Supporting information

Biodegradable and drug-eluting inorganic composites based on mesoporous zinc oxide for urinary stent applications

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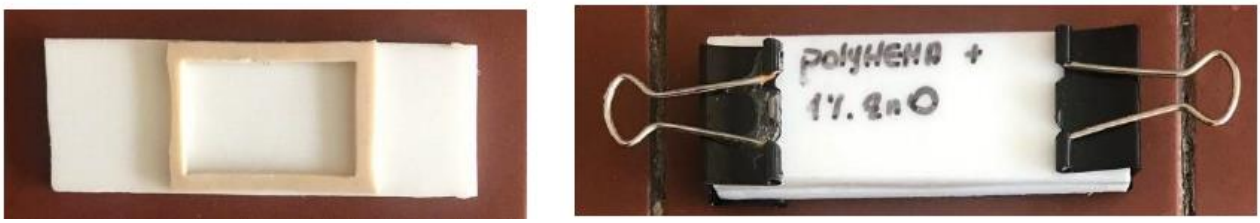


Figure S1. Picture of sample polyHEMA@ZnO_1% which includes the silicon rubber mold and plates of Teflon.

The nitrogen sorption measurement allows for the calculation with the Brunauer-Emmet-Teller (BET) model of the specific surface area, about 19.58 m^2/g. It also resulted some mesopourous-sized porosities of about 4 nm in diameter, calculated by Density Functional Theory (DFT) model applied to the equilibrium desorption branch of the isotherm. These pores, as well as the flower-like morphology, are responsible for the relatively high surface area and also act as preferential adsorption sites of the drugs.

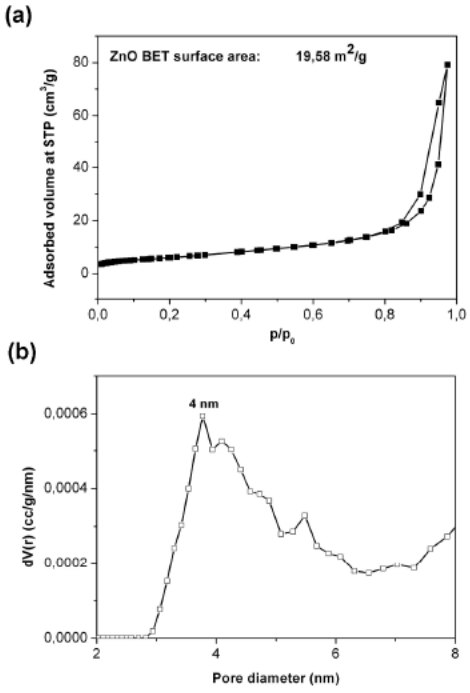


Figure S2. (**a**) Nitrogen sorption isotherm with indication of the calculated BET surface area and (**b**) DFT pore size distribution of the mesoporous ZnO flower-like microparticles.

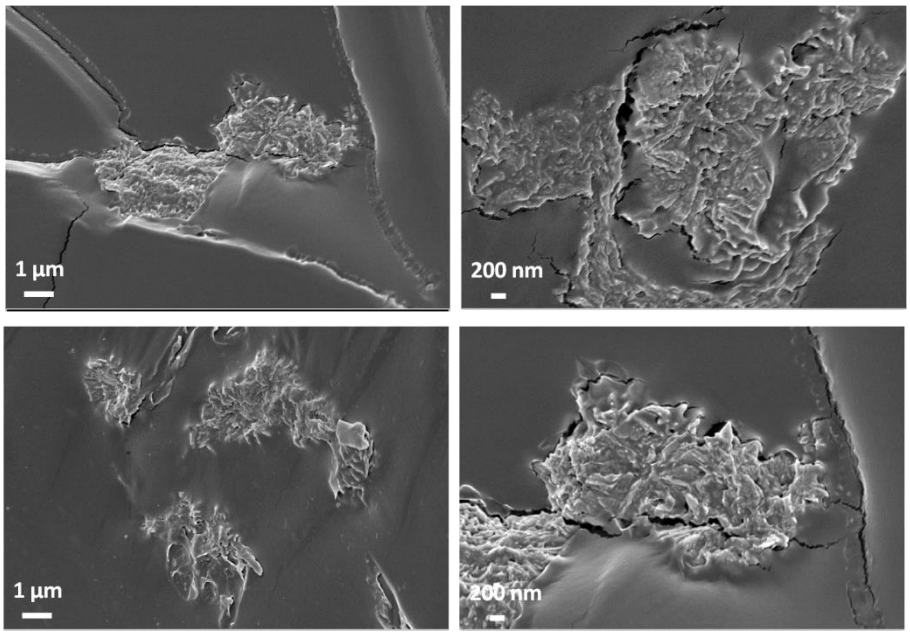


Figure S3. Morphological analysis of poly(HEMA-co-AA)@ZnO composite samples incorporating different ZnO amounts: (a) ZnO_0.1 wt%; (b) ZnO_1 wt%.

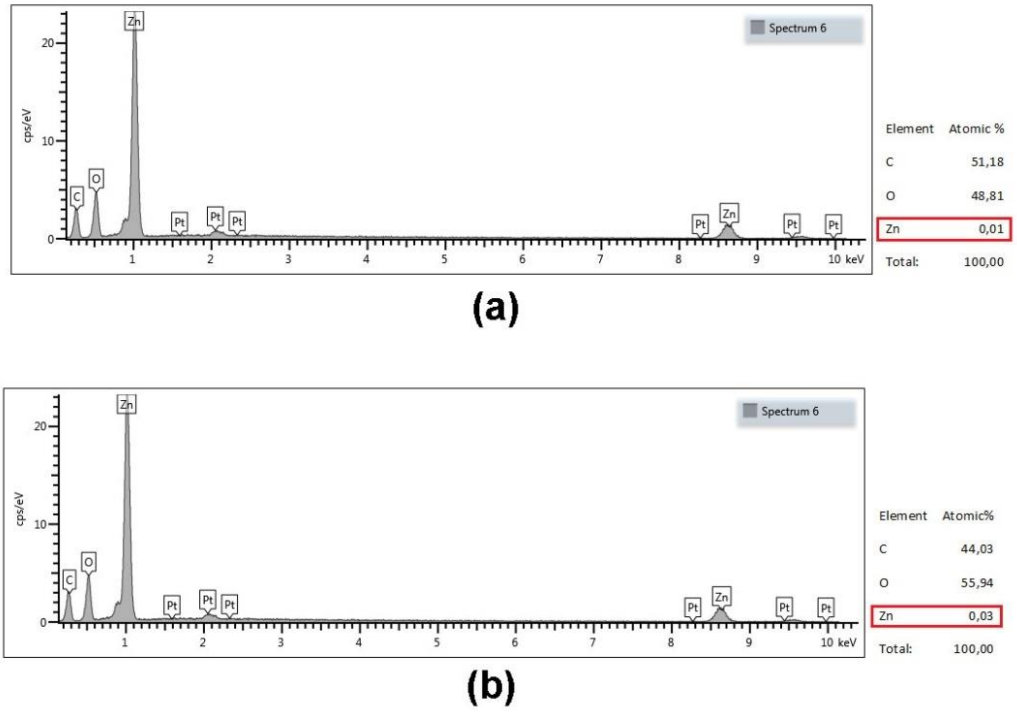


Figure S4. EDX results obtained for (**a**) polyHEMA@ZnO_0.1% and (**b**) polyHEMA@ZnO_1%. Each table summarizes the % atomic weight of each detected element. The detection of Pt is due to metallic coating of the samples needed for FESEM imaging.

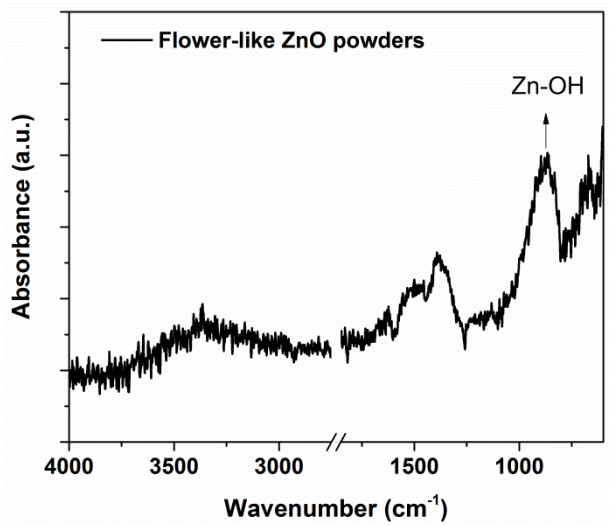


Figure S5. FT-IR spectrum of mesoporous ZnO flower-like powders.

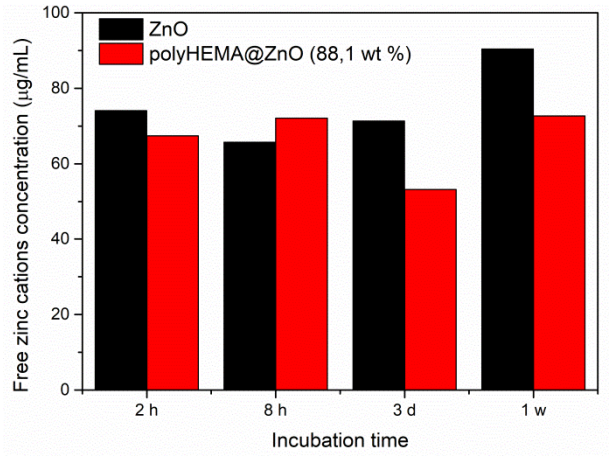
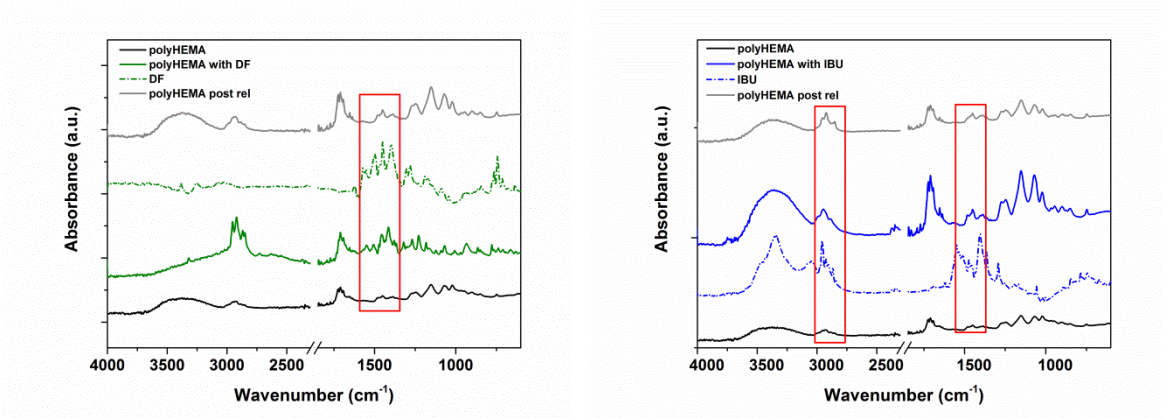
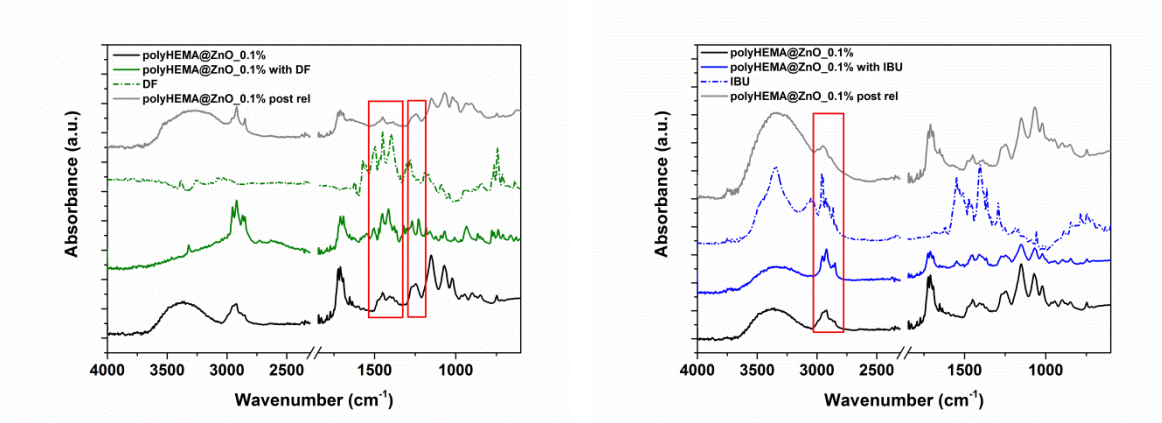


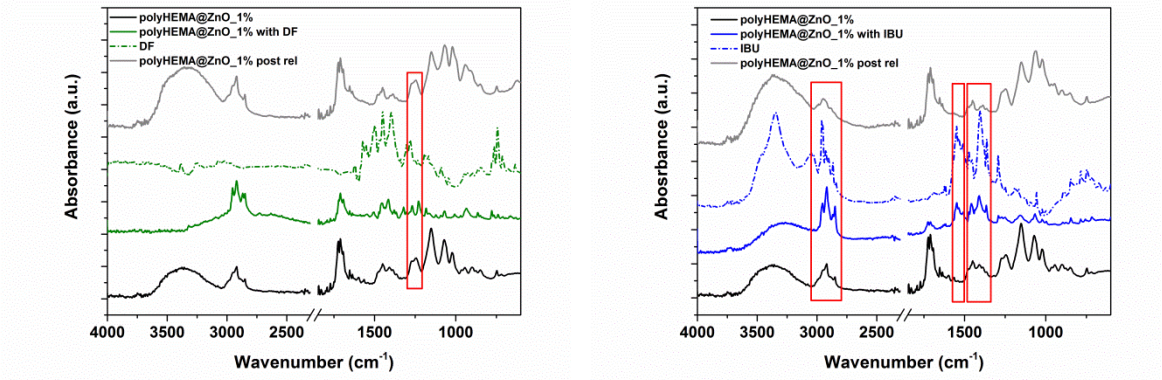
Figure S6. Concentration of zinc cations released from ZnO-based samples in cell culture medium (DMEM ,10 % fetal bovine serum) at different incubation times.



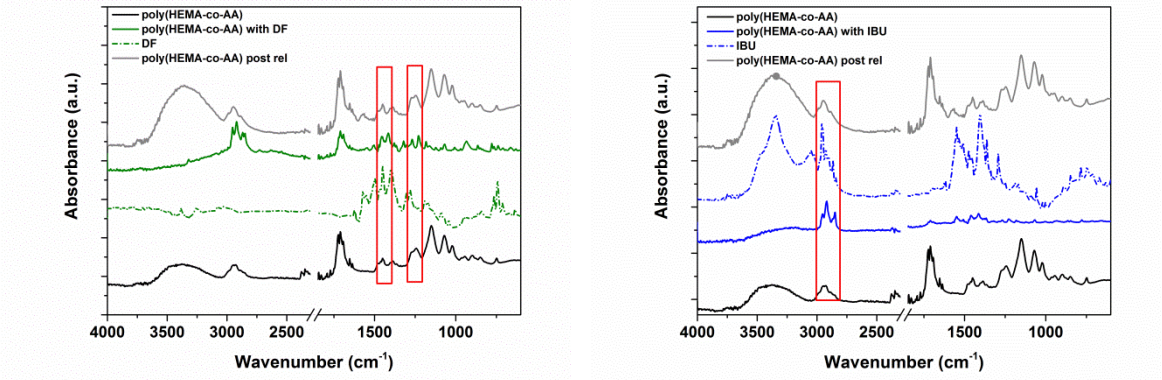
(**a**) (**b**)


polyHEMA@ZnO_0.1%
polyHEMA@ZnO_0.1% with DF
DF
polyHEMA@ZnO_0.1% post rel
Absorbance (a.u.)
4000 3500 3000 2500 1500 1000
Wavenumber (cm-1)
polyHEMA@ZnO_0.1%
polyHEMA@ZnO_0.1% with IBU
IBU
polyHEMA@ZnO_0.1% post rel
Absorbance (a.u.)
4000 3500 3000 2500 1500 1000
Wavenumber (cm-1)

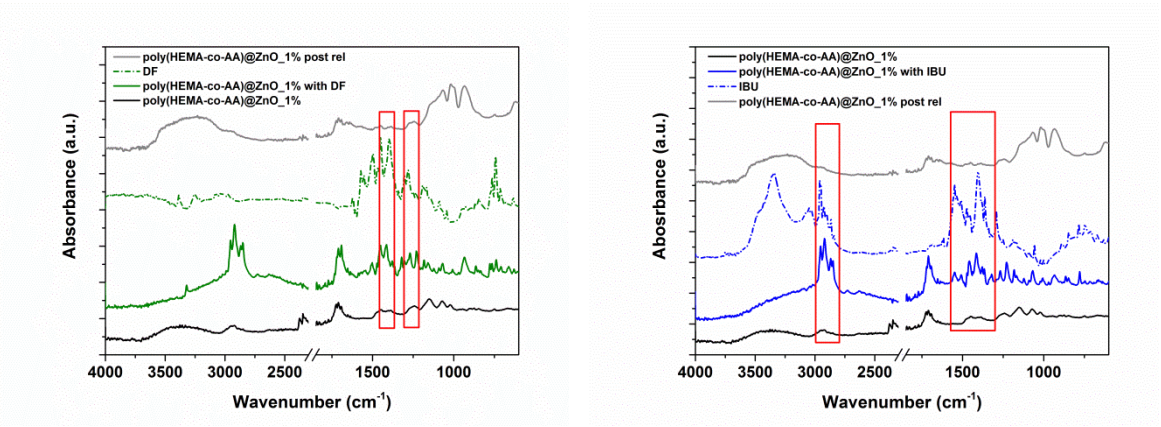
(**c**) (**d**)


polyHEMA@ZnO_1%
polyHEMA@ZnO_1% with DF
DF
polyHEMA@ZnO_1% post rel
Absorbance (a.u.)
4000 3500 3000 2500 1500 1000
Wavenumber (cm-1)
polyHEMA@ZnO_1%
polyHEMA@ZnO_1% with IBU
IBU
polyHEMA@ZnO_1% post rel
Absorbance (a.u.)
4000 3500 3000 2500 1500 1000
Wavenumber (cm-1)

(**e**) (**f**)


poly(HEMA-co-AA)
poly(HEMA-co-AA) with DF
DF
poly(HEMA-co-AA) post rel
Absorbance (a.u.)
4000 3500 3000 2500 1500 1000
Wavenumber (cm-1)
poly(HEMA-co-AA)
poly(HEMA-co-AA) with IBU
IBU
poly(HEMA-co-AA) post rel
Absorbance (a.u.)
4000 3500 3000 2500 1500 1000
Wavenumber (cm-1)

(**g**) (**h**)



(**i**) (**j**)

Figure S7. FT-IR spectra in case of Diclofenac and Ibuprofen release: (**a,b**) polyHEMA; (**c,d**) polyHEMA@ZnO_0.1%; (**e,f**) polyHEMA@ZnO_1%; (**g,h**) poly(HEMA-co-AA); (**i,j**)poly(HEMA-co-AA)@ZnO_1%.