Electronic Supplementary Material (ESI) for Biomaterials Science. This journal is © The Royal Society of Chemistry 2023

## In situ titanium phosphate formation on titanium implant as an ultrahigh linking with nano-hydroxyapatite coating for rapid osseointegration

Ziming Liao<sup>1</sup>, Luyao Zhang<sup>1</sup>, Weiwei Lan<sup>1,2</sup>, Jingjing Du<sup>1,2,3</sup>, Yinchun Hu<sup>1,2</sup>, Yan Wei<sup>1,2\*</sup>, Ruiqiang Hang<sup>4\*</sup>, Weiyi Chen<sup>1,2</sup>, Di Huang<sup>1,2\*</sup>

- <sup>1</sup> Research Center for Nano-Biomaterials & Regenerative Medicine, Department of Biomedical Engineering, College of Biomedical Engineering, Taiyuan University of Technology, Taiyuan 030024, China
- <sup>2</sup> Shanxi-Zheda Institute of Advanced Materials and Chemical Engineering, Taiyuan 030060, China
- <sup>3</sup> Analytical & Testing Center, Hainan University, Haikou 570028, China
- <sup>4</sup> Shanxi Key Laboratory of Biomedical Metal Materials, College of Materials Science and Engineering, Taiyuan University of Technology, Taiyuan 030024, China Corresponding to: Telephone: 86-351-3176650; E-mail: huangjw2067@163.com (D. Huang), weiyan@tyut.edu.cn (Y. Wei), hangruiqiang@tyut.edu.cn (R. Hang)

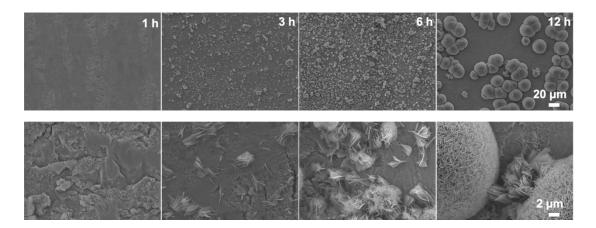
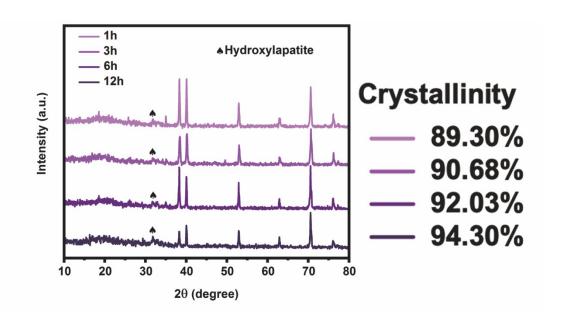


Figure S1. The formation process of titanium phosphate coating.



**Figure S2.** XRD images of TiP-Ca coatings with different fabrication times and corresponding crystallinity of HA.

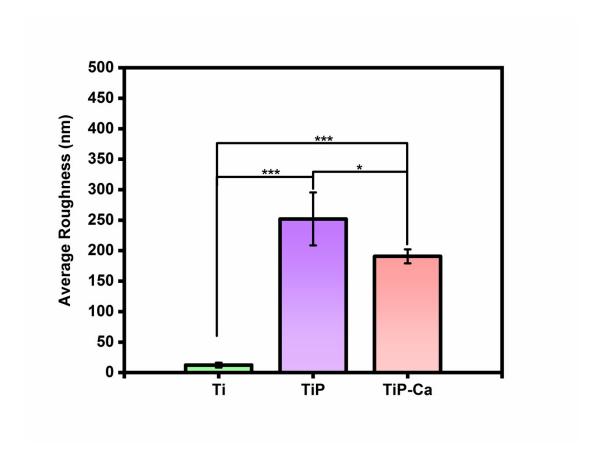


Figure S3. Average roughness of the samples tested by AFM.