

Electronic Supplementary Information

Effects of Plasma-Generated Nitrogen Functionalities on Upregulation of Osteogenesis of Bone Marrow-Derived Mesenchymal Stem Cells

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EXPERIMENTAL DATA

1. Grazing-incidence Angle X-ray diffraction (GIAXRD) analysis

The grazing-incidence angle X-ray diffraction (GIAXRD, D/max2550HB+/PC) (Cu K α , 1.5406 nm) was operated at 40 kV voltage, 200 mA and a take-off angle of 1°. The scanning rate of the X-ray detector was 1 deg/min. The X-ray beam incident direction onto the surface of the samples was perpendicular to the scanning direction of the plasma beam. Fig. S1 shows that no crystal phase occurs on PArN, PArNH, and PArNH₂. It is because the pyrolytic carbon films on PE, PArN, PArNH, and PArNH₂ have a network structure.

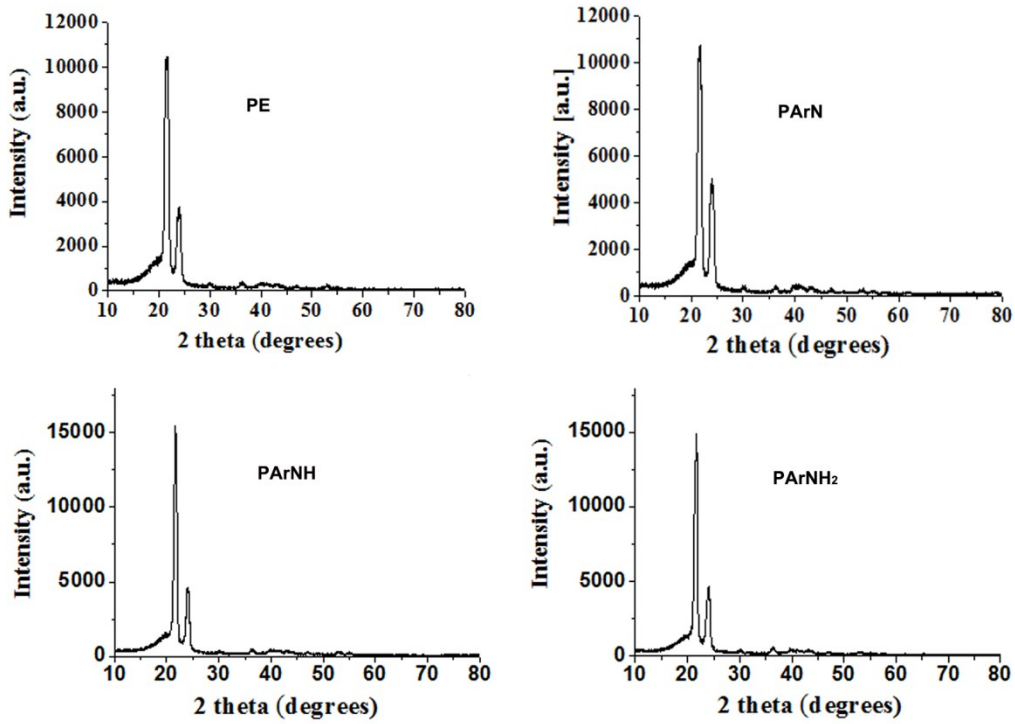


Fig. S1. GIAXRD curves of PE, PArN, PArNH, and PArNH₂

2. Cell proliferation behaviors

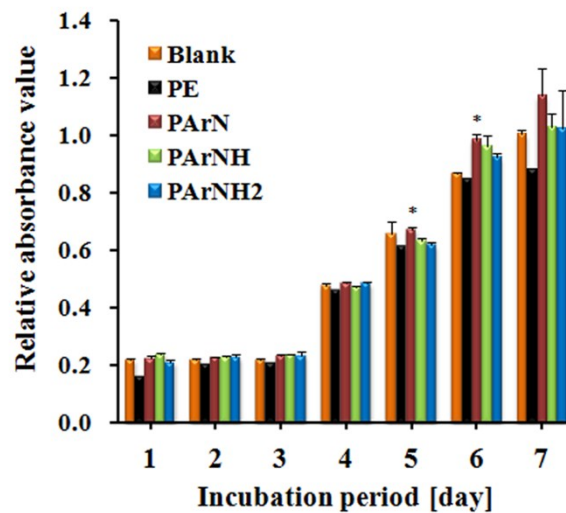


Fig. S2. Cell proliferation of BMSCs incubated on PE, PArN, PArNH, and PArNH₂ using MTT

assay. Asterisk (*) denotes statistical significance compared to the PArNH₂ ($p < 0.05$)

MTT assay (sigma, USA) was performed to determine cell proliferation behaviors of

BMSCs incubated on PE, PArN, PArNH, and PArNH₂. The cells (1×10^5 cells/disc)

were cultured with the specimens for different period, and then the specimens were rinsed twice with sterile PBS and transferred to the fresh 24-well tissue culture plates. Afterwards, MTT assay was performed according to MTT kit protocol (sigma, USA). The absorbance was measured spectrophotometrically at 490 nm. The results shown in Fig. S2 reveal that BMSCs have better cell proliferation on PArN, PArNH, and PArNH₂, relative to PE. Moreover, BMSCs on PArN exhibit better growth than those on PArNH₂ in the later incubation period.