube but an octahedron.

How is this possible? In the next units we want to answer this question: How do crystals get their outer shapes and how can we describe them?