

## **Biomimetic Synthesis of Hydroxyapatite Nanocrystals Controlled by Chinese Yam**

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Apatite is used extensively in various geological applications, including dating techniques and studies of rare earth element variation in rocks, and is also widely used in material science and medical applications. Especially hydroxyapatite (HA) nanoparticles exhibit excellent biocompatibility and as the main component exist in human tooth and bones. So Hydroxyapatite nanocrystals have attracted more and more attention because of its extensive applications in tissue engineering area. In this study, the biological molecules enriched in Chinese yam were used as reactants and templates for the biomimetic synthesis of hydroxyapatite nanocrystals at room temperature and atmosphere. The results show that cobblestone-like HA biocomposite formed on the surface of Chinese yam while cube-shaped and porous HA biocomposites were fabricated in the squeeze juice of Chinese yam with different addition orders of configurational ion, respectively. Obviously the diverse polar groups presented in soluble and insoluble biomolecules of the Chinese yam play different roles in inducing and controlling the nucleation and growth of HA. Also we find that the morphology, size and structure of the products changed with the concentration of  $\text{Ca}^{2+}$  and  $\text{PO}_4^{3-}$  as well as pH values of the solutions. This study may supply a new method for the biomimetic synthesis of bioinorganic materials.

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