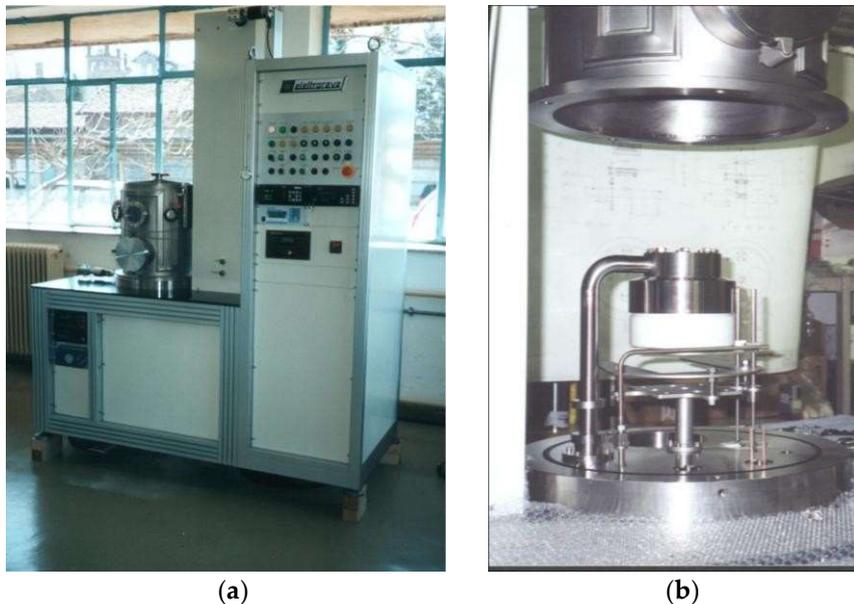
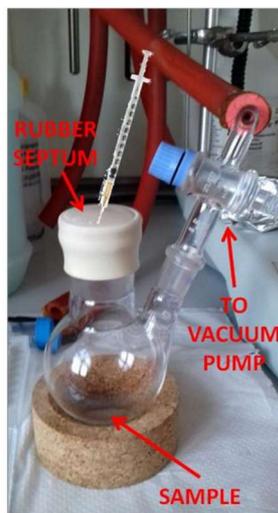


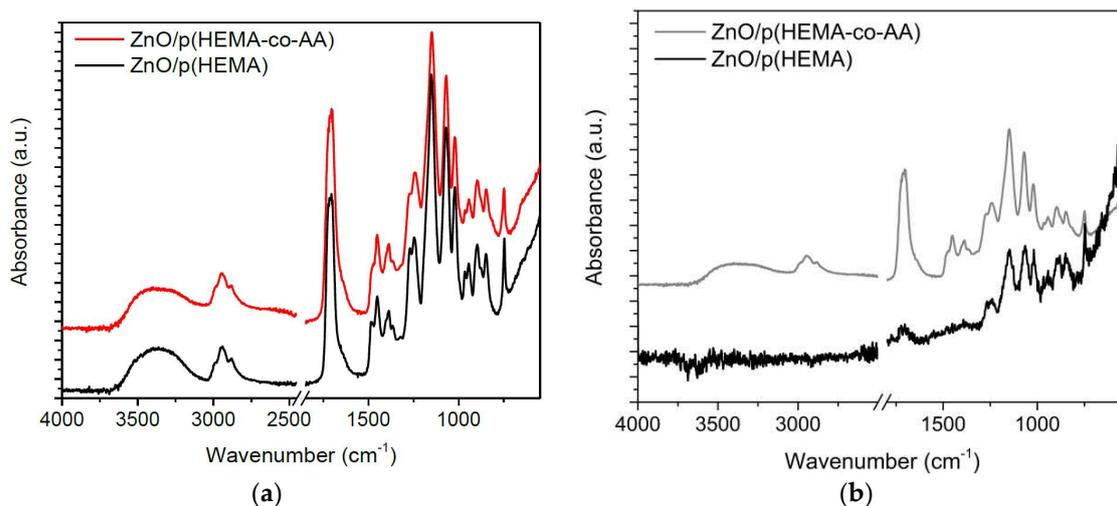
## Supplementary Materials



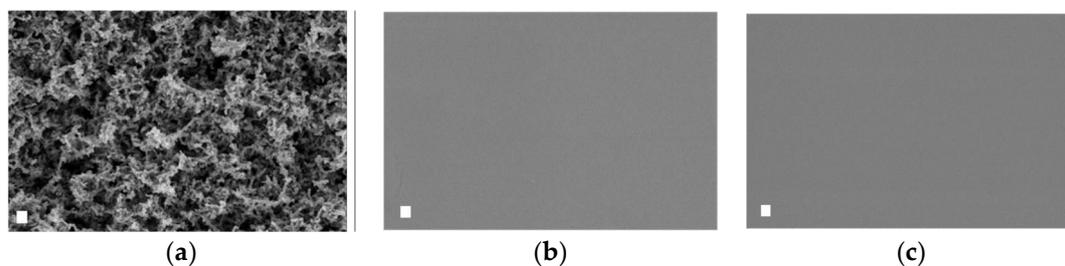
**Figure S1.** (a) Overview of the radio-frequency (RF) magnetron sputtering monotarget system used for the deposition of Zn coatings; (b) View of the inner part of the deposition chamber.



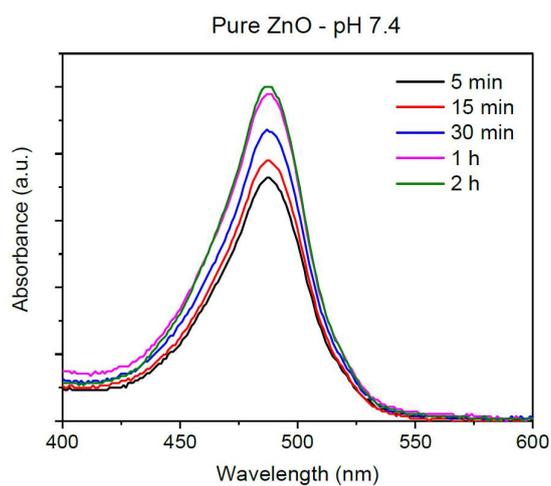
**Figure S2.** Overview of the apparatus used for the preparation of ZnO/polymer bilayer samples by vacuum infiltration method.



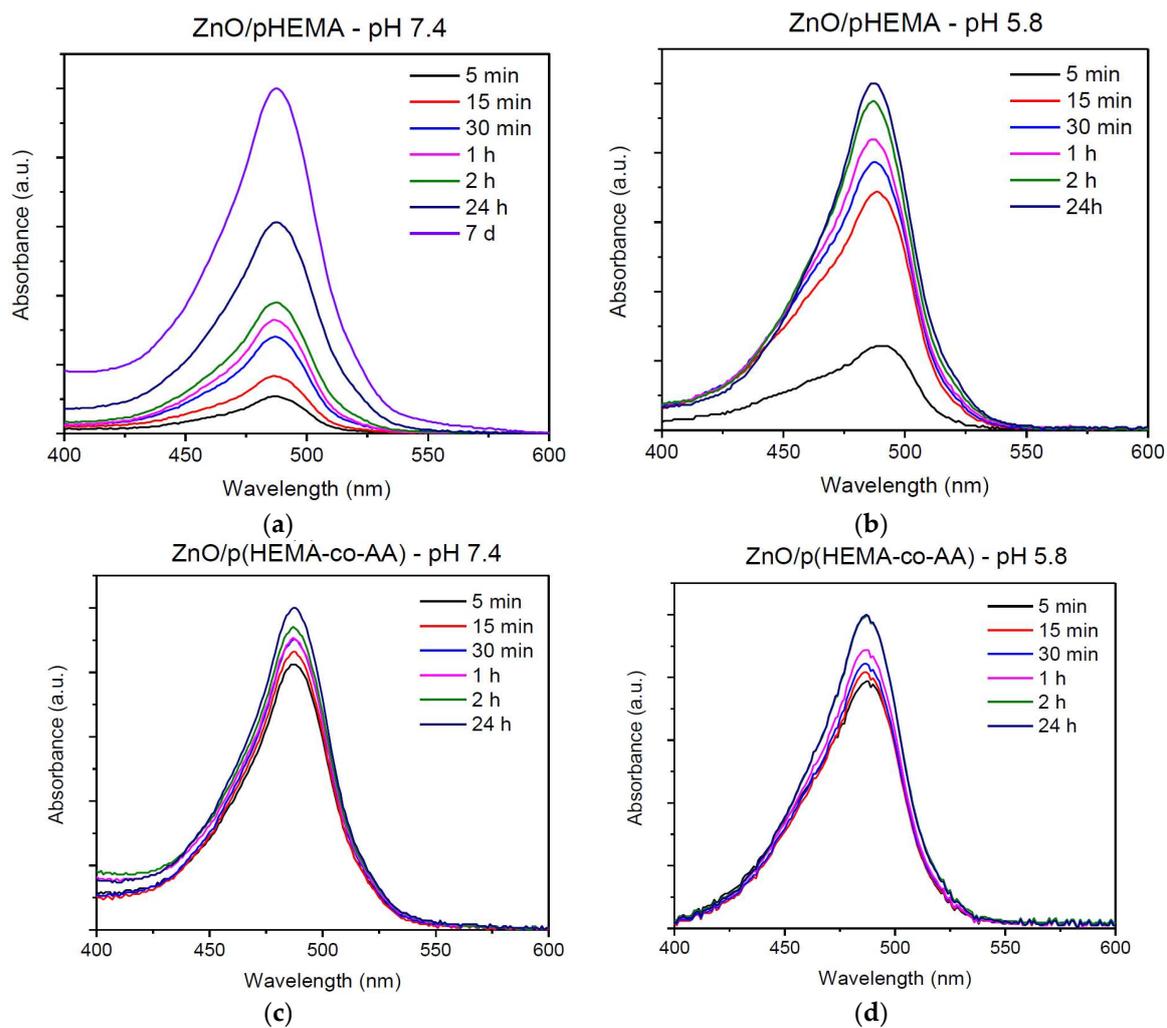
**Figure S3.** FTIR spectra for ZnO/pHEMA and ZnO/p(HEMA-co-AA) samples, obtained by (a) drop-casting and (b) vacuum infiltration method. No additional contributions coming from the porous ZnO layer are detected in both the cases because the characteristic ZnO IR modes fall out from the detection range of the ATR-FTIR setup, i.e., at wavenumber lower than  $525\text{ cm}^{-1}$ .



**Figure S4.** Top-view FESEM images of porous ZnO thin films on Si substrate: (a) before polymer infiltration; (b) after vacuum infiltration of the pHEMA solution; (c) after vacuum infiltration of the p(HEMA-co-AA) solution. Scale bar is 200 nm.



**Figure S5.** UV spectra of calcein release solutions from the mesoporous ZnO matrix, performed in aqueous SBF solution at physiological pH conditions and  $37^\circ\text{C}$ .



**Figure S6.** UV spectra of calcein release solutions for (a) ZnO/pHEMA at pH 7.4, (b) ZnO/pHEMA at pH 5.8, (c) ZnO/p(HEMA-Co-AA) at pH 7.4, (d) ZnO/p(HEMA-Co-AA) at pH 5.8.