

Mineral Spotlight: Langite

This week's mineral spotlight is langite, a vibrant blue to turquoise-colored copper mineral. Langite is found in many copper-bearing localities around the world, but usually in small quantities making it a rare mineral. In Michigan, it is found and mined in Marquette and Copper Harbor.

Langite is named after Dr. Viktor von Lang, an Austrian theoretical physicist and chemist at the University of Vienna in the late 19th century. He pioneered crystal physics, which studies the internal structure of crystals using vectors, lattices, and crystallographic axes, and relates it to larger scale properties.

Chemically, langite is a hydrous copper sulfate ($\text{Cu}_4(\text{SO}_4)(\text{OH})_6 \cdot 2\text{H}_2\text{O}$) and is formed from the oxidation of copper sulfides like chalcocite, bornite, and chalcopyrite. The mineral forms in crusts of small crystals covering a surface, known to mineralogists as a "drusy" crystal habit.

Langite first appears in the rock record during the Great Oxygenation Event, almost 2.5 billion years ago. During this time, photosynthetic cyanobacteria began pumping out oxygen as a waste product, filling the air with free oxygen. With the atmospheric change, oxidized minerals like langite, which form when other minerals are exposed to the oxygenated atmosphere, were created.

Now langite is mostly formed as an anthropogenic mineral, meaning that it is created by human activities. Langite, along with a host of other oxidized minerals, is formed in mines as buried material is exposed in mine shafts to air and new weathering processes.

This feature was posted on Dice Museum social media by Museum intern Josian Aardema on 7/11/2023.

