

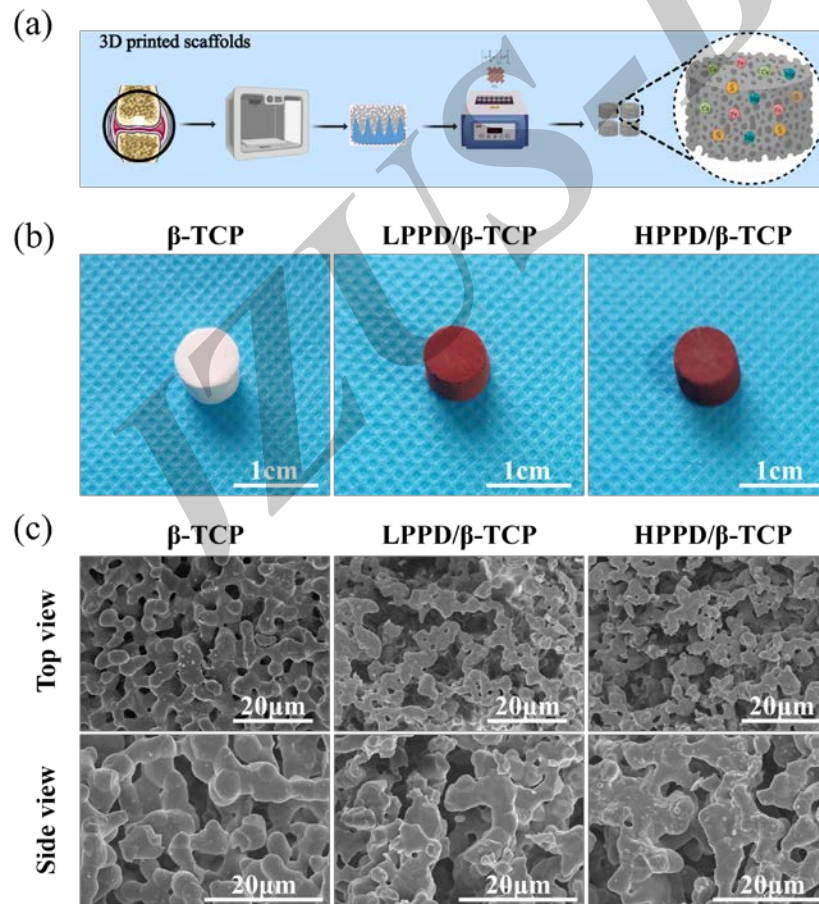
***Cite this as:*** Chenxu WEI, Zongan LI, Xiaoyun LIANG, Yuwei ZHAO, Xingyu ZHU, Haibing HUA, Guobao CHEN, Kunming QIN, Zhipeng CHEN, Changcan SHI, Feng ZHANG, Weidong LI, 2025. Three-dimensional (3D) printing-assisted freeze-casting of processed pyritum-doped  $\beta$ -tricalcium phosphate biomimetic scaffold with angiogenesis and bone regeneration capability. *Journal of Zhejiang University-SCIENCE B*, 26(9):863-880.  
<https://doi.org/10.1631/jzus.B2400340>

# **Three-dimensional (3D) printing-assisted freeze-casting of processed pyritum-doped $\beta$ -tricalcium phosphate biomimetic scaffold with angiogenesis and bone regeneration capability**

**Key words:** Bone defect, Processed pyritum, Three-dimensional (3D) printing-assisted freeze-casting, Angiogenesis, Bone regeneration, VEGF-Notch1-BMP-2-OPN coupling

# Research summary

This article mainly focuses on the 3D printing-assisted freeze-casting of processed pyritum-doped  $\beta$ -TCP biomimetic scaffold with angiogenesis and bone regeneration capability.



# Innovation points

- Scaffold promotes angiogenesis-related cell proliferation and migration in vitro.
- Scaffold promotes osteogenic regeneration of bone defects in vivo.
- Scaffold has good biological activity and promotes angiogenesis and osteogenesis through VEGF-Notch1-BMP-2-OPN coupling, accelerating the bone repair process.

