

Supplementary Information

DLS diagrams of size and zeta potential versus concentration and time are presented. Concentration experiments were carried out in order to find the most suitable concentration for Dynamic Light Scattering measurements. Five concentrations were tested and the best concentration was 10mg/L. For this concentration size versus time measurements were carried out in order to see if aggregation takes place as times goes by. From figure S2 it is observed that aggregations are not affected by time.

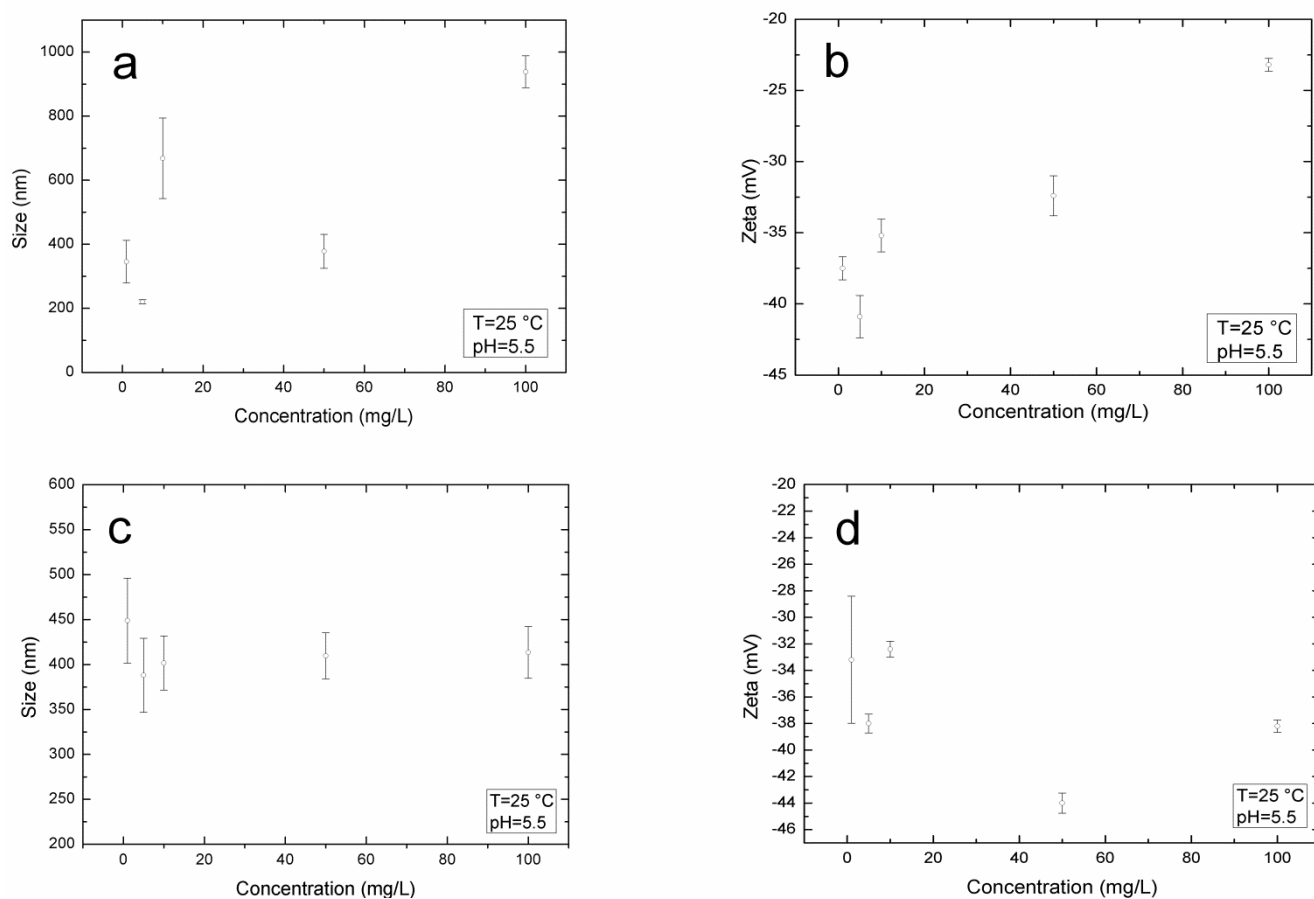


Figure S1. DLS diagrams of size and zeta potential versus Concentration of PGMA microspheres

(a & b) and of PGMA@P(MMA-co-DVB-co-AA) microcontainers (c & d)

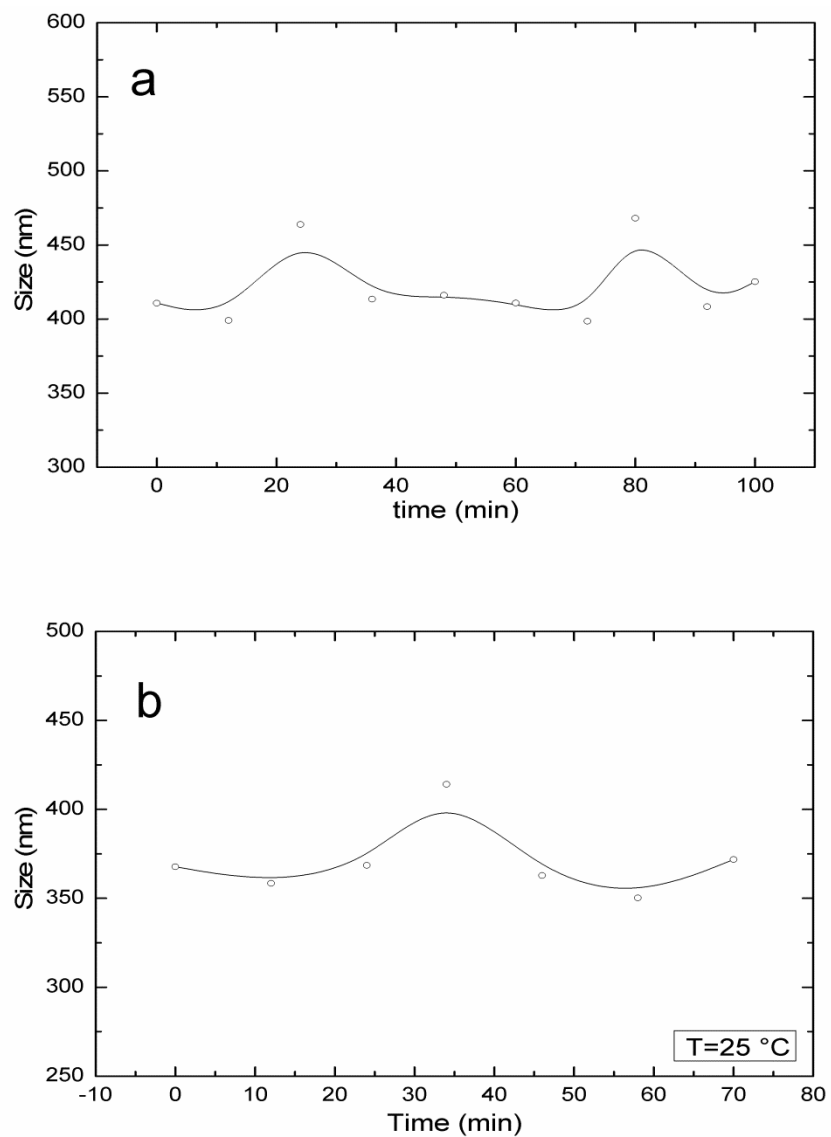
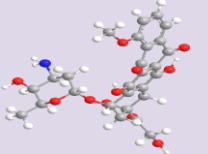
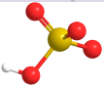
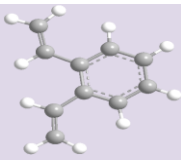
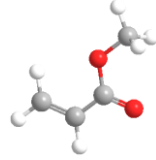
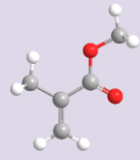
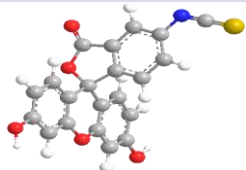
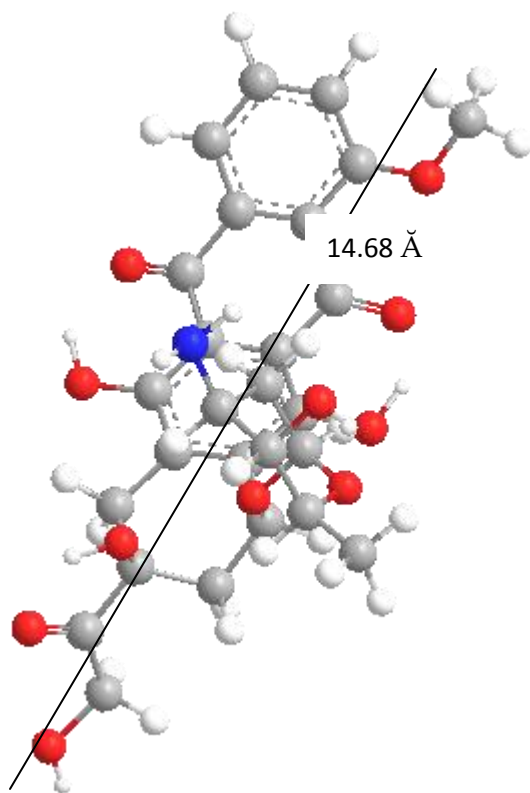


Figure S2. DLS diagrams of size versus time of (a) PGMA microspheres and of (b) PGMA@P(MMA-co-DVB-co-AA) microcontainers

Table S1. Polar Surface and size according to the minimum energy calculations using ChemBio3D

Name	Structure 3D	Polar surface	Size (Å)	Minimum energy (kcal/mol)
Doxorubicin		206, 07	15.5	38.9834
Potassium Persulfate radical		78	4	9.8133
Divinyl Benzene		0	7.5	-2.0411
Acrylic Acid		26.3	5.926	6.7749
Methyl Methacrylate		37.3	6.65	-1.4961
Fitc			88.35	16.5896



Scheme S1. The size of the DOX molecule according the ChemBio3D

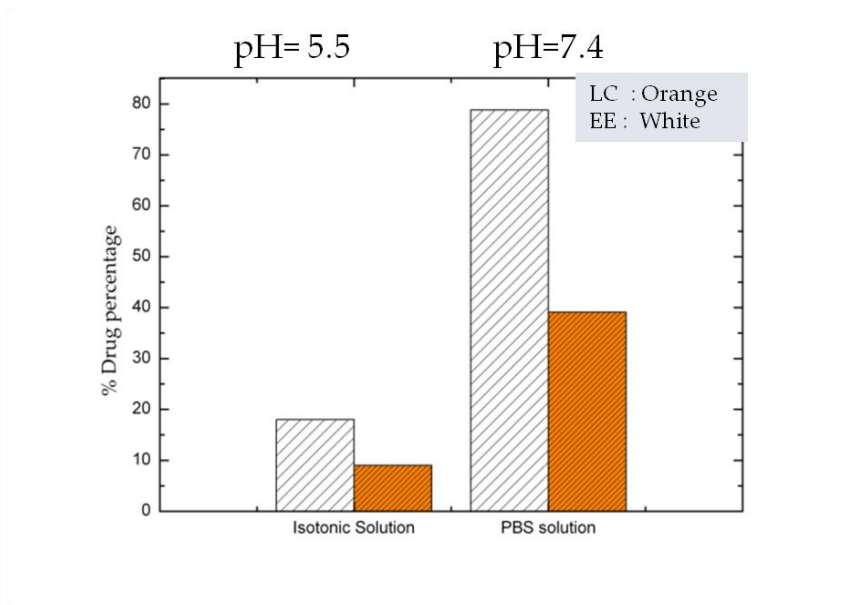


Figure S3. Loading Capacity and encapsulation efficiency under treatment in two different solutions a) PBS solution, b) Isotonic solution (0.9 % in NaCl).

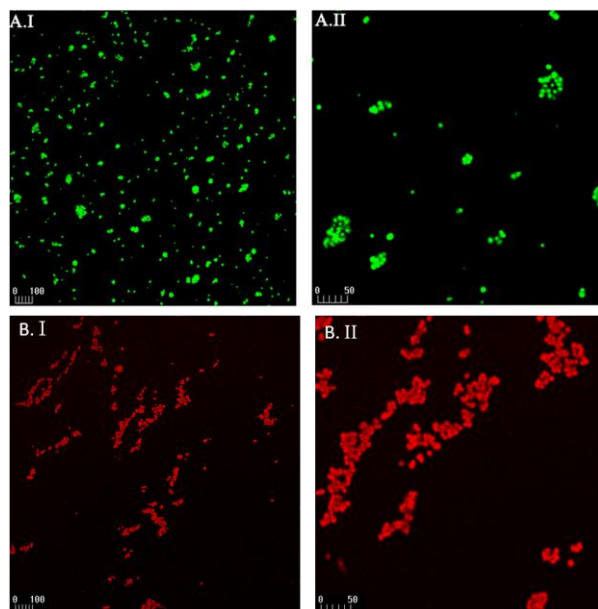


Figure S4. Fluorescent microscopy with A) FITC (A.I, A.II magnified), B)

DOX (B.I, B.II magnified photo)

In the SEM images below we can see the morphological changes of PGMA seeds in different time points after treatment in simulated polymerization conditions.

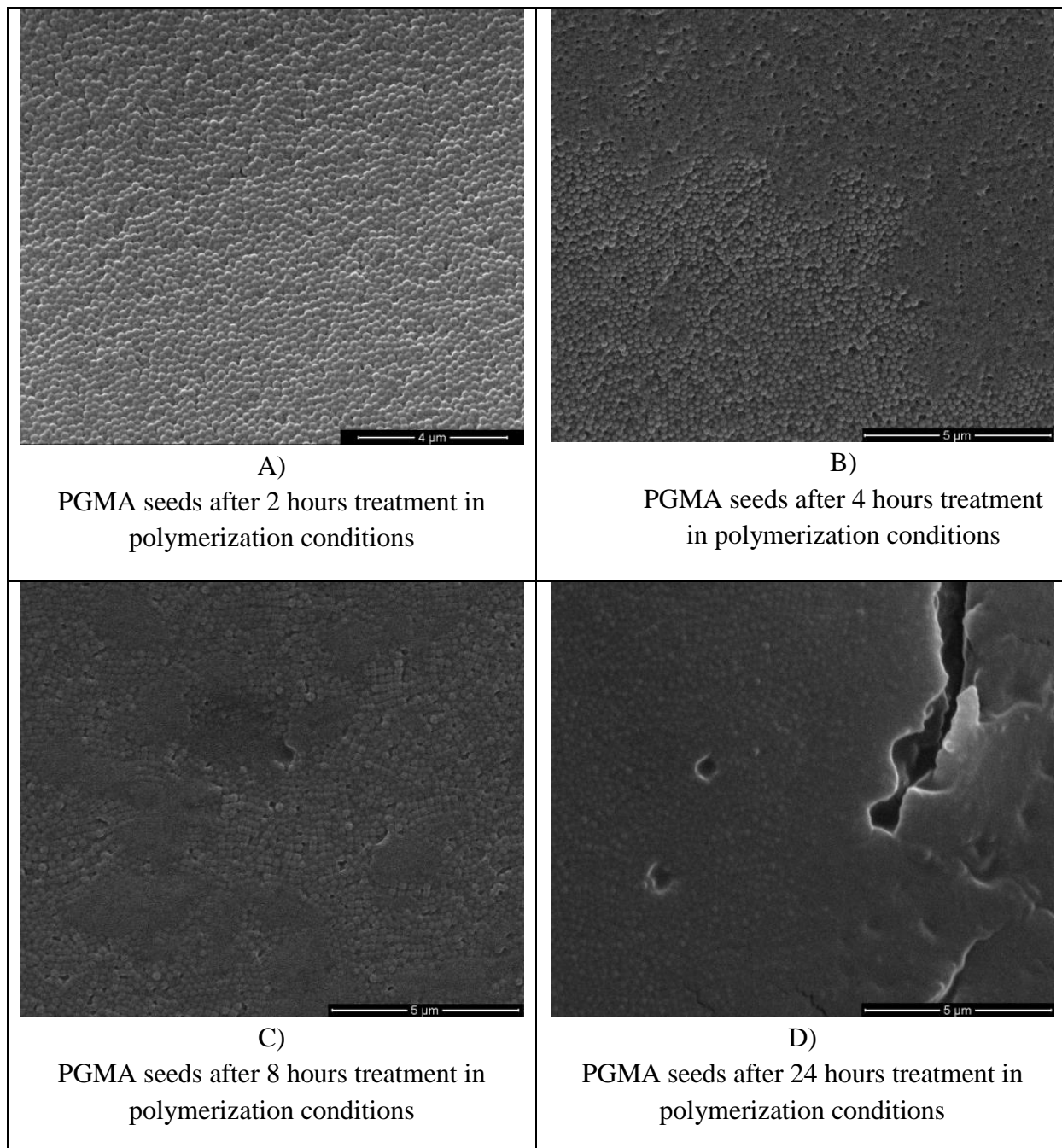


Figure S5. SEM images of PGMA seeds after treatment in solution simulating polymerization conditions

The solubility of free DOX in different temperatures and pHs (pH=4 and at pH=7.4) is presented below. In this experiment different solutions with the same concentration of DOX (0.2 mg/ml) were treated for two hours in two different conditions (pH=4 & 7.4, T=25 °C & 37 °C). According to the figures below, in acidic pH, solubility is not affected by the temperature increase, in contrast to the slightly basic pH, in which we have an increase in absorbance of about 7.3 % indicating a slightly solubility improvement.

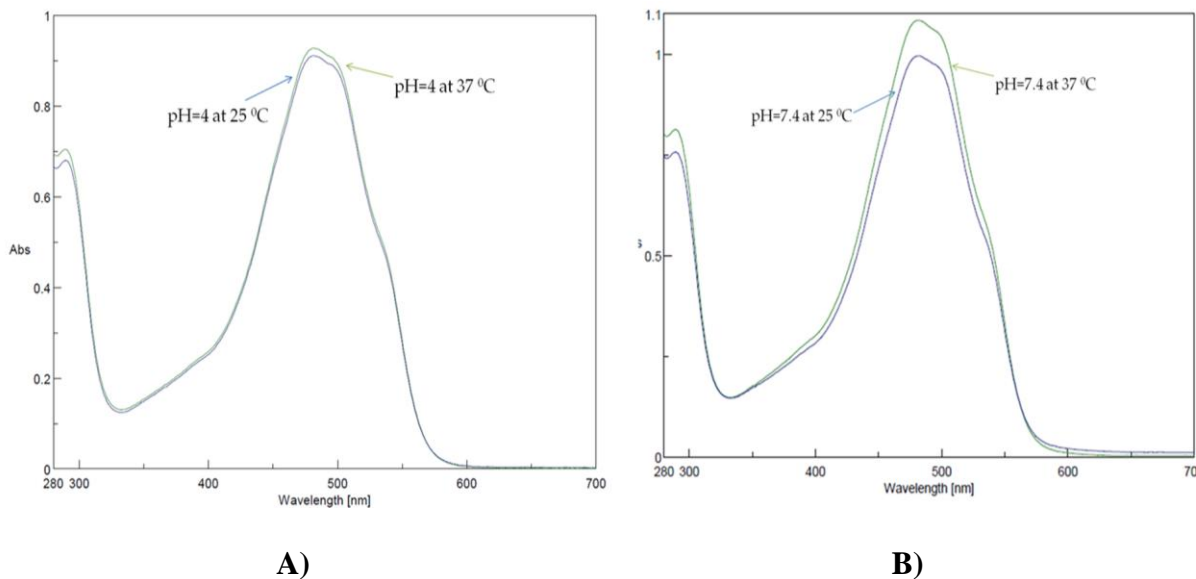


Figure S6. UV-vis spectra of free Dox, A) pH=4, at 25 & 37 °C. B) pH=7.4, at 25 & 37 °C.