

**Supporting Information.**

**Bioinspired Methodology to Fabricate Hydrogel Spheres for  
Multi-applications Using Superhydrophobic Substrates**

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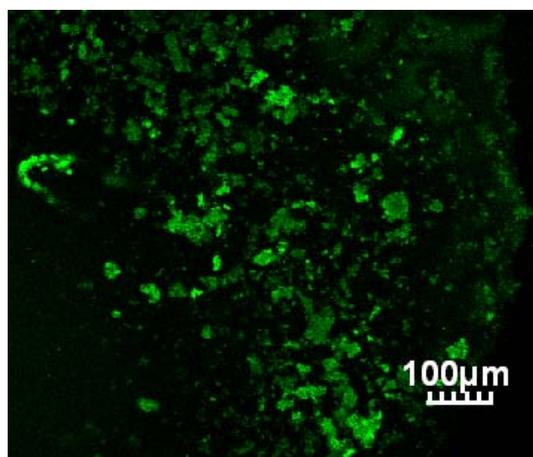


Figure S1: Confocal microscopy image of albumin-FITC encapsulated in an alginate hydrogel sphere. Although some protein aggregates may be observed, one can conclude that the protein is well distributed in the entire volume of the particle.

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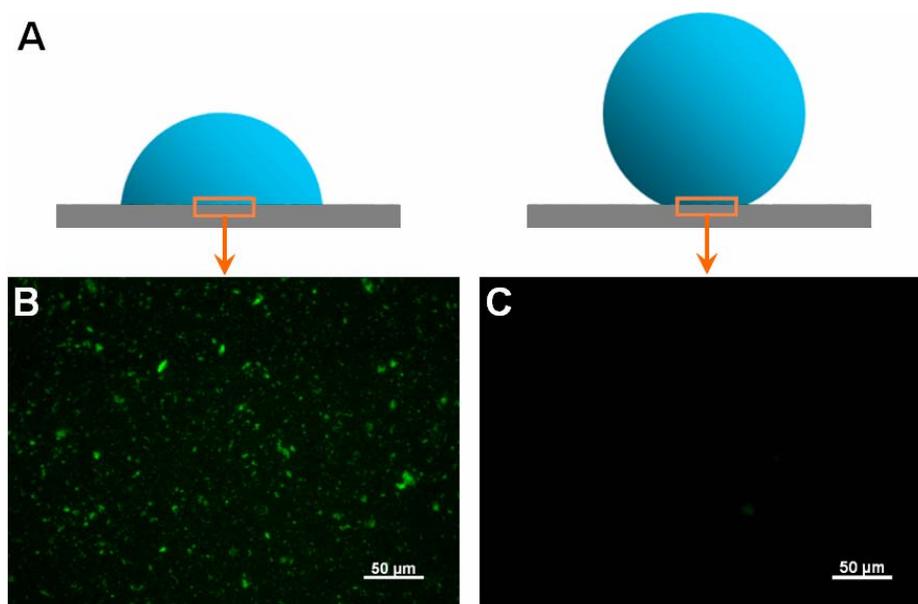


Figure S2: Contamination experiment on the superhydrophobic surface: (A) typical scheme used in evaluating surface contamination; Fluorescent images of remnant albumin-FITC on the smooth (B) and superhydrophobic (C) polystyrene substrates after removing the chitosan hydrogel containing the fluorescent protein from the surface. These results show that there is no visible contamination on the superhydrophobic substrate by the encapsulated protein.

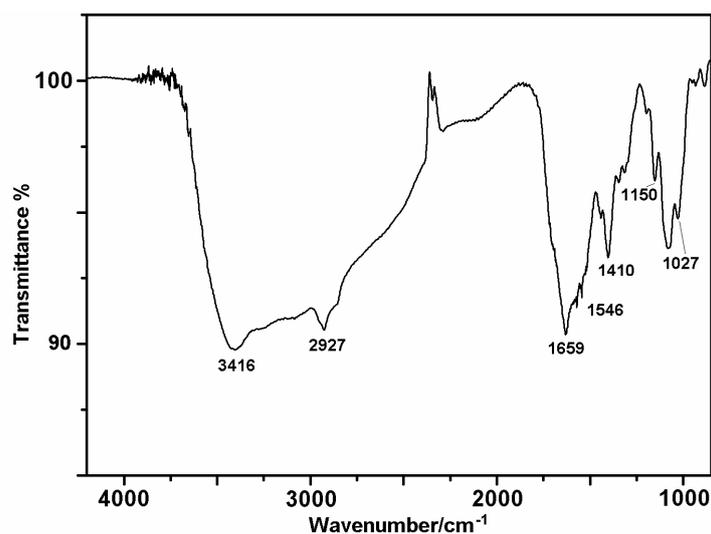


Figure S3: FTIR spectrum of the prepared chitosan particle. As expected the chitosan particles produced by this mild method presented the typical bands presented in chitosan. The band at  $3416\text{cm}^{-1}$  corresponds to the combined peaks of the  $\text{NH}_2$  and  $\text{OH}$  group stretching vibration in chitosan. The band at  $2927\text{cm}^{-1}$  is attributed to the symmetric or asymmetric  $\text{CH}_2$  stretching vibration. The band at  $1659\text{cm}^{-1}$  is attributed to the  $\text{CONH}_2$  group. The band at  $1546\text{cm}^{-1}$  is attributed to the  $\text{NH}$ -bending vibration in amide group. The band at  $1415\text{cm}^{-1}$  is attributed to the vibrations of  $\text{OH}$ . The band from  $1150\text{-}1040\text{cm}^{-1}$  is attributed to  $-\text{C-O-C}-$  in glycosidic linkage.

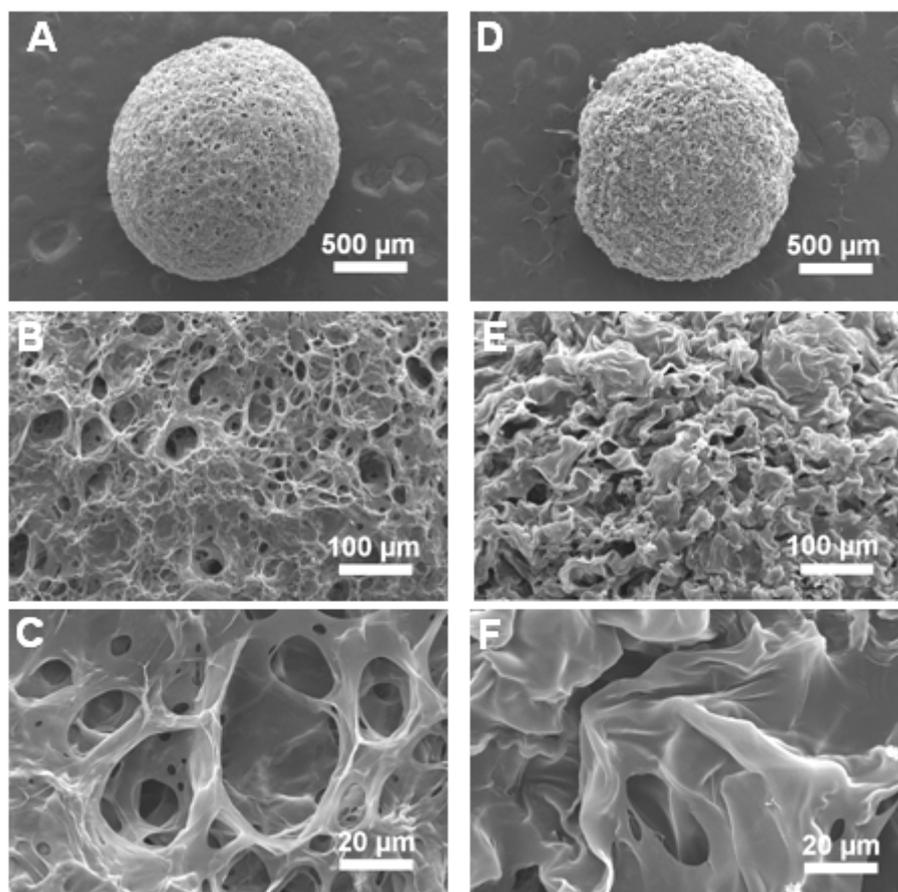


Figure S4: Scanning electron microscopy images (SEM) of chitosan particle surface untreated (A, B, C) and treated (D, E, F) by Ar plasma for 40min. Three different magnifications of each particle are shown.

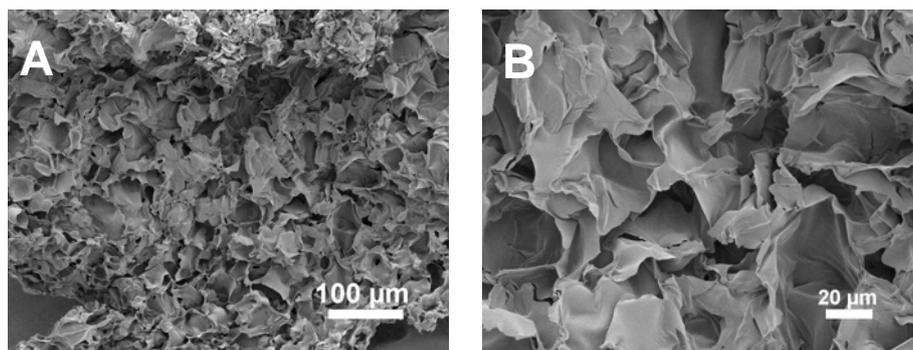


Figure S5: SEM images of the inner structure of a chitosan particle. The porous structure is uniform and similar to the surface microstructure.