

Supplementary information

Strontium delivery on topographical titanium to enhance bioactivity and osseointegration in osteoporotic rats

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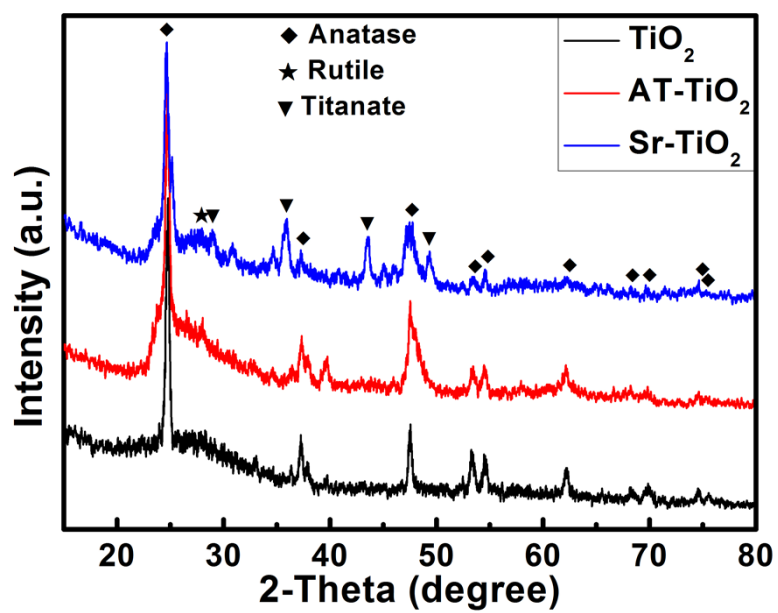
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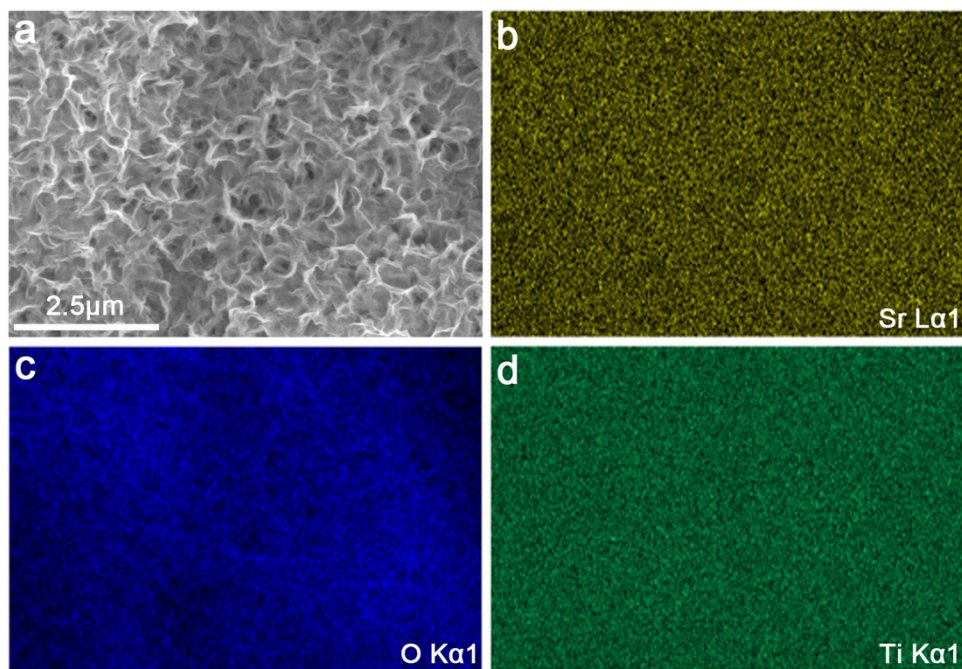
Culture and differentiation of THP-1 cells

THP-1 cells are a human acute monocytic leukemia cell line, which originated from the peripheral blood of a human male with acute monocytic leukemia in the 1980s. This cell line is often chosen over the other cells in the field for studying osteoclasts, not only because it is a monocytic model that retains the functional properties of PBMC, but also because it is a human cell line.¹⁻³

The cell lines obtained from American Type Culture Collection (ATCC, maintained by cell bank of Chinese Academy of Sciences) were cultured in dishes with RPMI 1640 (GIBCO 11875-093) containing 10 % fetal bovine serum (FBS) (Hyclone, USA) and 10 mM HEPES at 37 °C in a humidified atmosphere of 95% air and 5% CO₂. To initiate differentiation, the cells were each plated onto the titanium samples. Four hours after adding 50 ng/ml PMA (Sigma, USA), non-adherent cells were discarded and adherent cells were cultured in the presence of 20 ng/ml M-CSF (PeproTech, USA), 50 ng/ml RANKL (PeproTech, USA) and 10⁻⁷ mol/L Vitamin D3 (Sigma, USA) until osteoclasts appeared. After five days, the cells on the titanium were harvested for further experiments. The cells also underwent the same procedures in 24-well plates, replacing the medium with different titanium extracts. The cells in the regular induction process were the control group, and the cells with pure medium were regarded as the blank group.



Supplementary Figure S1: Surface phase compositions of samples TiO_2 , AT-TiO_2 , and Sr-TiO_2 examined by XRD.



Supplementary Figure S2: Energy-dispersive X-ray spectrometric (EDS) mapping results for Sr-TiO₂ group, showing the homogeneous distribution of Sr (**b**), O (**c**) and Ti (**d**) elements on the corresponding region (**a**).

Notes and references

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