

Biom mineralization of calcium carbonate by adding aspartic acid and lysozyme

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Calcium carbonate is one of the most materials present in nature. Crystal structures of CaCO_3 become three polymorphic modifications, namely calcite, aragonite and vaterite. And, polymorphic modifications are mediated by adding additives such as aspartic(Asp) acid and lysozyme. Lysozyme which is a major component of egg white proteins has influenced the calcification of avian eggshells. In this work, the influence of Asp and lysozyme on the precipitation was performed from calcium chloride solution into sodium carbonate solution using a special double-wall vessel.

CaCO_3 crystals were analyzed by X-ray Diffraction (XRD), Field Emission Scanning Electron Microscope (FE-SEM) and Fourier Transform Infrared Spectrometry (FT-IR). XRD was used to select the intensities and crystal structure of specific calcium carbonate. SEM was employed for the analysis of the morphology of the precipitation and particle size. Two kinds of crystals were identified by FT-IR spectrum. Hexagonal crystals of vaterite were affected by the Asp in the crystallization solution. However, rhombohedral crystals of calcite were formed without any sign of vaterite.