

Polymorphism of calcium carbonate crystal by silk fibroin in crystallization solution

김진호, 김인호*

충남대학교

(ihkim@cnu.ac.kr*)

The precipitated calcium carbonate was synthesized in an solution of reaction mixture. Calcium carbonate was synthesized at various reaction conditions such as reaction time, pH and organic additive. Biomineralization with CaCO_3 is a complex process, typically involving an insoluble matrix for control over nucleation, transport and localization of ions as well as the size, shape and polymorph of the precipitating phase. CaCO_3 , one of the most abundant biominerals, is found as different polymorphs of calcite and vaterite.

Silk fibroin was used as additive to understand the change of morphology of calcium carbonate crystal. The crystals were analyzed by FE-SEM, XRD, and FT-IR. Reaction time and pH mainly affected the morphology of crystals. Besides, it was found that silk fibroin inhibited the formation of vaterite and promoted the calcite forms.