Supplementary information

Protecting electrochemical degradation of pure iron using zinc phosphate coating for biodegradable implant applications

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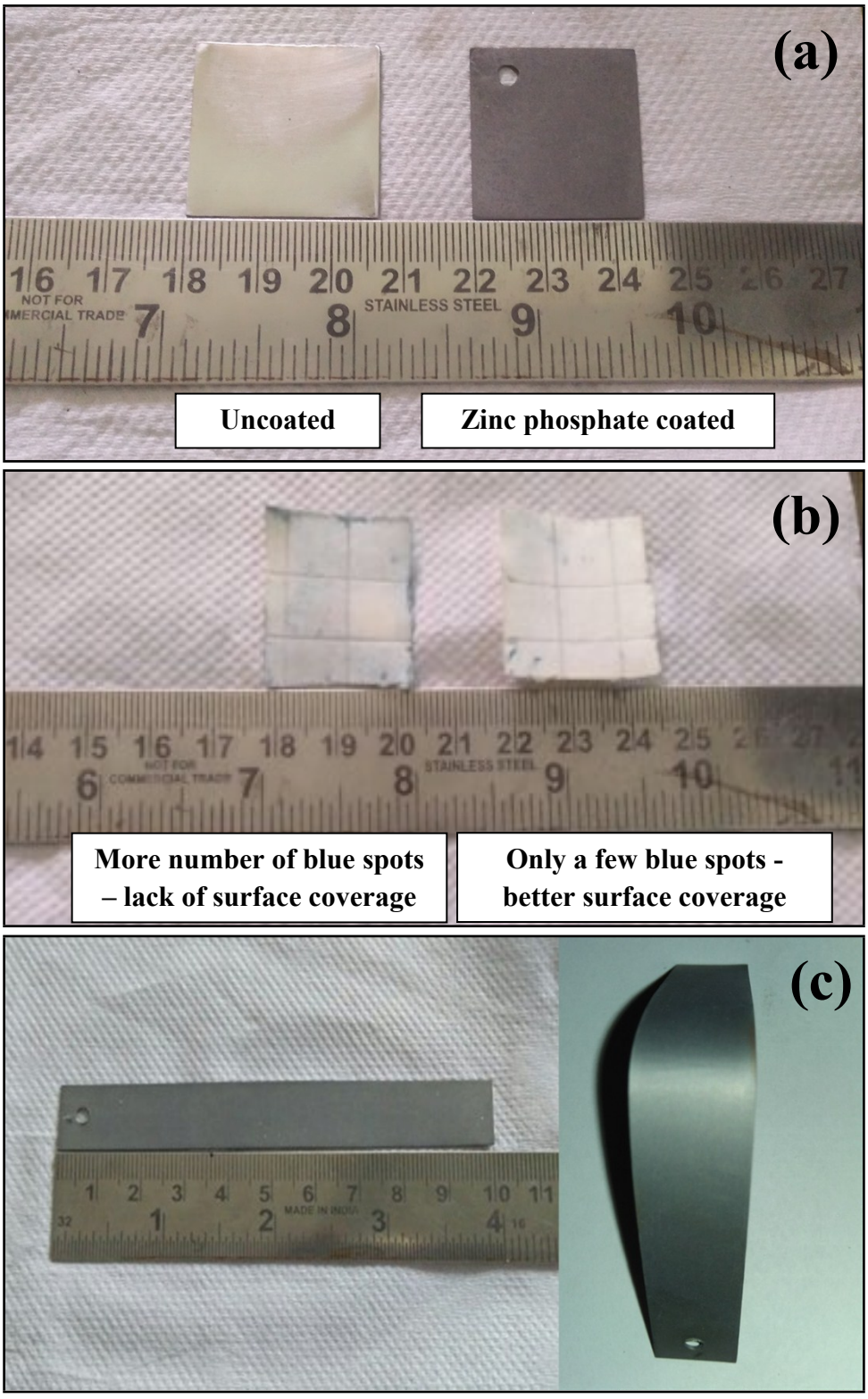

Figure S1. Photographic images of (a) uncoated and zinc phosphate coated iron; (b) filter papers used to test the porosity and coverage of zinc phosphate coated iron samples by Ferroxyl test; and (c) zinc phosphate coated iron strip before and after bending.

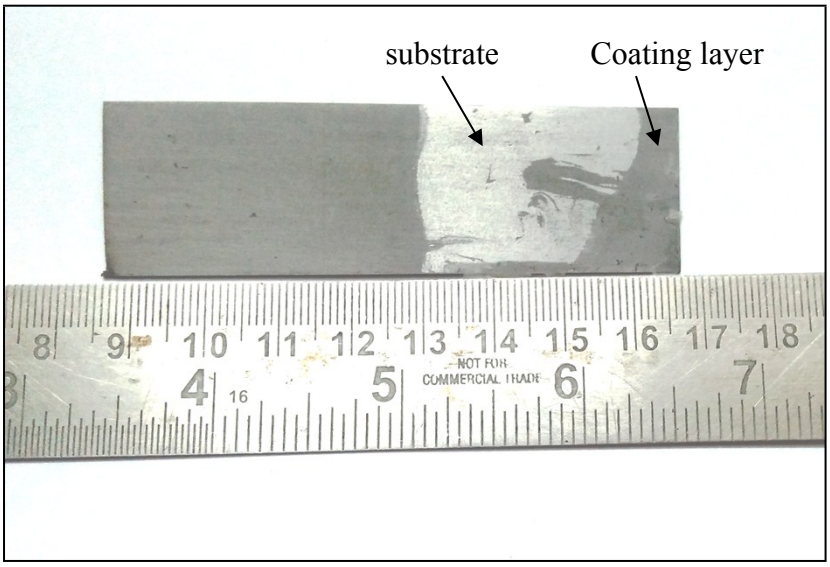

Figure S2. Photograph of zinc phosphate coated pure iron after performing the bond strength test.

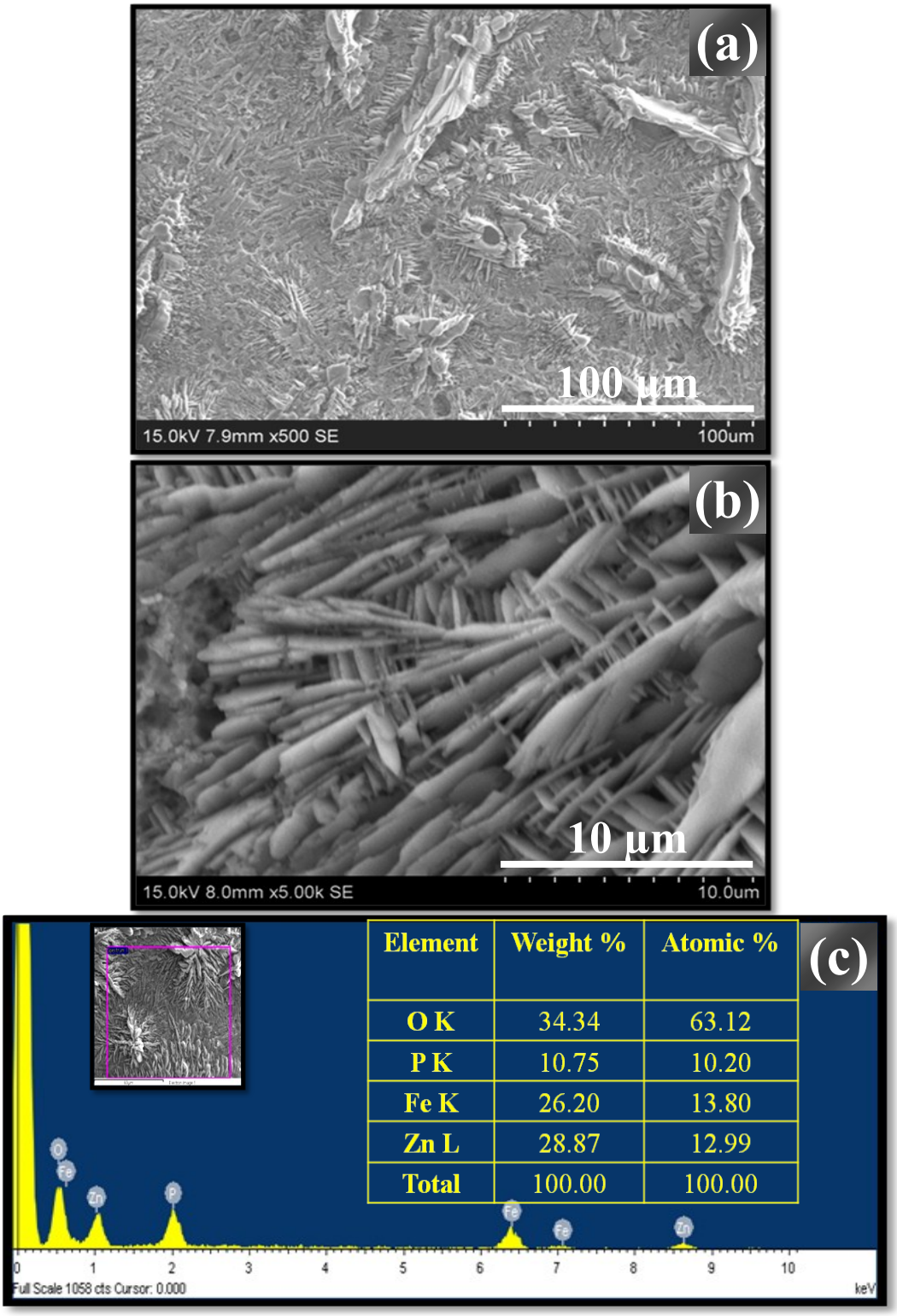

Figure S3.(a,b) Surface morphology of zinc phosphate coating formed on iron; and (c) EDS spectrum chemical composition acquired at its surface.

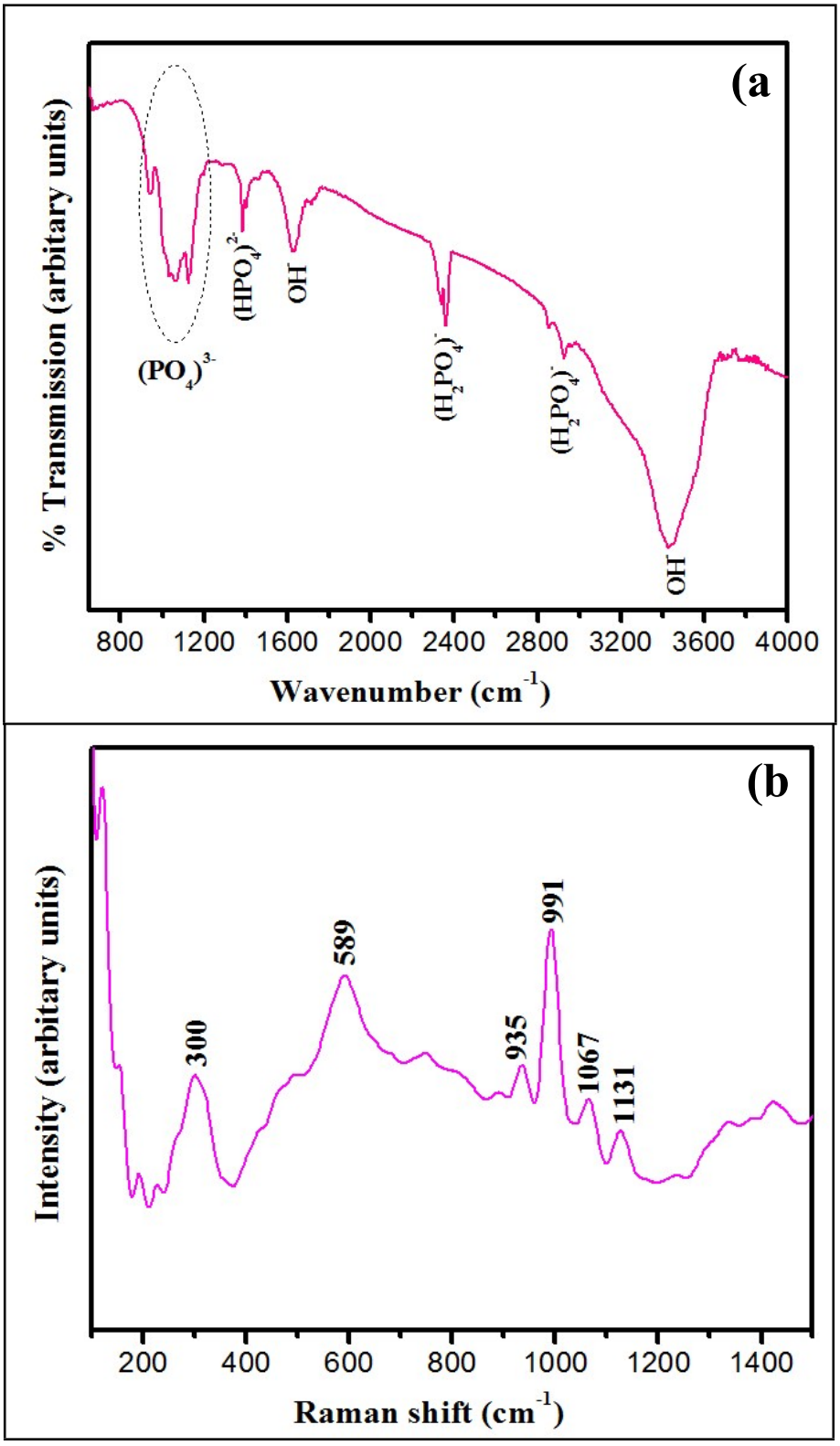

Figure S4. (a) FT-IR; and (b) Raman spectra of zinc phosphate coating formed on iron

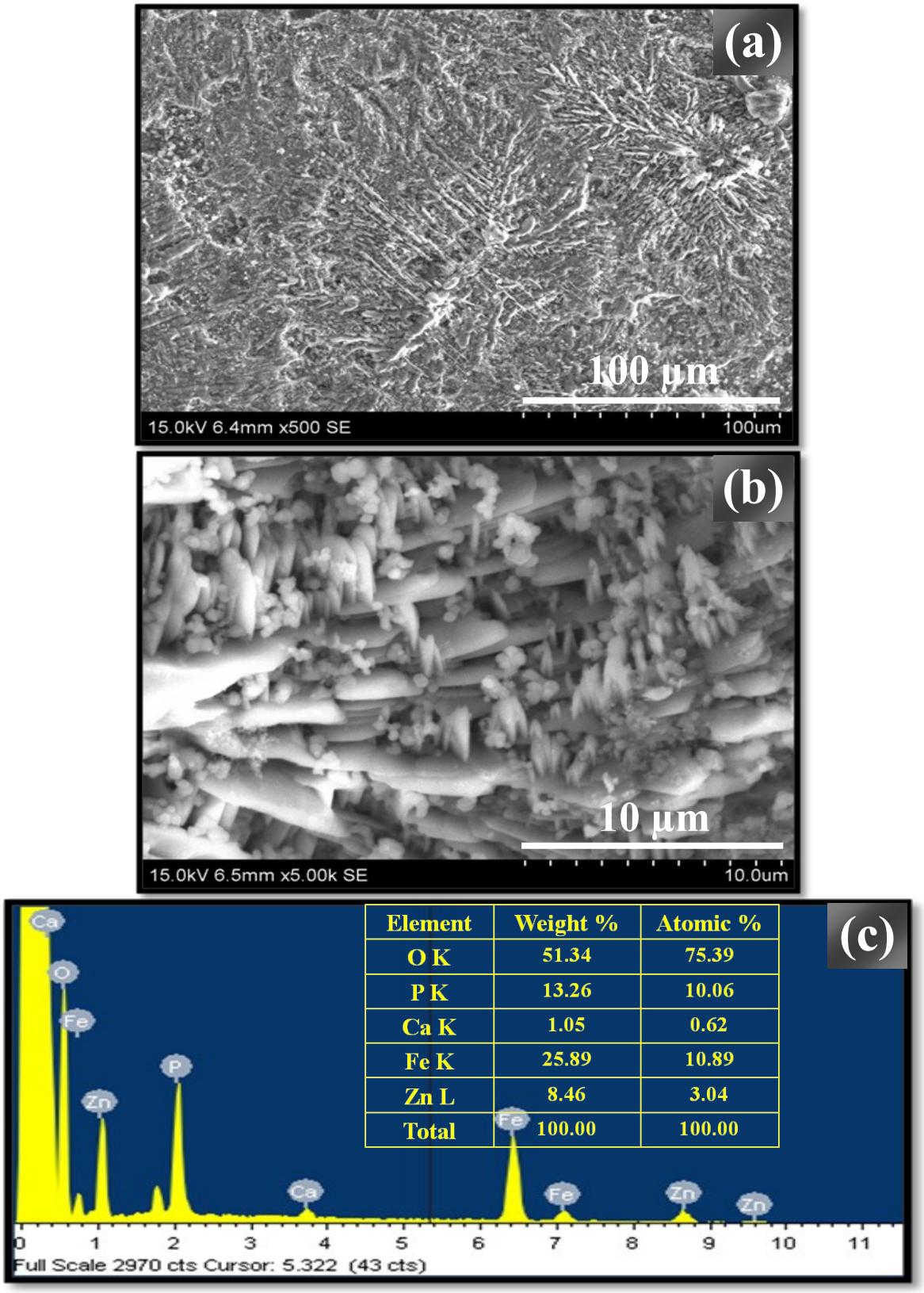

Figure S5. (a, b) Surface morphology of zinc phosphate coated iron; and (c) EDS spectrum and chemical composition acquired at its surface after immersion in HBSS at 37 ± 1 °C for 168 h.

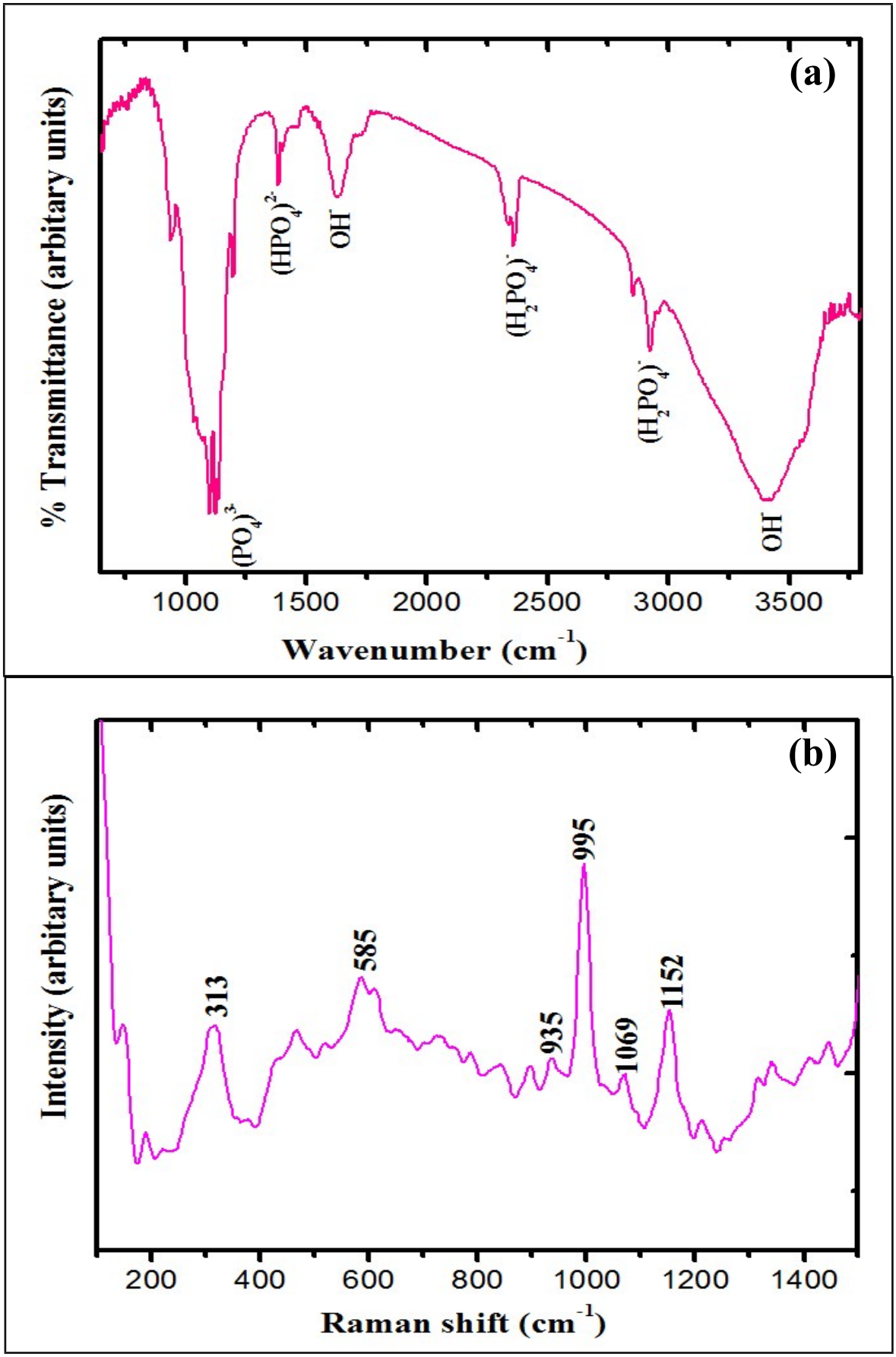

Figure S6. (a) FT-IR; and (b) Raman spectra of zinc phosphate coated iron after immersion in HBSS at 37 ± 1 °C for 168 h

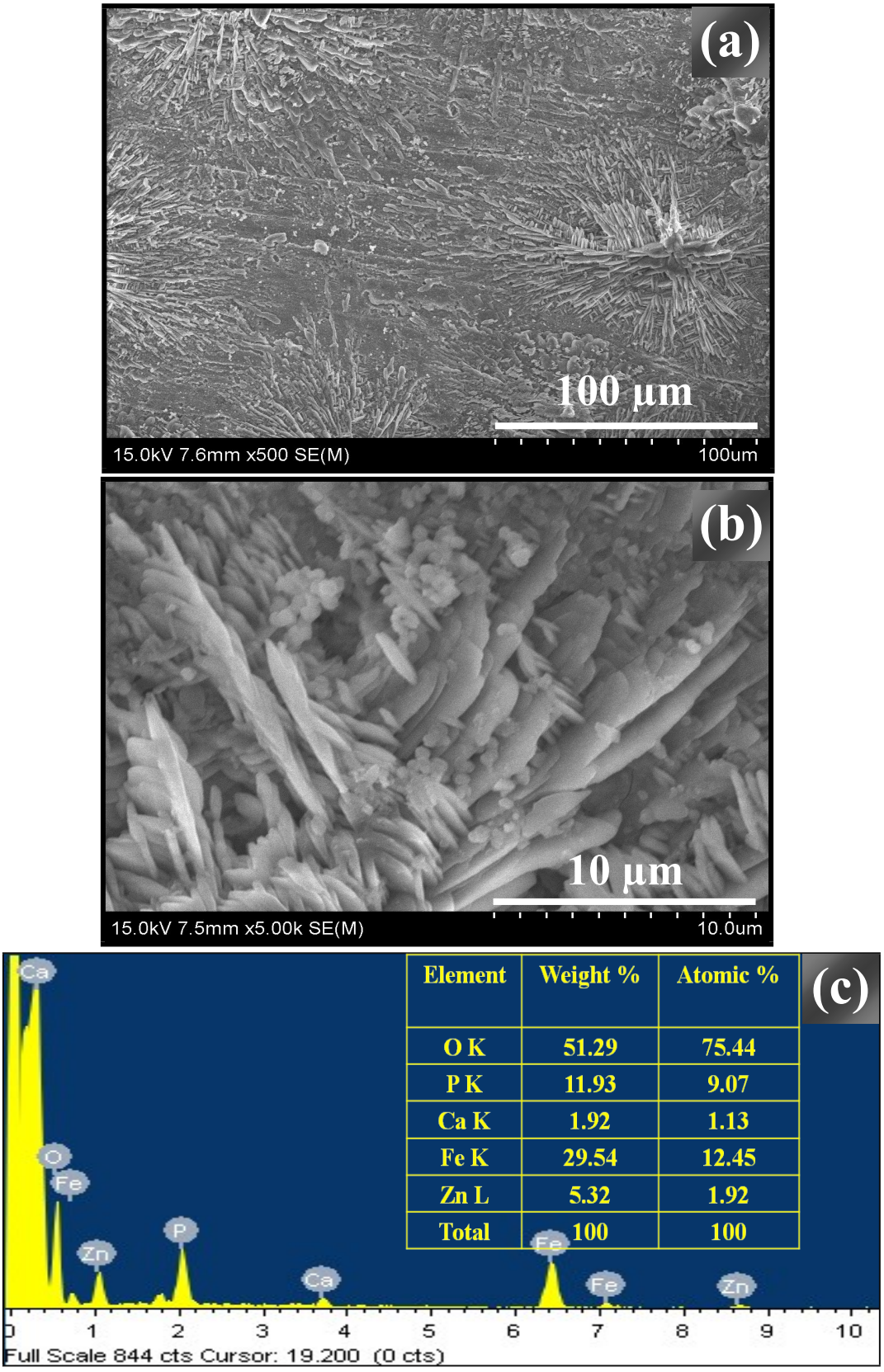

Figure S7. (a,b) Surface morphology of zinc phosphate coated iron;and (c) EDS spectrum and chemical composition acquired at its surface after immersion in SBF at 37 ± 1°C for 240 h

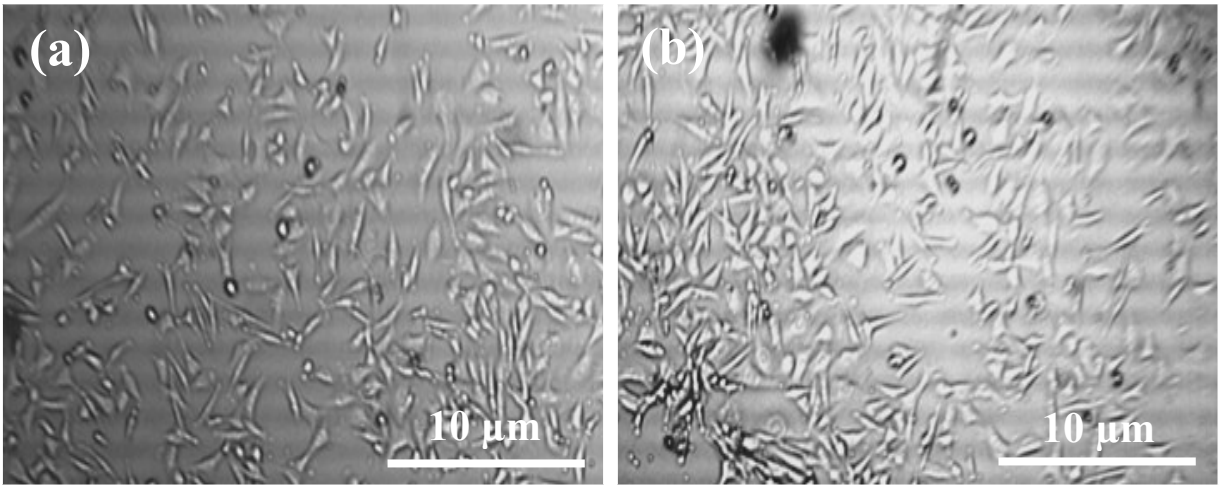

Figure S8. Cell morphology and extent of cell growth after 3 days of cell culture on (a) uncoated pure Fe; and (b) zinc phosphate coated pure Fe

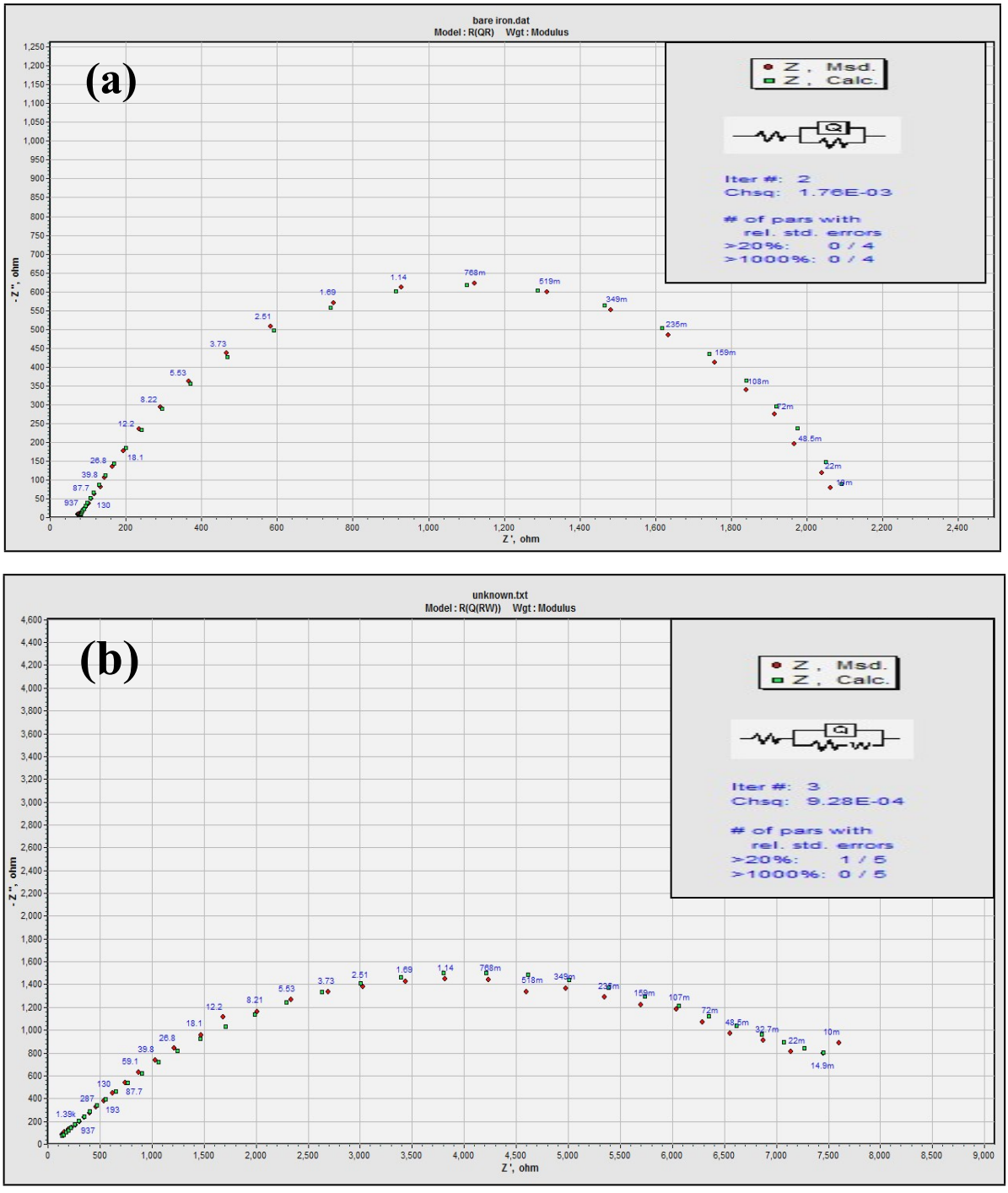

Figure S9: Snap shots of fitting of Nyquist plots using ZSimpWin software: (a) uncoated pure iron; and (b) zinc phosphate coated pure iron