

## Structural properties of biogenic aragonite and calcite. A review

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The crystal structure of aragonite and calcite in biogenic samples extracted from the skeletons of selected scleractinian corals has been studied by synchrotron radiation diffraction [1]. A precise determination of the lattice parameters of biogenic scleractinian coral aragonite shows the same type of changes of the a, b, c lattice parameter ratios as that reported for aragonite extracted from other invertebrates [2]. It is believed that the crystal structure of biogenic samples is influenced by interactions with organic molecules that are embedded in the biomaterial. In order to study this influence we have studied the thermal lattice expansion of biogenic and geological aragonite by in-situ synchrotron radiation (SR) diffraction. These studies were performed by using both, pulverized and non-pulverized biogenic aragonite samples [3]. The thermal expansion of biogenic aragonite depends on the sample form. Pulverized biomineral aragonite samples show same thermal expansion as the reference geological aragonite. Biomineral aragonite samples studied *en-bloc* (non-pulverized) show smaller thermal expansion coefficients as compared with the reference geological aragonite. The observed difference is attributed to the pressure exerted by the heated organic inclusions trapped in the lattice of the biomineral samples studied *en-bloc*. The structural phase transition from aragonite to calcite is observed at different temperatures for pulverized biomineral 280°C, biomineral *en-bloc* 360°C and geological 450°C aragonite samples.

### References

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