

Supporting Information

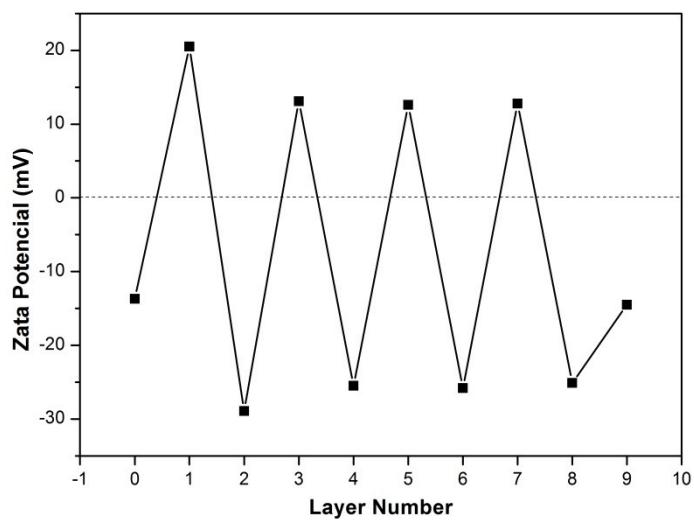


Figure S1. Zeta potential vs. layer number for the LBL self-assembly of PSS, PAH and titania coating. The layer numbers 1, 3, 5 and 7 correspond to PAH assembly and 2, 4, 6 and 8 correspond to PSS assembly. Layer number 9 corresponds to titania coating. Layer number 0 corresponds to CaCO_3 cores.

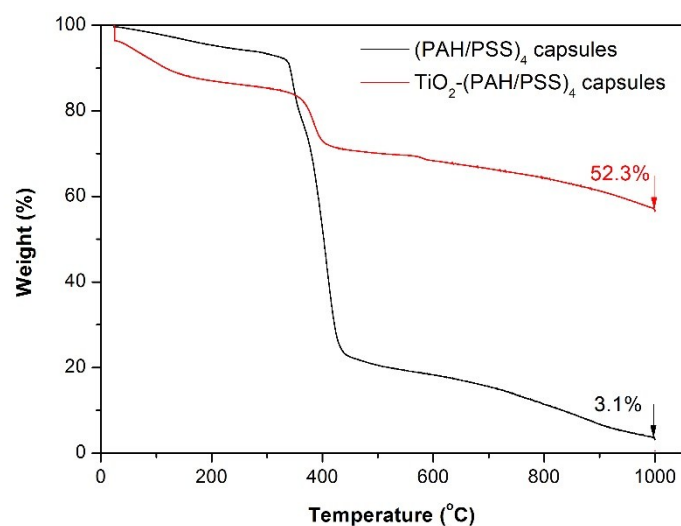


Figure S2. Thermogravimetric analysis (TGA) profiles of $(\text{PAH/PSS})_4$ capsules and TiO_2 /PE composite capsules.

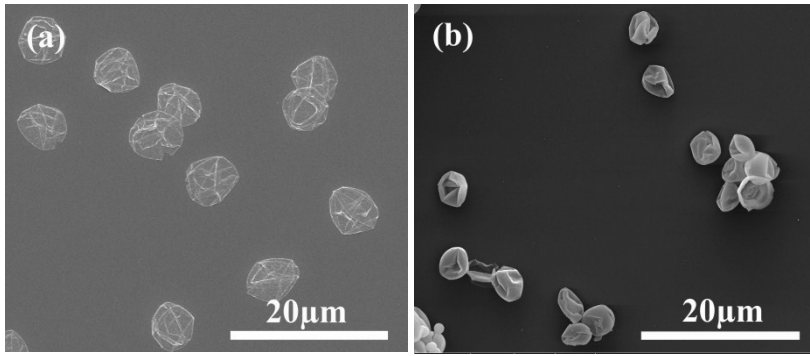


Figure S3. SEM images of (PAH/PSS)₄ capsules before (a) and after (b) *in situ* TiO₂ coating for 72 hours. (PAH/PSS)₄ capsules were prepared by LbL method using SiO₂ microparticles (5.53 μm) as sacrificial templates. TiO₂ coating was produced in the exact same procedure.

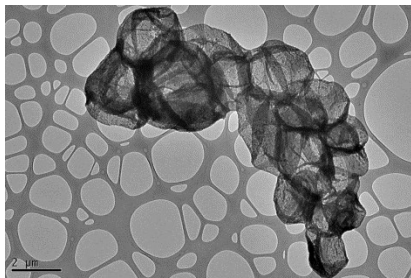


Figure S4. TEM images of pure (PAH/PSS)₄ capsules

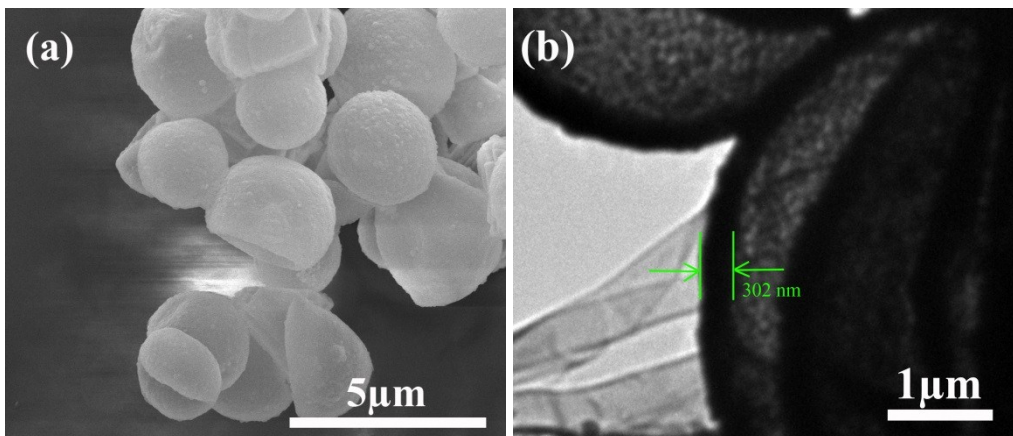


Figure S5. SEM (a) and TEM (b) images of SiO₂-(PSS/PAH)₄ composite microcapsules synthesized by LbL method and sol-gel chemistry.^[5]

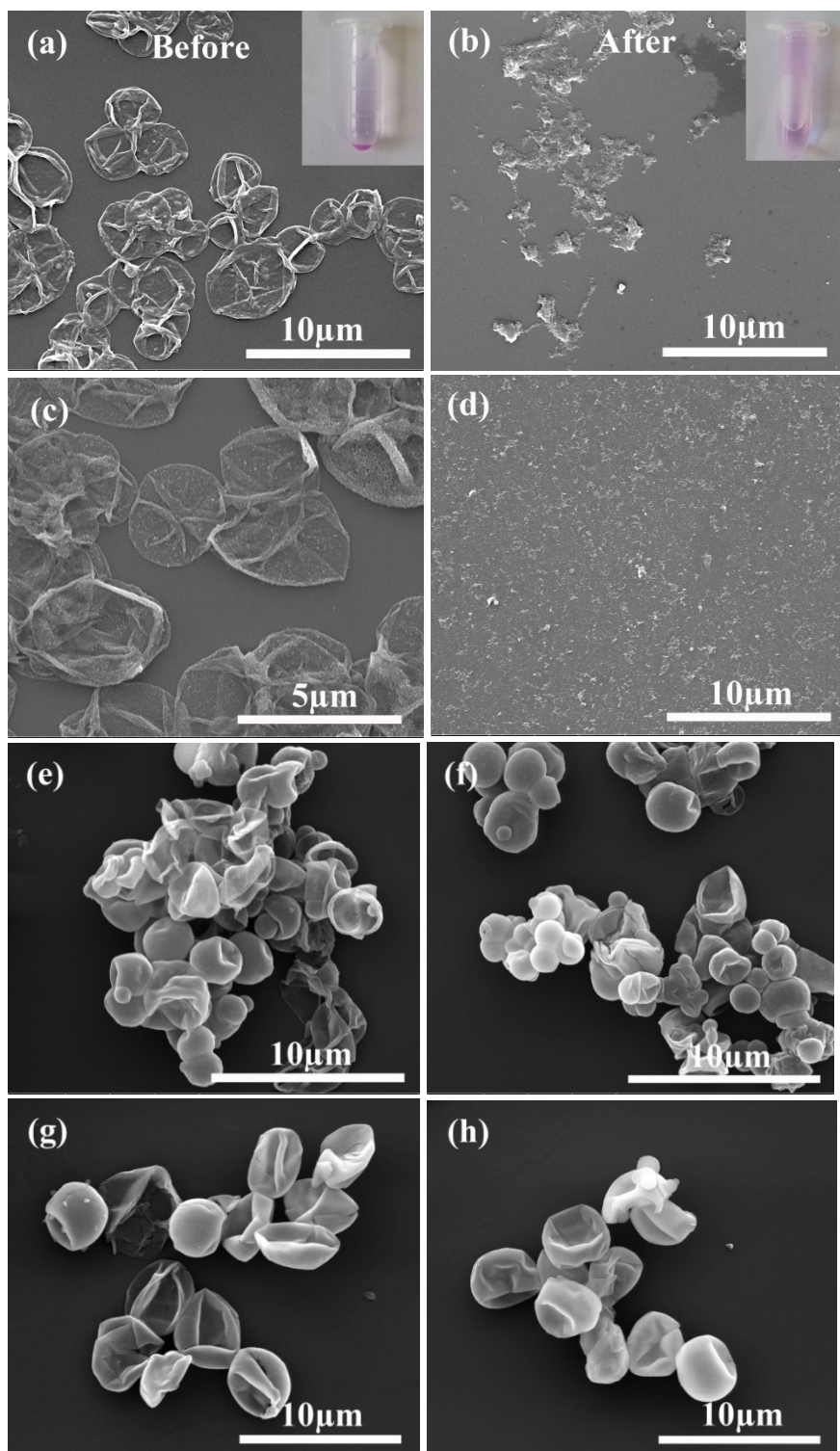


Figure S6. SEM images of capsules before and after NaOH (pH=13) treatment. (a, b) (PAH/PSS)₄ microcapsules, before and after soaking in NaOH for 2 minutes; (c, d) TiO₂/PE capsules with *in situ* titania coating for 24 hours, before and after soaking in NaOH solution for 10 minutes respectively; (e, f) TiO₂/PE capsules with *in situ* coating for 72 hours, before and after soaking for 10 minutes respectively; (g, h) TiO₂/PE capsules (SiO₂ sacrificial templates) with *in situ* coating for 72 hours, before and after soaking in NaOH solution for 10 minutes respectively. The insets are images of pure (PAH/PSS)₄ labelled with TRITC dyes centrifuged at 8000r min⁻¹ for 2 minutes before and after NaOH (pH=13) treatment for 2 minutes.

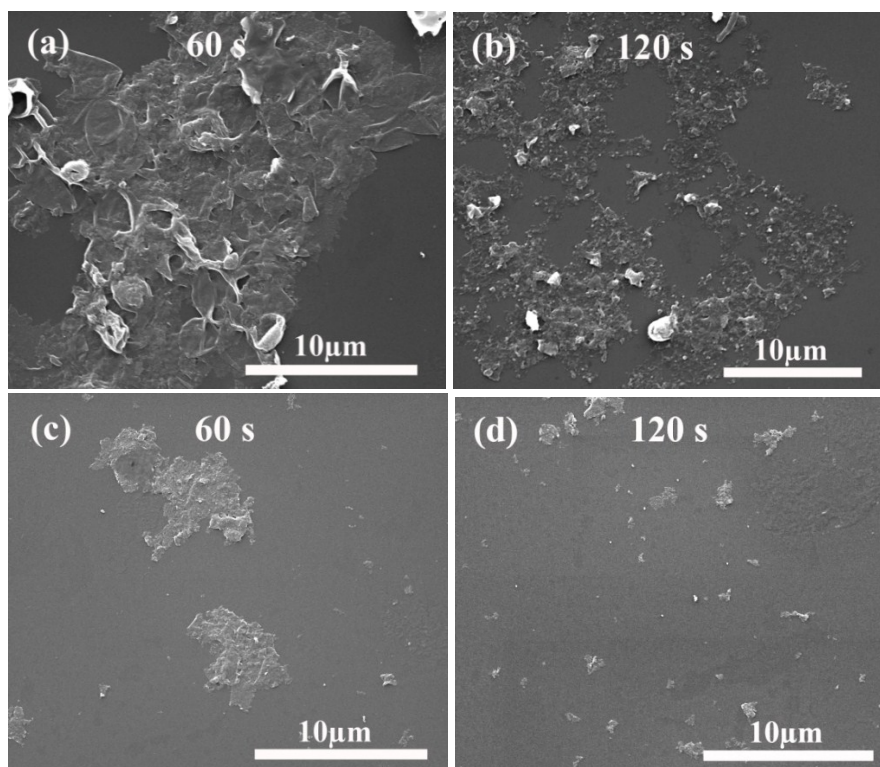


Figure S7. SEM images of different capsules treated by ultrasound for different longer time: (a,b) (PAH/PSS)₄ capsules; (b,c) TiO₂-(PAH/PSS)₄ composite capsules.

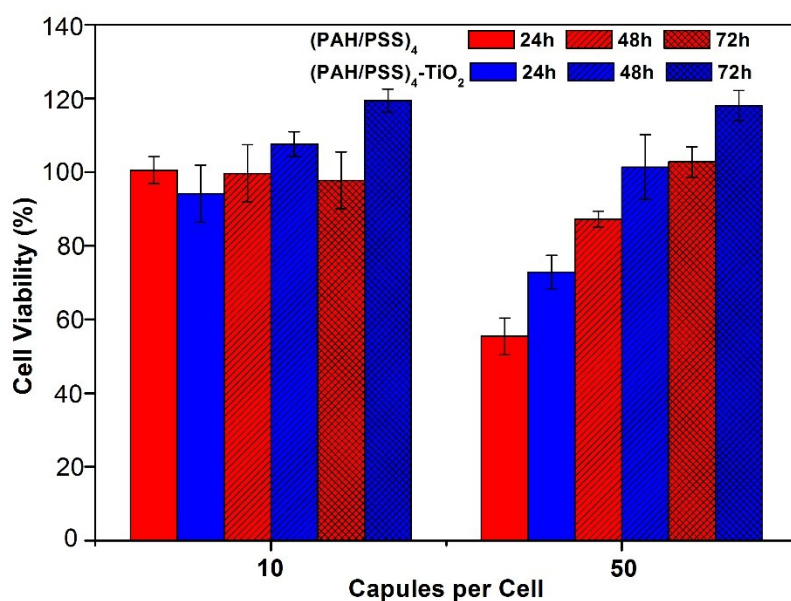


Figure S8 Cell viability of B50 cell line mixed with different concentration of PAH/PSS, PAH/PSS/TiO₂ capsules for 24 h, 48h and 72 h at 37 °C respectively as measured by an MTT assay compared with the control. The error bars show the standard deviations.