

## Crimson Japan

クリムゾン・ジャパン

The final objectives of this study are to perform a visual ~~observation~~ evaluation of the crystallization ~~mode style~~ of Octacalcium phosphate [OCP:  $\text{Ca}_8(\text{PO}_4)_4(\text{HPO}_4)_2 \cdot 5\text{H}_2\text{O}$ ] ~~in~~ porous molded bodies ~~made~~ from biocompatible polymers and the bonding state of biocompatible polymers and OCP crystal interfaces, and a evaluation of the mechanical properties of biocompatible polymers crystallized by OCP, to gain foundational knowledge on the mechanism for forming bone and bone-like ~~bone~~ graft materials. ~~In the present study~~Here, as it was a 1-year investigation, we selected gelatin, which ~~is~~ ~~has~~ biocompatible polymers and for which the ~~protocol for the preparation of porous bodies of cancellous bones~~ ~~porous body preparation method~~ has already been established, and ~~we~~ focused on the evaluation of this OCP formation mechanism. This mechanism is an essential part of ~~calcification in~~ bone formation ~~calcification~~ and is of pivotal importance for ~~bones acquiring~~ high mechanical strength in bones and ~~degree manifestations~~ of flexibility. Not only this, it is also essential for the preparation of the ~~high-performance functionality~~ biomaterials to which it is applied. Therefore, by combining the two evaluations of the evaluation of the crystal interface ~~on a and~~ micro-scale ~~level with that, and~~ ~~evaluation~~ of the mechanical strength of macro-scale ~~bodies~~ ~~formation~~, mutual feedback could be provided on the influence that micro-generated phenomena have on bulk, we could obtain knowledge over a wide range not possible with a unidirectional investigation.

OCP is a main inorganic component of ~~young~~ bones, and is mainly composed of highly biocompatible materials. ~~Moreover, Not only that, a~~As this unique ~~crystalline~~ structure is able to carry drugs inside the crystal structure, it shows promise as a raw material for new combination medical materials. On the other hand, ~~with the use of OCP and, and above all, with OCP incorporating or carrying pharmaceutical components~~ ~~drug-carrying OCP itself~~, it ~~has been~~ difficult to obtain molded bodies with the appropriate size and strength ~~to be~~ utilized ~~as a~~ bone graft material. When OCP powder is simply kneaded into biocompatible polymers, it does not become a material with the flexibility of bone, so the crystallization process on the bone is very important. Controlling OCP crystallization promises to enable preparation of biomaterials with “suppleness” like bone.

[www.crimsonjapan.co.jp](http://www.crimsonjapan.co.jp)

**Comment [Checker1]:** Level 2

[Redundancy] [Language]

Redundancy issue rectified by deleting unnecessary word

**Comment [Checker2]:** Level 2

[Technical Word Choice] [SME]

More appropriate technical word choice was used.

**Comment [Checker3]:** Level 2

[Mistranslation]

Mistranslation issue was rectified

**Comment [Checker4]:** Level 2

[Technical Word Choice] [SME]

Accurate technical word choice was used as per the literature.

**Comment [Checker5]:** Level 2

[Omission]

Omission issue was rectified