

CHIYEWON

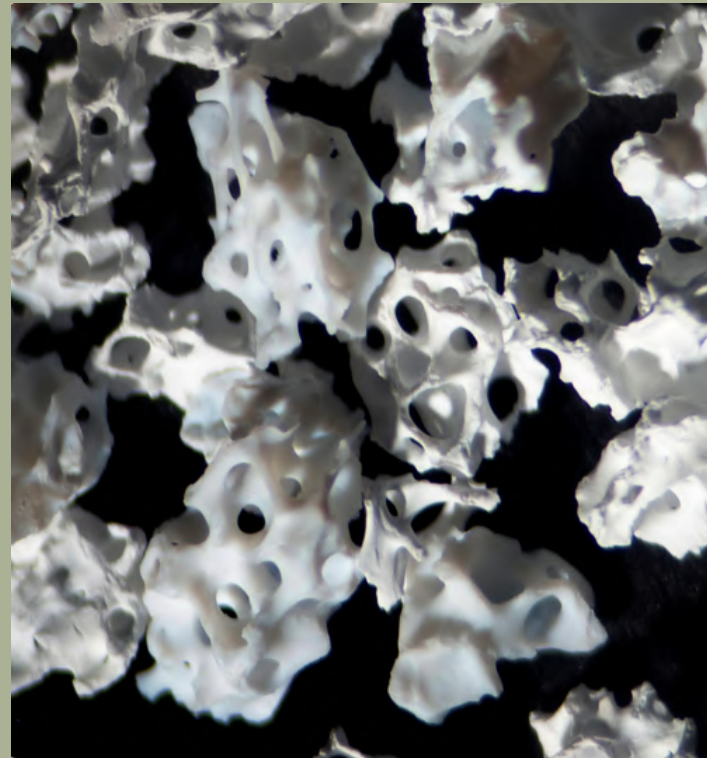
Why is Ti-oss[®] Special?

Ti-oss® made from 100% BSE-free approved Australian Bovine origin, is a biocompatible, highly porous, OCP-based inorganic mineral matrix designed for dental regenerative applications.

3 ESSENTIAL PROPERTIES

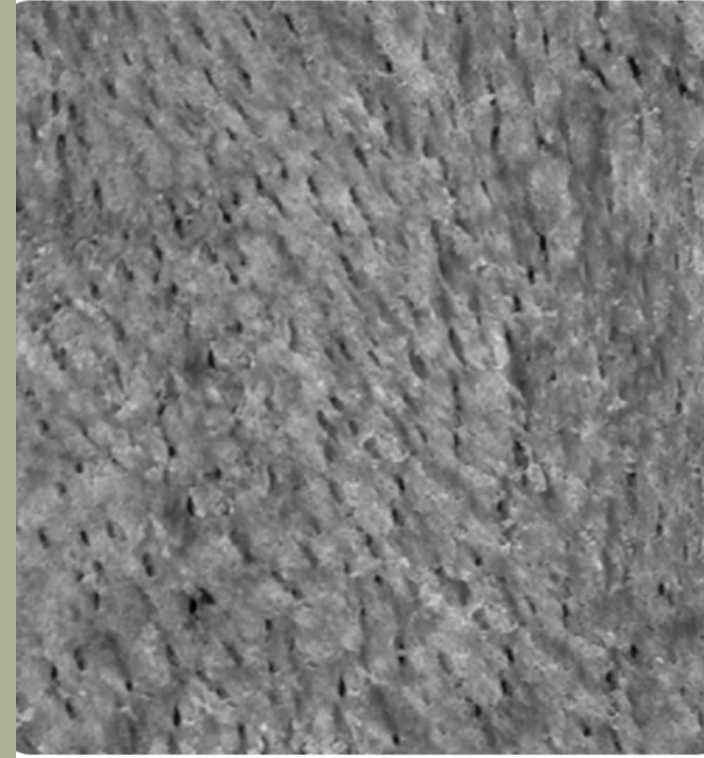
The performance of Ti-oss® clearly outstands other world-leading products in the market. That's because of the following three essential properties that you can find only with Ti-oss®.

3 ESSENTIAL PROPERTIES



To make bone, we need

**GENUINE MULTI-
POROUS
STRUCTURE**



Beyond the great!

**ROUGH
HYDROPHILIC
SURFACE**

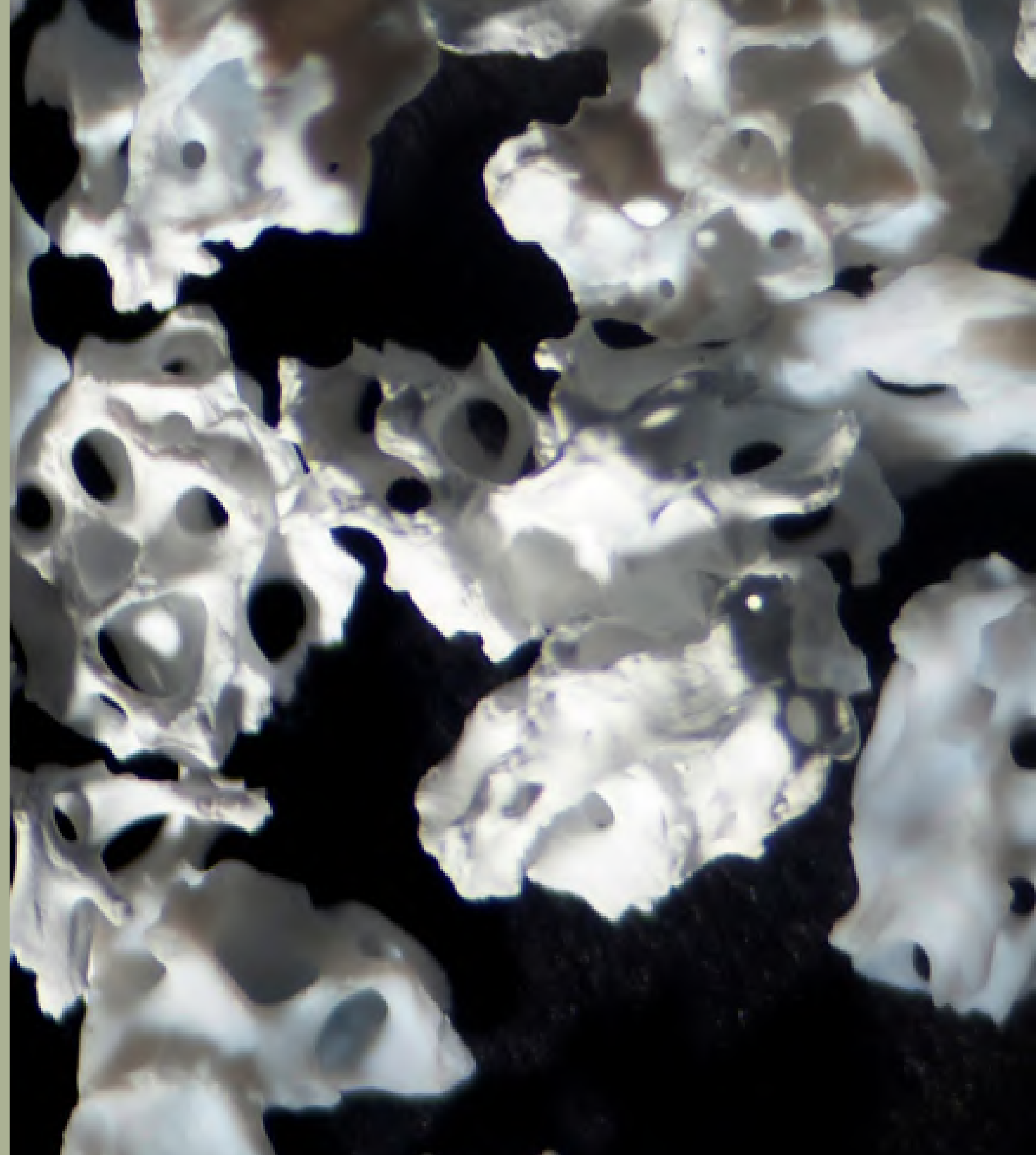


Osteopromoting factor

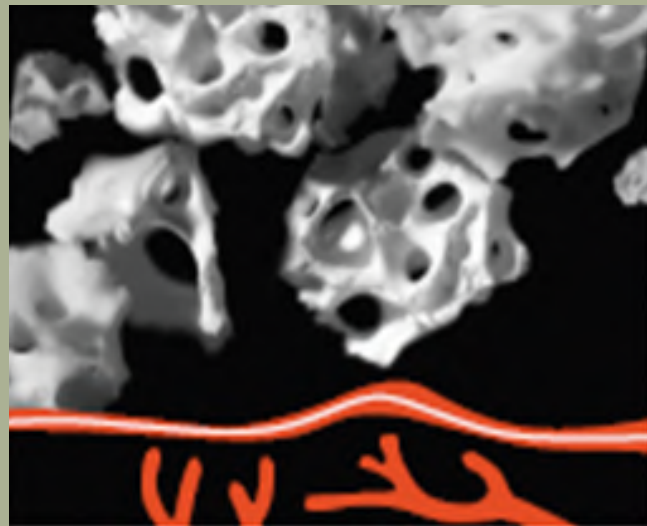
**OCTACALCIUM
PHOSPHATE
CRYSTAL**

GENUINE MULTI-POROUS STRUCTURE

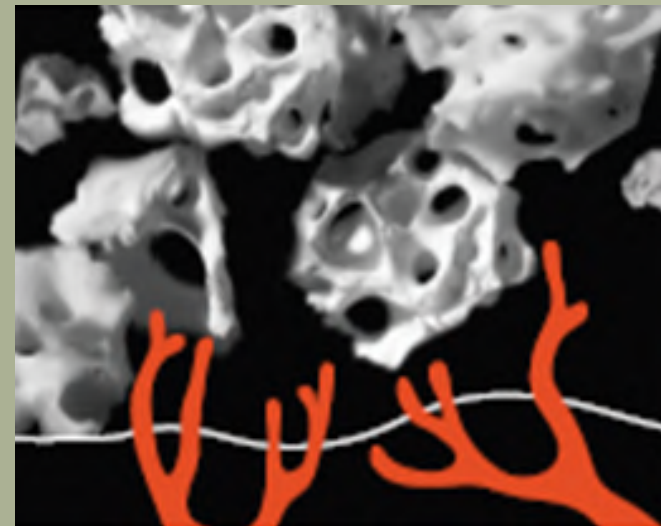
Ti-oss® shows an excellent multiporous structure. The porosity of bone graft substitute is one of the most crucial factors for angiogenic progress. Ti-oss® is made from 100% pure cancellous bone without the use of cortical portions. Chiyewon's specialized & advanced pulverizing technique enables mass production of highly porous and uniformed graft particles



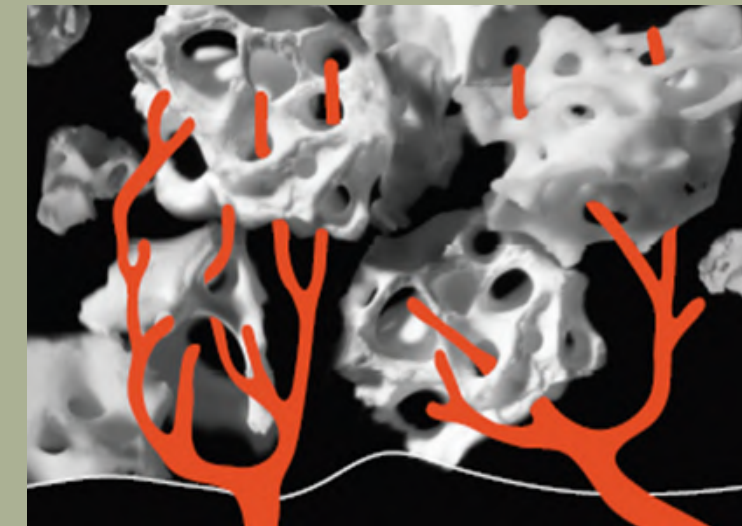
POST GRAFT SURGERY BLOOD VESSEL PROGRESS OF TI-OSS®



3 days



3~5 days



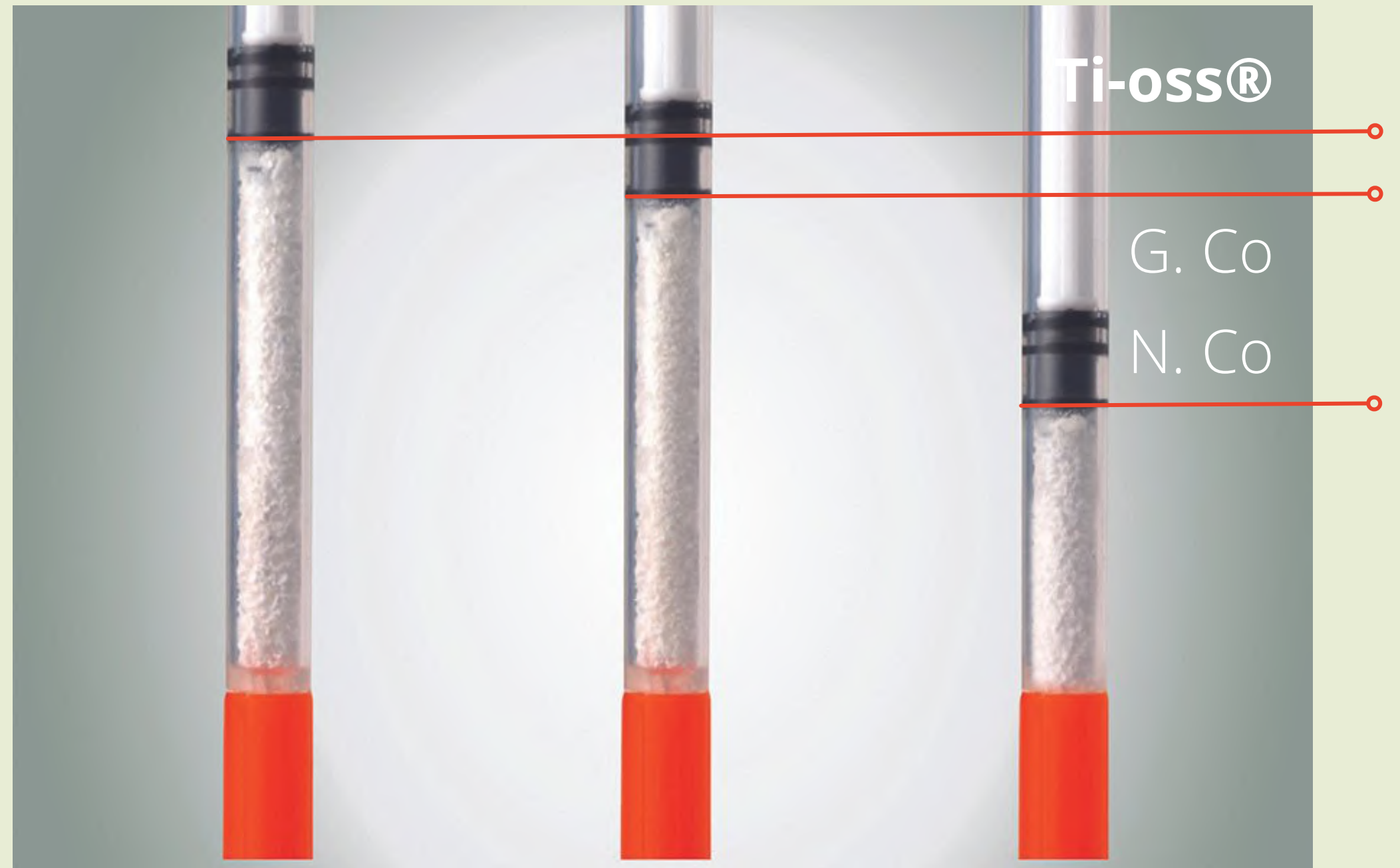
2 weeks

When the graft surgery is implemented to the defect site, the new bone cell is conducted & delivered from the patient's existing bone to the graft site throughout the blood supply. The Blood vessels deliver blood, bone cells into the pores of the graft materials. If the graft particle shape has poor porosity, it prohibits the blood vessel growth inside the graft and consequently causes poor angiogenic progress. That's why the porosity of the graft material is essential.

OUTSTANDING VOLUME STABILITY

Comparison of CC per Gram

The unique 100% multiporous cancellous nature of Ti-oss® offers higher quantitative mass volume per gram unit, compared to other poor porous products. It results in less material cost which means that Ti-oss® is cost-efficient & effective.



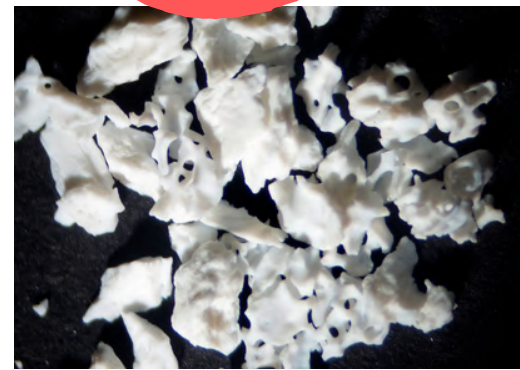
POROSITY COMPARISON

Of Xenograft Materials

These are the physical photos of the world's popular products we took with SEM (Scanning Electron Microscope). Believe it or not, all of them are world-leading brands. As you see, Ti-oss® has an excellent multiporous structure that creates superior osteoconductive promotion.



Ti-oss®
1.2 mm-1.7 mm
Excellent porosity
Shows an excellent osteoconductive structures



Company A
Well porous
But we can see there are many cortical particles



Company B
1.0 mm-2.0 mm
Very few porosity
They are mainly cortical bones



Company C
10 X Magnified
No porosity at all
Consist of 100% cortical bones



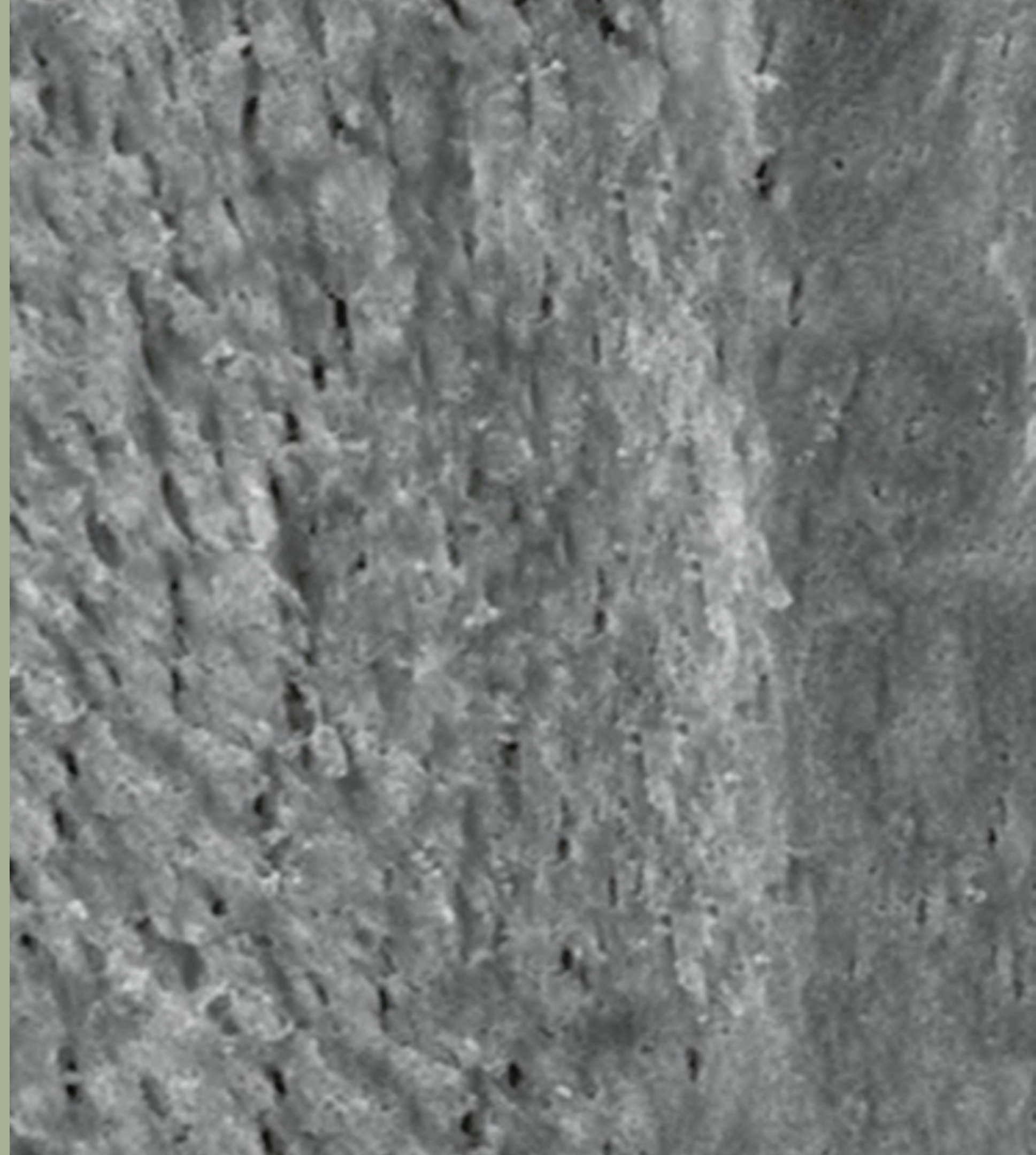
Company D
Porous nature damaged
The porous shape seems to be damaged in the production process



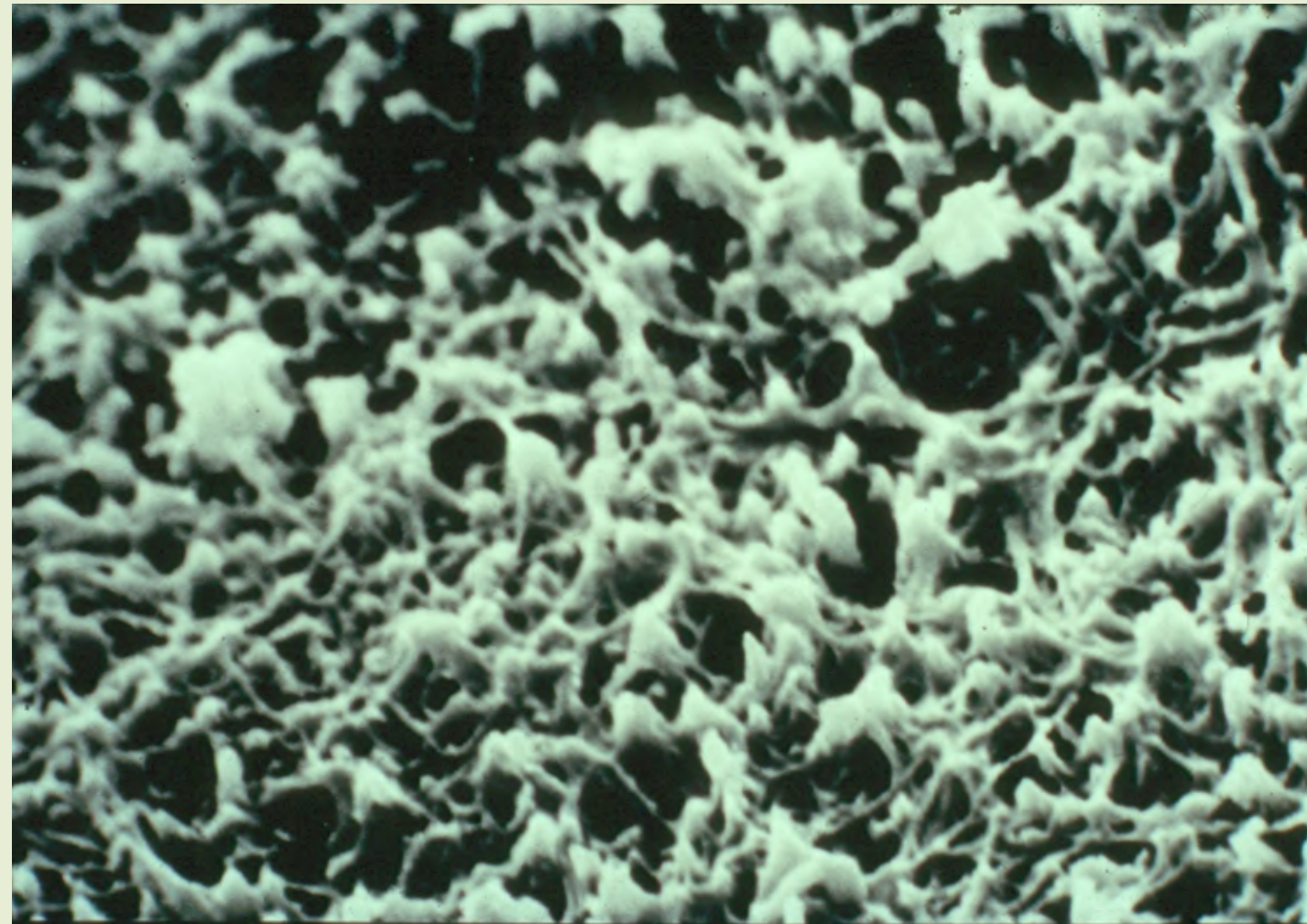
Company E
No porosity at all
Consist of 100% cortical bones

ROUGH SURFACE TOPOGRAPHY

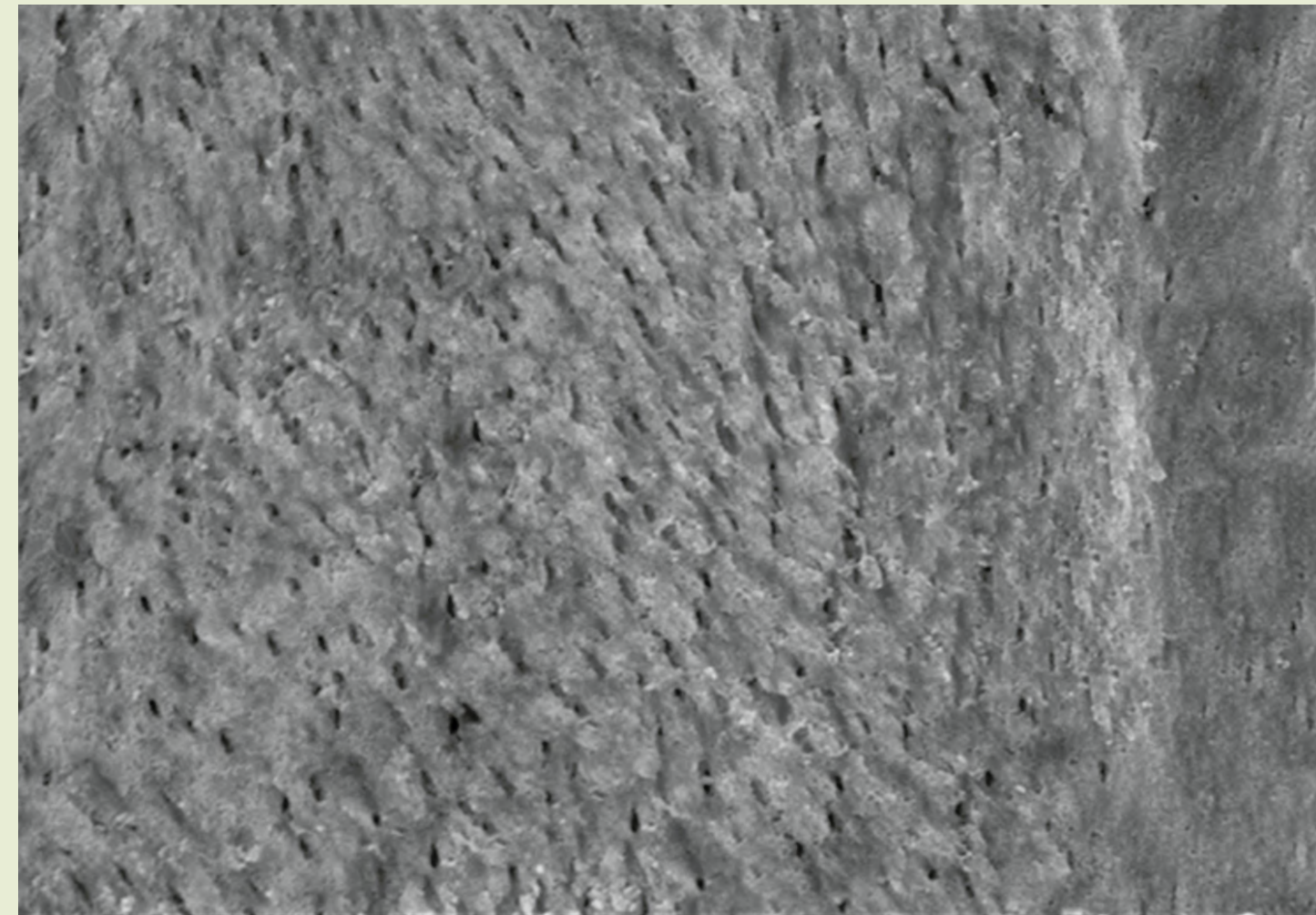
Our 15 years of R&D and sophisticated low-temperature manufacturing expertise enable Ti-oss to exhibit an optimal, natural surface topography, the same as human bone.



HUMAN BONE VS TI-OSS®

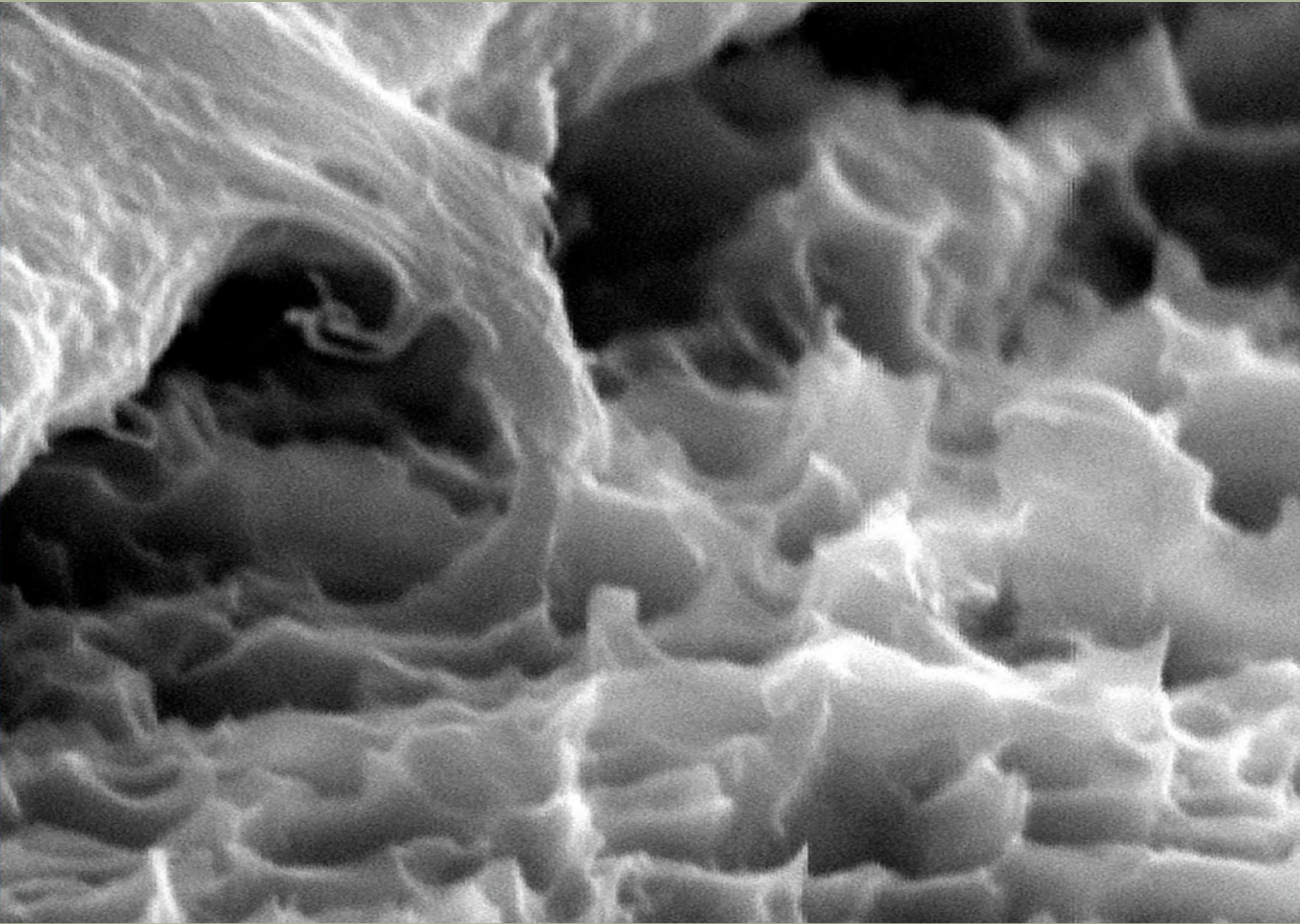


Human Bone Surface affected by Osteoclast
The microscopic photo of the human bone surface affected by osteoclast for osteoblast promotion. it's very rough!



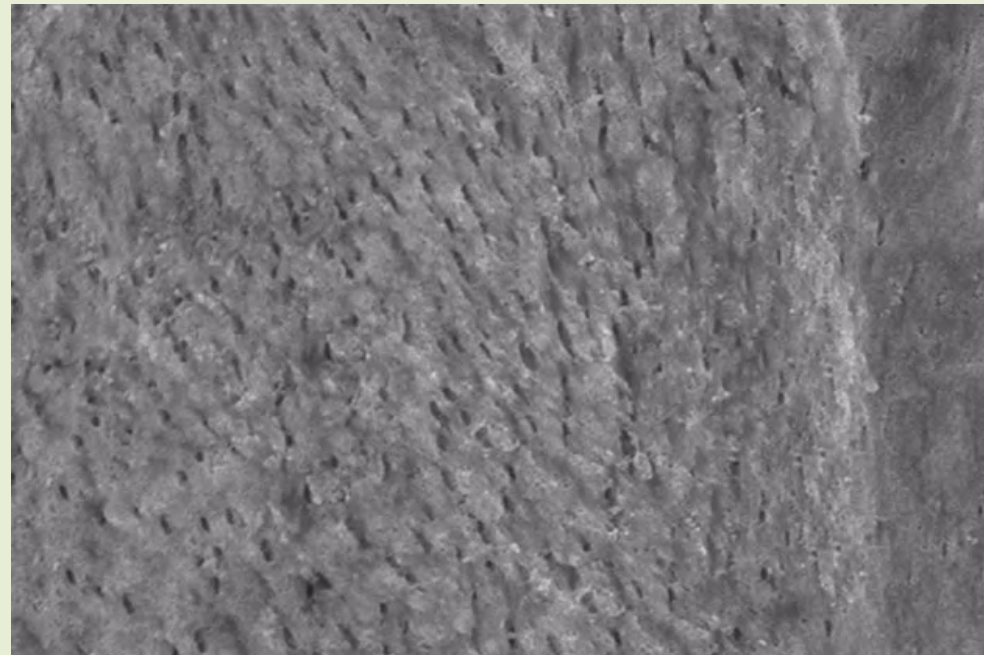
The Surface of Ti-oss
This is the SEM x 3000 magnified microscopic photo of Ti-oss®. It has a very similar surface roughness to the one of the human bone.

WHY IS THE ROUGH SURFACE IMPORTANT?



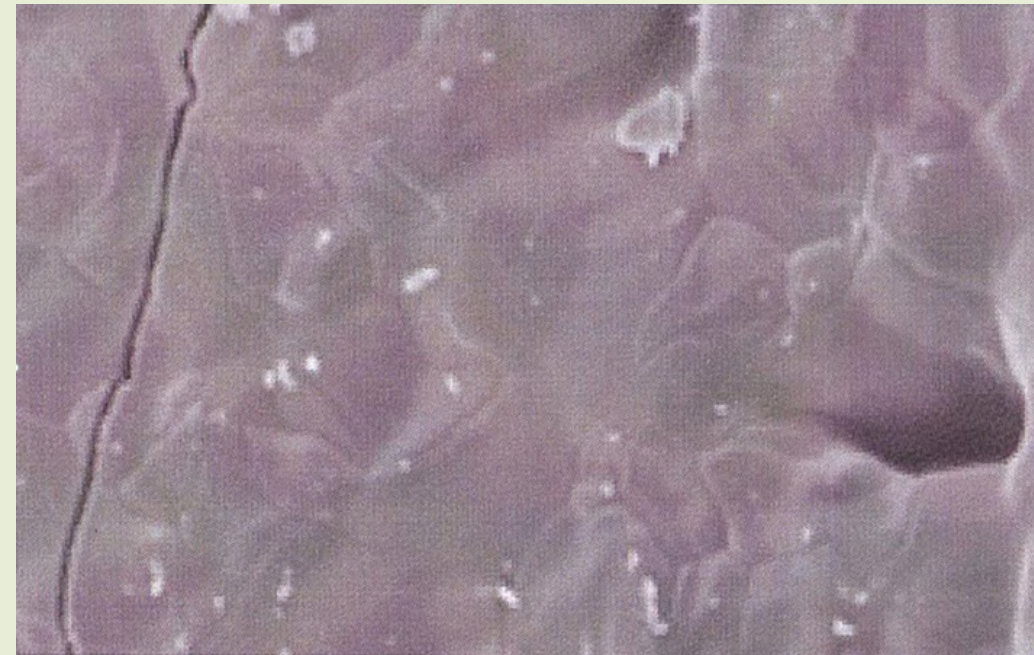
The new bone is formed from the patient's existing bone directly onto the rough graft surface through the blood clots attachment (also called fibrin network formation) process. How? The roughness on the graft surface enables the capture of individual anchors of the blood clots onto the graft, and it is another essential step for new bone formation. Thanks to our 15 years of sophisticated low-temperature manufacturing expertise, specialized experiences in research & development, and collaborated research with scientific institutions, we are able to express an optimal, natural surface topography, the same as human bone. The vitrification phenomenon caused by a high temperature (1200°C and over) & cracks that happen in the cooling processes has been completely controlled with Ti-oss®.

TI-OSS® VS OTHERS SURFACE COMPARISON



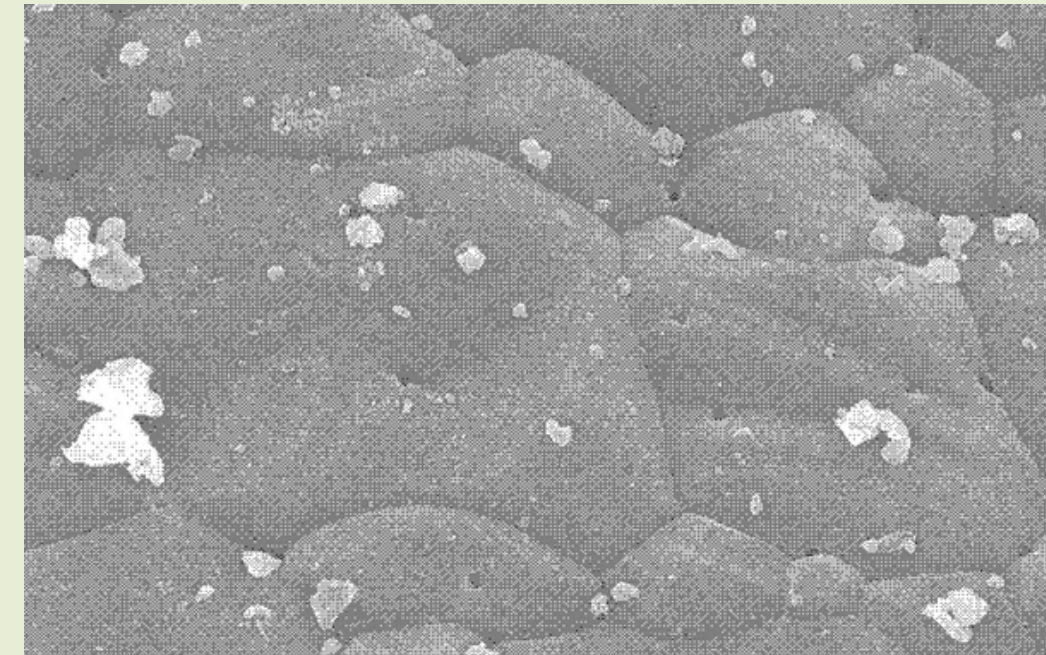
Ti-oss®

- SEM x 3000 magnified
- Origin: Korea
- Rough, Non-vitrified
Osteoconductive Structure
- Performs excellent bone contact and blood clots adhesion.



S. Company

- SEM x 5000 magnified
- Origin: Asia
- All vitrified and poor bone contact due to no adhesion of blood clots to the surface.

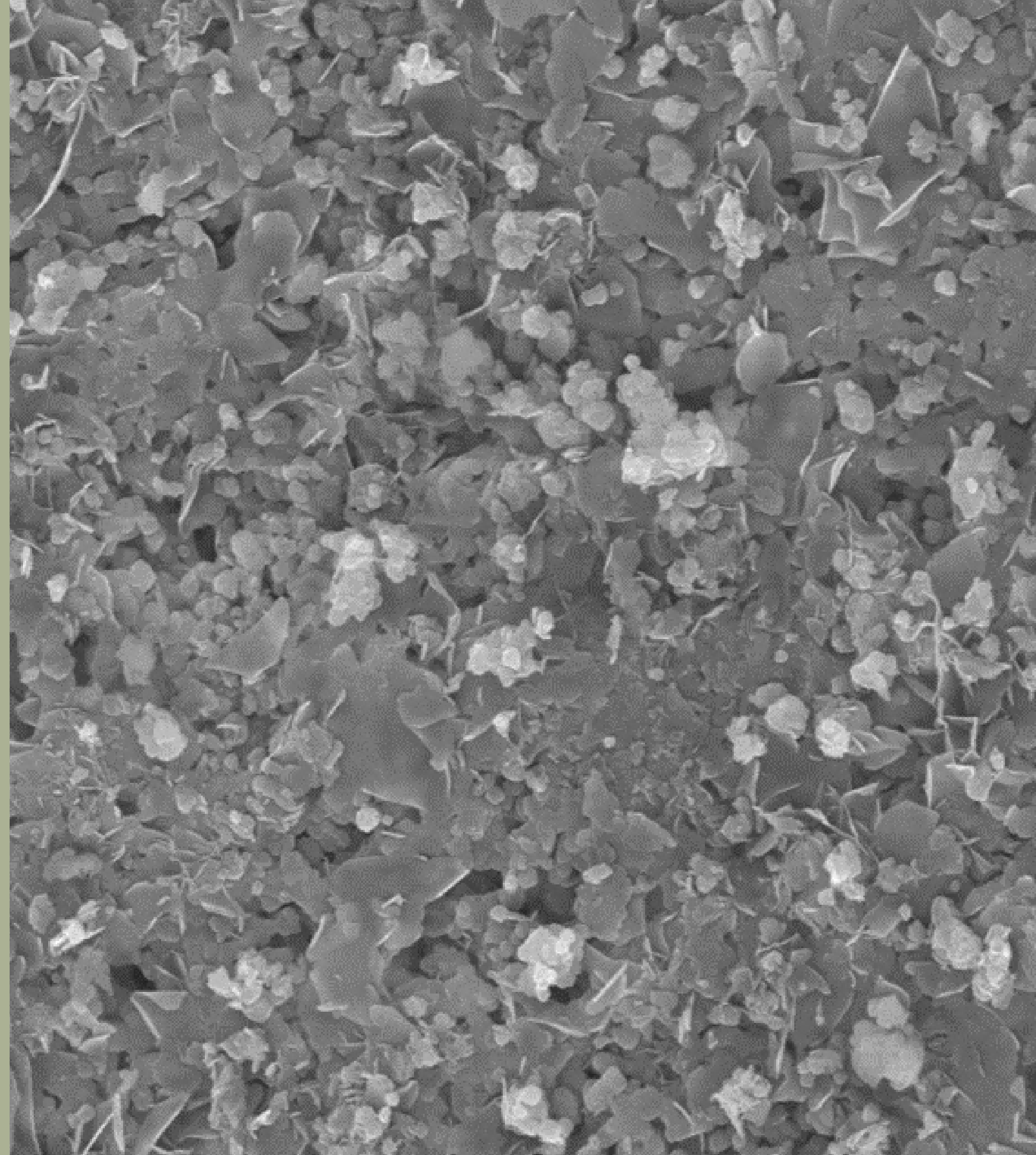


C. Company

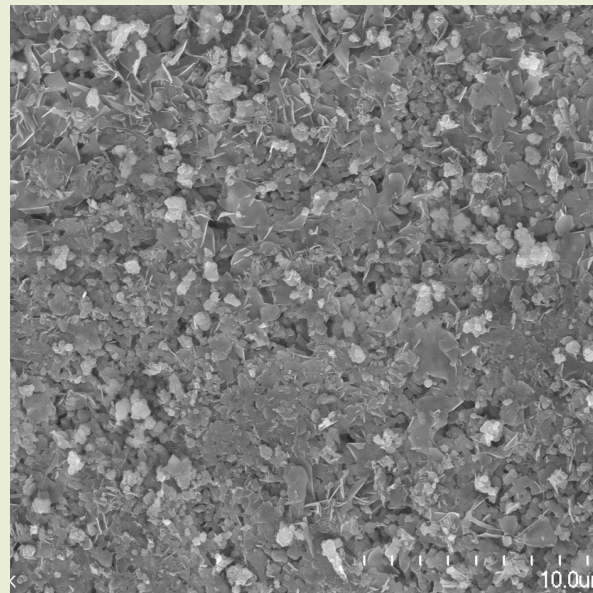
- SEM x 10000 magnified
- Origin: Europe
- All vitrified and poor bone contact due to no adhesion of blood clots to the surface.
- Bioglass, Synthetic bone shows the same surface

OSTEO PROMOTING FACTOR

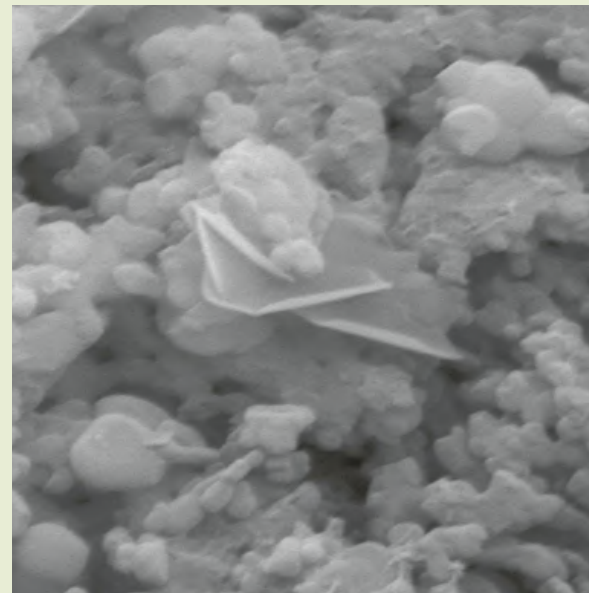
Pre HA structure, Octacalcium Phosphate (OCP) crystal that exhibits excellent bone regenerative properties is found on the surface of Ti-oss®.



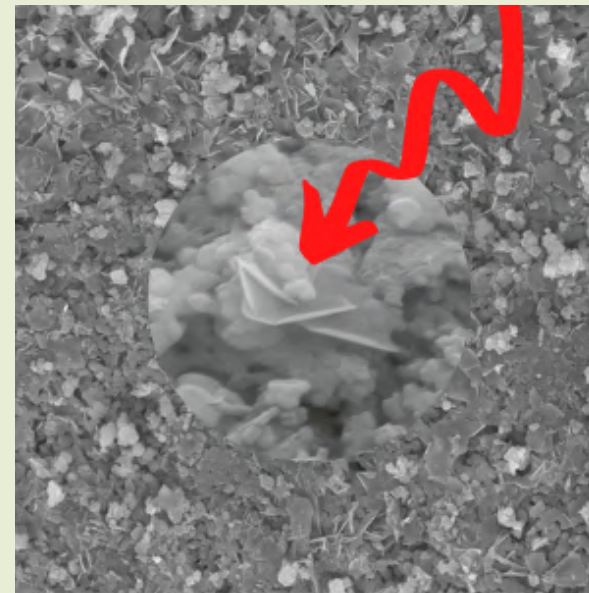
OCTACALCIUM PHOSPHATE CRYSTAL



SEM x 10000



SEM x 50000



Our Secret

The osteopromoting factor of the bone graft materials is one of the foremost points that you must consider when choosing the right product. It is an advanced technology that only a few companies in the world are able to produce. Ti-oss® exhibits unique fish-fin-like structures on its surface and it is the secret of the osteopromoting factor of Ti-oss®.

Thank you very
much for your
time!

Thank
you



Chiyewon

Chiyewon Co., Ltd.
8F, Gyeonchun-ro, 192, Guri-si,
Gyeonggi-do, 11927, Korea
Phone: +82 (31) 568-1809
Fax: +82 (31) 553-3612
Email: sales2@chiyewon.com