Supporting information

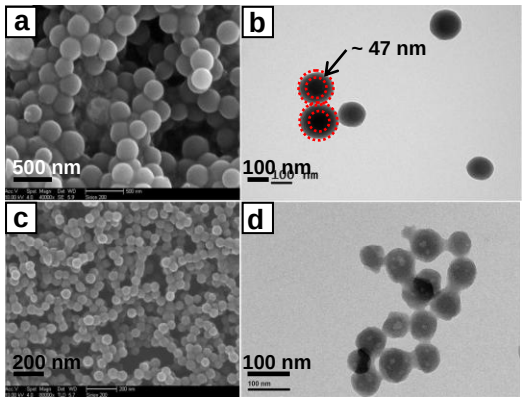

Figure S1. SEM and TEM images of SA@SiO_2 NCs with different molar ratios of PTMS:SA. (a, b) 1:1, (c, d) 1:2.5.

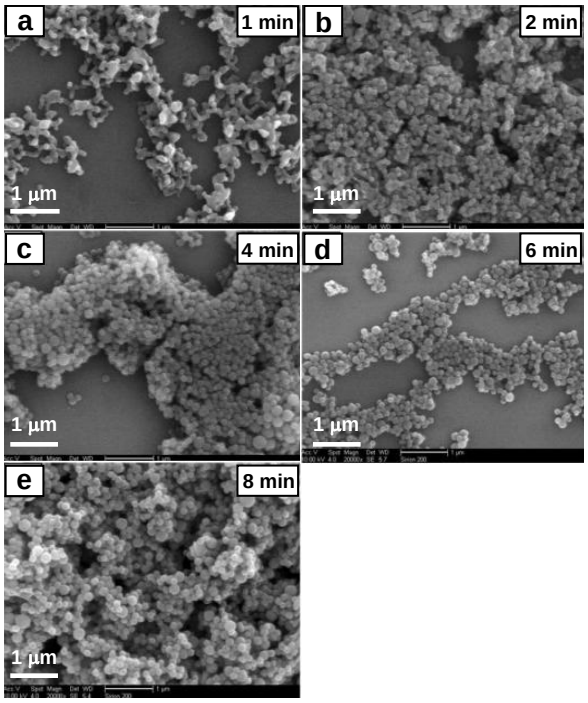

Figure S2. SEM images of the SA@SiO_2 NCs of different hydrolyze time: (a) 1, (b) 2, (c) 4, (d) 6, and (e) 8 min, respectively.

As shown in the Figure S2, the SEM images were PTMS hydrolyze reaction in the different time. When the hydrolyze time was 4 min or longer, we can achieved preferable nanocapsule with core-shell morphology. In the experimental process, at the initial stage, the clear microemulsion became muddy when PTMS added. And the stirring for 4 min, the microemulsion became transparent again, so the hydrolyze time at least was 4 min.

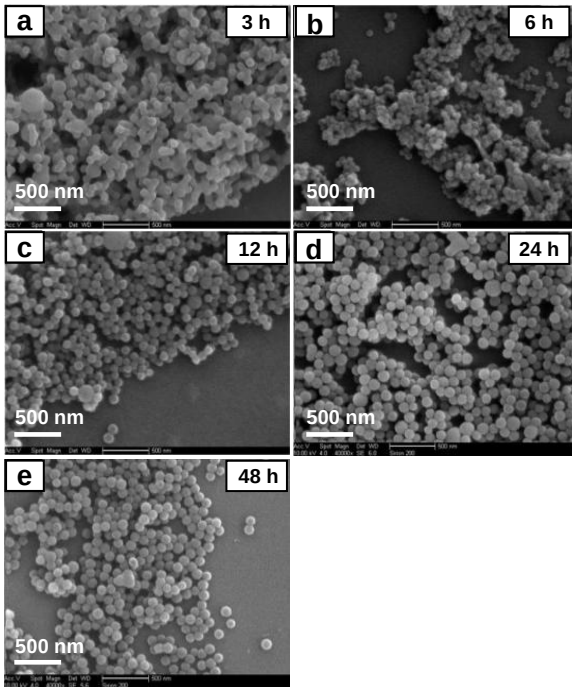

Figure S3. SEM images of the obtained SA@SiO_2 core-shell NCs with different condensation reaction time: (a) 3, (b) 6, (c) 12, (d) 24, and (e) 48h, respectively.

As shown in the Figure S3, when the condensation time was 6 h or longer, we could achieve SA@SiO_2 core-shell NCs with uniform sphere-like morphology, if the time was shorter than 6h, such as 3h, the stearic acid was not wrapped completely.

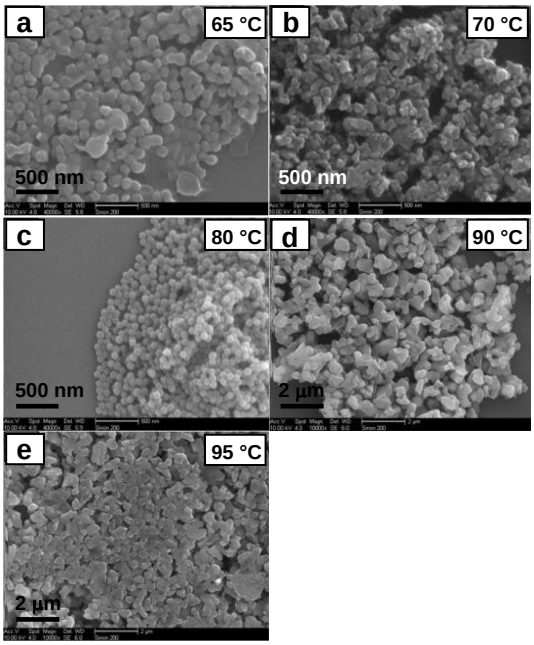

Figure S4. SEM images of the obtained SA@SiO_2 core-shell NCs with different reaction temperatures: (a) 65 ℃, (b) 70 ℃, (c) 80 ℃, (d) 90 ℃, and (e) 95 ℃, respectively.

As shown in the Figure S4, the optimal reaction temperature is 80 ℃. When the reaction temperature was too high or too low, the nanocapsule's morphologies were irregular spheres.

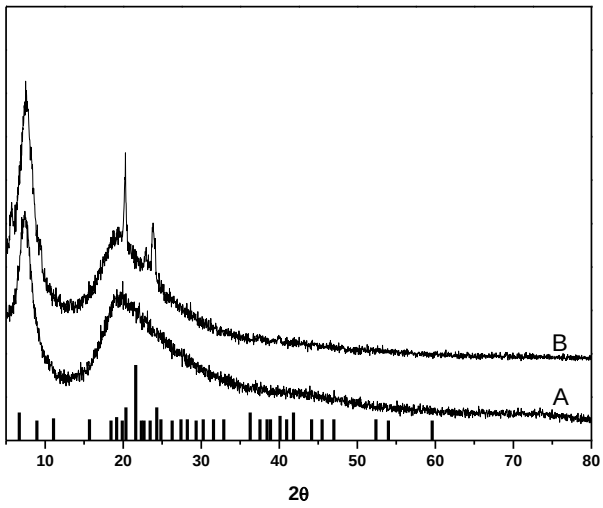

Figure S5. XRD patterns of (A) SiO_2, (B) SA@SiO_2 NCs.

Figure S5 displays the XRD patterns of the core material SA, the shell material SiO_2 and the core-shell nanocapsule, the bottom is the SA standard card JCPDS No. 09-0618. It is evident that two broad peaks are observed in the whole range of detector angles, revealing the amorphous state of the SiO_2 shells. As shown in Fig. S1 B, these peaks at 2θ of 21.62 ° and 24.32 °, which can be indexed as (110), (200) reflections. These characteristic reflections suggest that the SA@SiO_2 NCs does not affect SA crystallization structure.

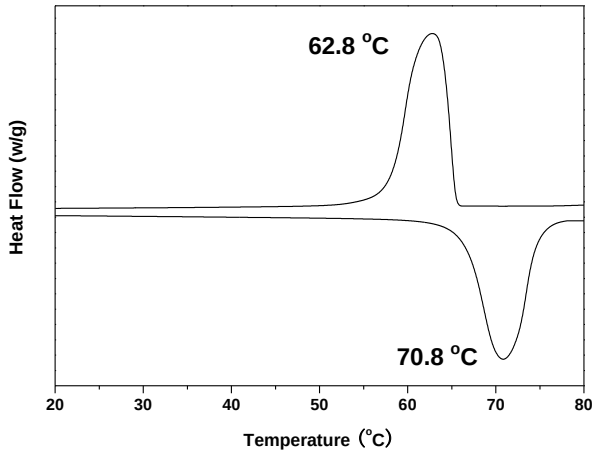

Figure S6. DSC curve of the bulk Stearic acid.

Figure S6 shows the DSC thermogram of bulk SA powder. It can be seen that a dominant endothermic peak centered around 70.8 ℃ during heating, and an exothermic peak is centered at 62.8 ℃.

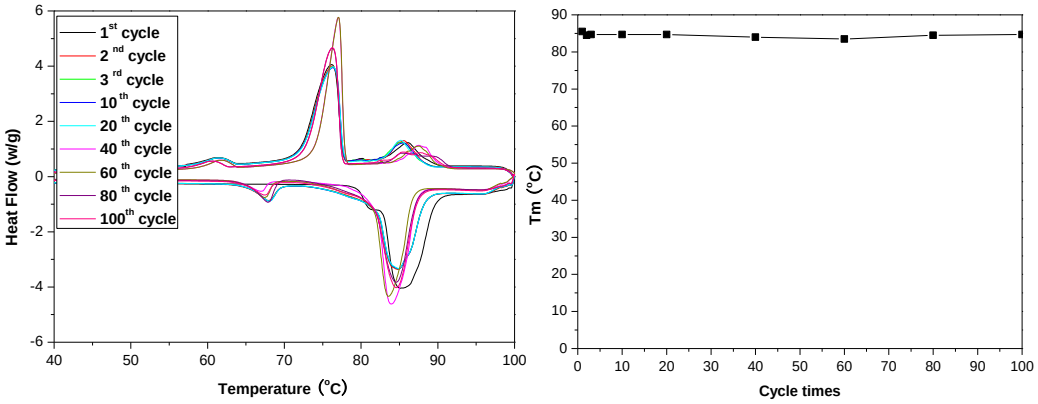

Figure S7. DSC thermal spectra of SA@SiO_2 NCs with cycling of 100 times. Those results showed that SA@SiO_2 NCs have good stable cycling property.

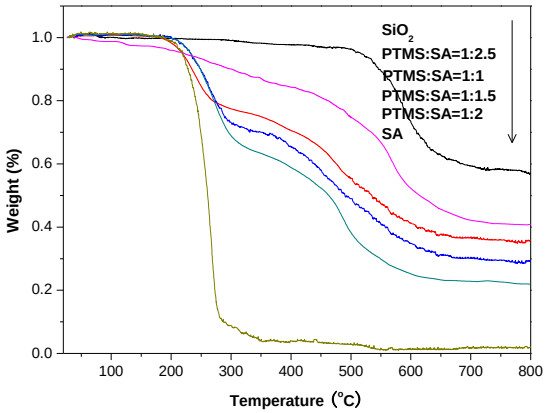

Figure S8. TGA of the bulk SA powers, SiO_2 shells and the obtained SA@SiO_2 NCs with different PTMS molar ratios.

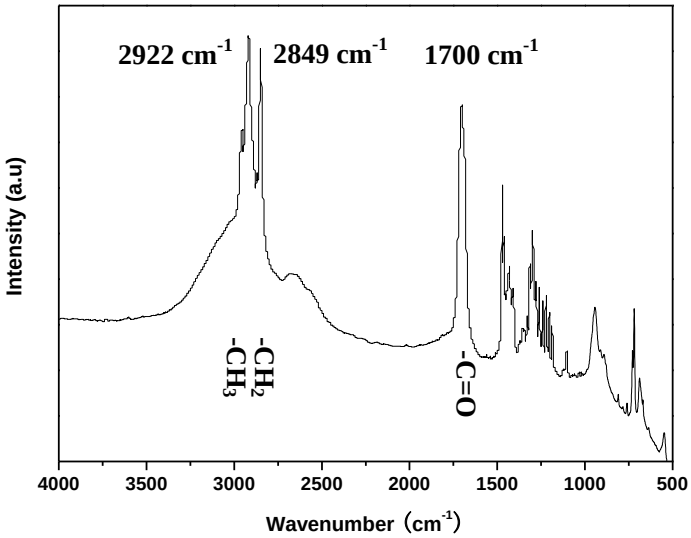

Figure S9. FT-IR spectrum of pure SA.