

## Supporting Information for

### Polydopamine-induced nanocomposite Ag/CaP coatings on titania nanotubes surface for antibacterial and osteointegration function

Ming Li <sup>a</sup>, Qian Liu <sup>a</sup>, Zhaojun Jia <sup>a</sup>, Xuchen Xu <sup>a</sup>, Yuying Shi <sup>a</sup>, Yan Cheng<sup>a\*</sup>, Yufeng Zheng<sup>a,b</sup>

<sup>a</sup>Center for Biomedical Materials and Tissue Engineering, Academy for Advanced Interdisciplinary Studies, Peking University, Beijing 100871, People's Republic of China.

<sup>b</sup>Department of Materials Science and Engineering, College of Engineering, Peking University, Beijing 100871, People's Republic of China..

\* Corresponding author email: [chengyan@pku.edu.cn](mailto:chengyan@pku.edu.cn)

#### 1. Materials and Methods

XRD analysis of the samples was conducted by using a Rigaku DMAX 2400 diffractometer with CuK $\alpha$  radiation ( $\lambda=1.540598$  Å) at 40 kV. The diffraction angles ( $2\theta$ ) were set between 10° and 80°, incremented with a step size of 4 °/min.

#### 2. Results and discussions

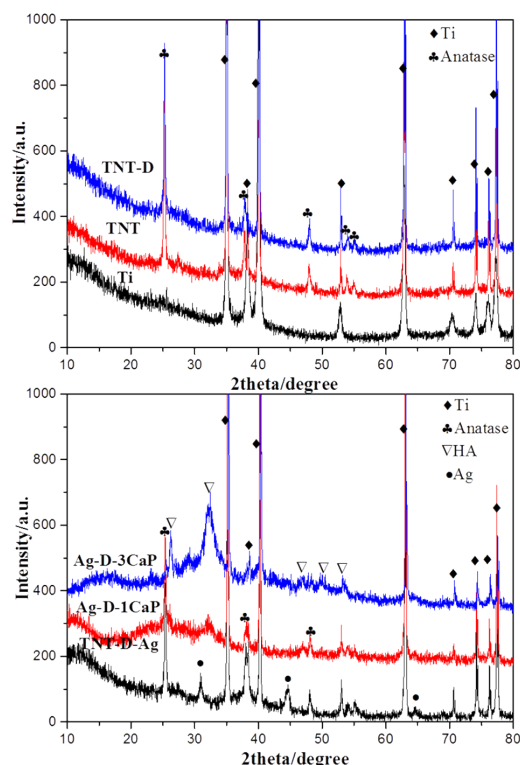


Fig.S1 The XRD patterns of Ti, TNT, TNT-D, TNT-D-Ag, Ag-D-1CaP and Ag-D-3CaP

The pristine and surface-functionalized Ti samples were subjected to XRD analysis. Except for the typical Bragg diffraction peaks of Ti substrate at  $2\theta$  values of

38° and 40°, the ones assigned for anatase (TNT) were also observed after the anodization and heat treatment. And the XRD analysis results of the TNT and TNT-D samples had no obvious differences. The successful reduction of Ag by the dopamine that polymerized on TNT surface was also verified by the observation of XRD peaks at  $2\theta=31.7^\circ$ ,  $44.5^\circ$  and  $64.6^\circ$ , which could be indexed to (100), (200) and (220) planes of Ag<sup>1,2</sup>. The Ag-D-3CaP samples displayed predominantly a hydroxyapatite phase peak around  $31^\circ$ , and the peak intensity became much stronger than that of Ag-D-1CaP samples. To be specifically, the XRD peaks located at  $25.9^\circ$ ,  $31.8^\circ$ ,  $46.7^\circ$ ,  $59.5^\circ$  and  $53.2^\circ$  were assigned to the (002), (211), (222), (213) and (004) planes of hydroxyapatite, respectively<sup>3</sup>; meanwhile, those broad diffraction peaks suggested the low crystallinity of the deposited hydroxyapatites<sup>4</sup>.

### 3. References

1. D. Philip, *Spectrochim Act A*, 2009, **73**, 374-381.
2. B. Das, S. K. Dash, D. Mandal, T. Ghosh, S. Chattopadhyay, S. Tripathy, S. Das, S. Kumar Dey, D. Das and S. Roy, *Arab J Chem*, 2015.
3. Q. Li, M. Li, P. Zhu and S. Wei, *J Mater Chem*, 2012, **22**, 20257-20265.
4. M. Li, Y. B. Wang, Q. Liu, Q. H. Li, Y. Cheng, Y. F. Zheng, T. F. Xi and S. C. Wei, *J Mater Chem B*, 2013, **1**, 475-484.