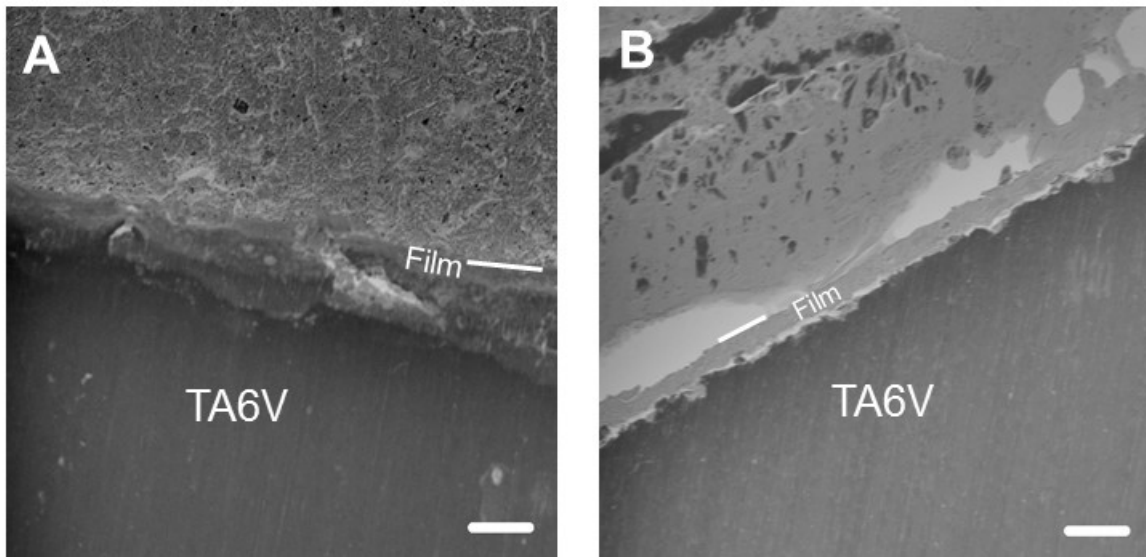
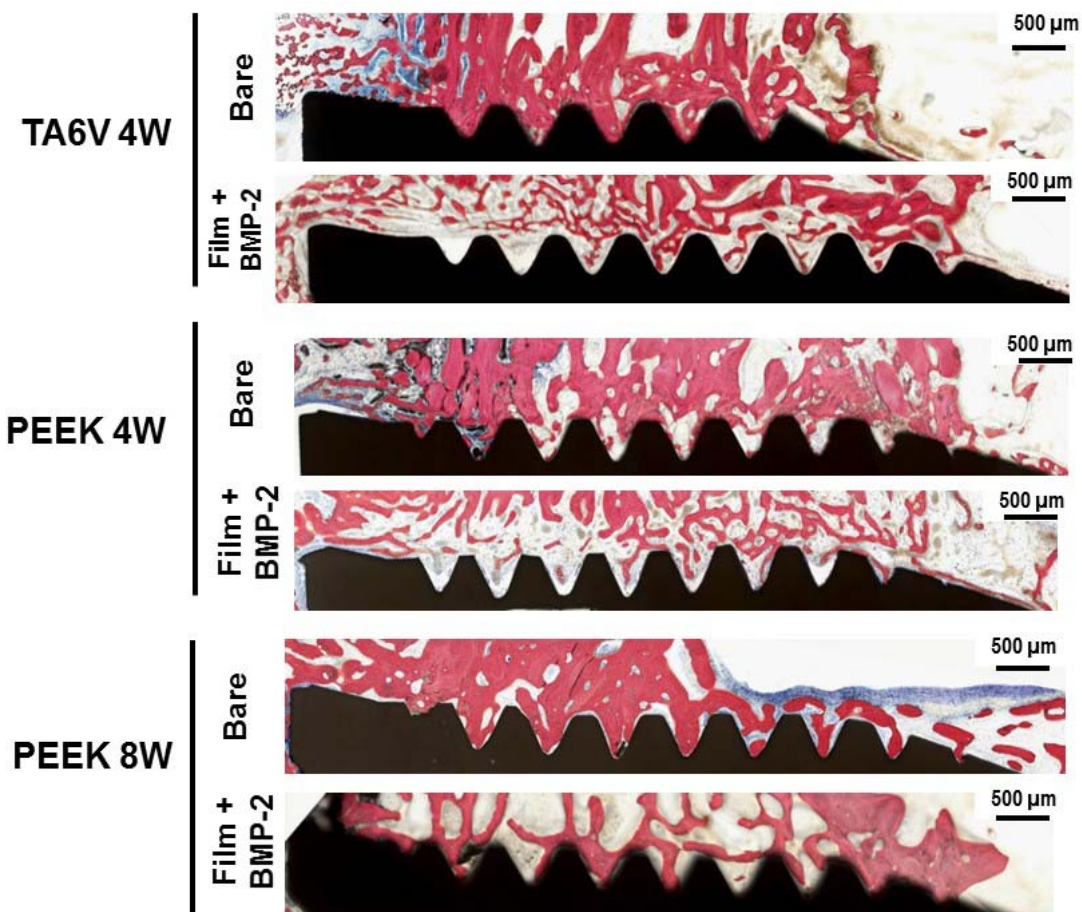


**FIGURE S11.** Illustration of the defined regions of interest for histomorphometrical and  $\mu\text{CT}$  analysis.

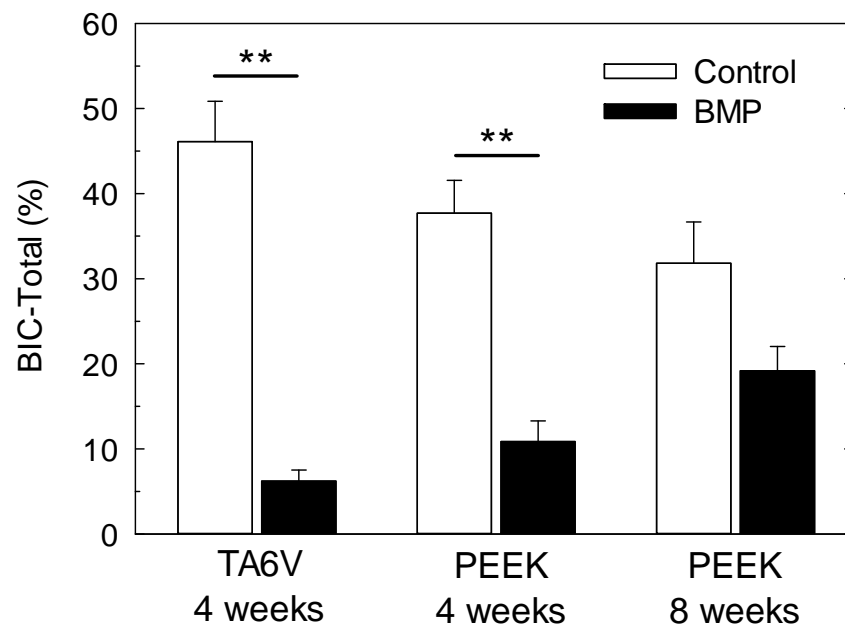
Bone is stained in red and the implant is in black. BIC-Total (%) represents the available implant perimeter in contact to bone normalized over the entire external implant perimeter length (including the screw apex); BIC-Thread was measured only within the thread area. Cancellous bone area per tissue area (BA) was measured both in a region adjacent to the implant (BA-Thread) and at a distance of 100  $\mu\text{m}$  away from the thread area (BA-Periph).



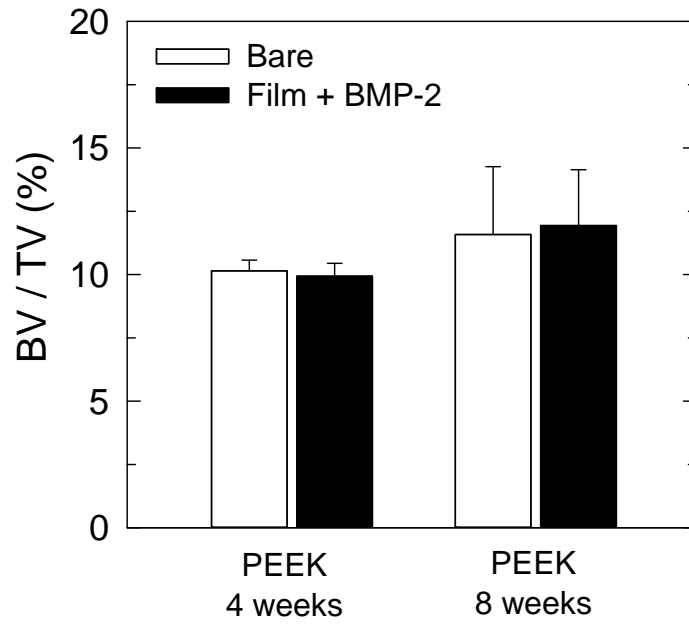
**FIGURE S12.** Backscattered Electron (BSE) images of transverse section of titanium implants coated with the BMP-2 loaded polyelectrolyte film after screwing in the rabbit bone (A) external side and (B) internal side of the titanium screw. Scale bar 10 $\mu$ m. The film is visible at the TA6V surface and for more clarity, its upper surface is indicated by a white line.



**FIGURE SI3.** Higher magnification images of the implants observed in Figure 4 (scale bar 500 μm).



**FIGURE SI4.** Histomorphometric analysis of BIC-Total (%) for all the experimental conditions.



**FIGURE SI5.**  $\mu$ CT measurement of the BV/TV inside the total cavity of the PEEK implant at 4 and 8 weeks.