Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Preparation of catalytic deep eutectic solvents-based silica microreactors using a non-aqueous sol-gel route

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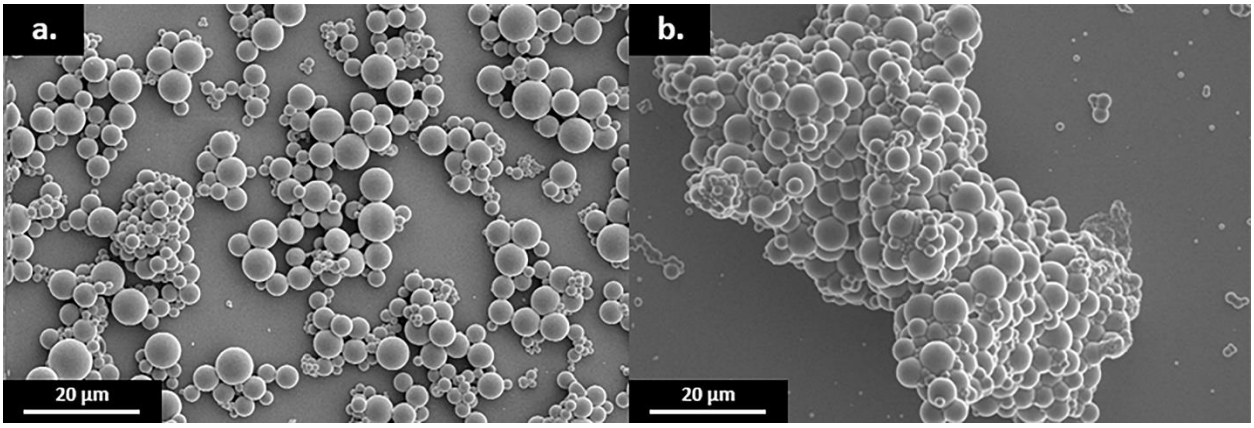

Figure S1. SEM images of microcapsules prepared from 20% core instead of 36% a. CHCl:TA@SiO_2 using xylene as the solvent in the dispersing phase and b. CHCl:S@SiO_2 using cyclohexane as the solvent in the dispersing phase.

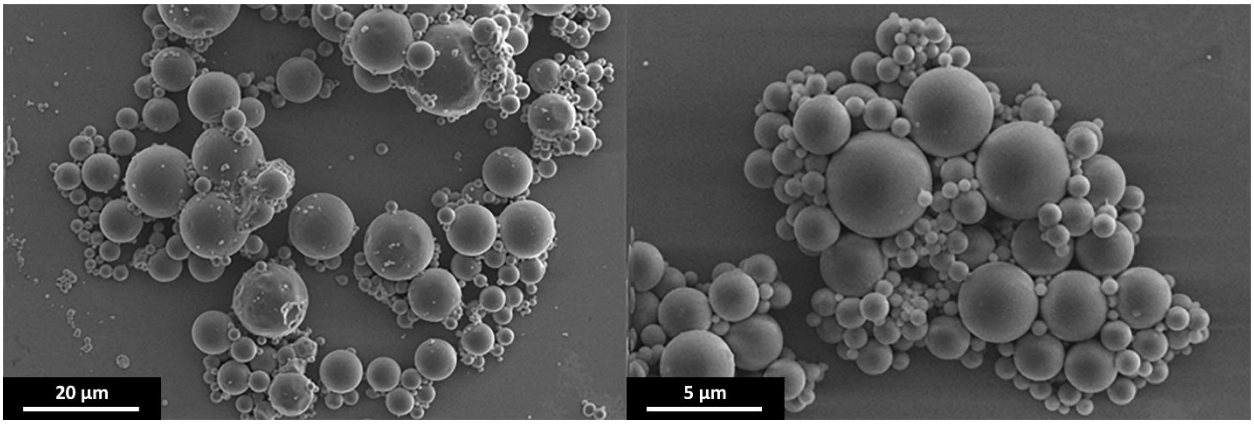

Figure S2. SEM images of CHCl:TSA@SiO_2 prepared using L-lactic acid instead of formic acid for the non-aqueous sol-gel process.

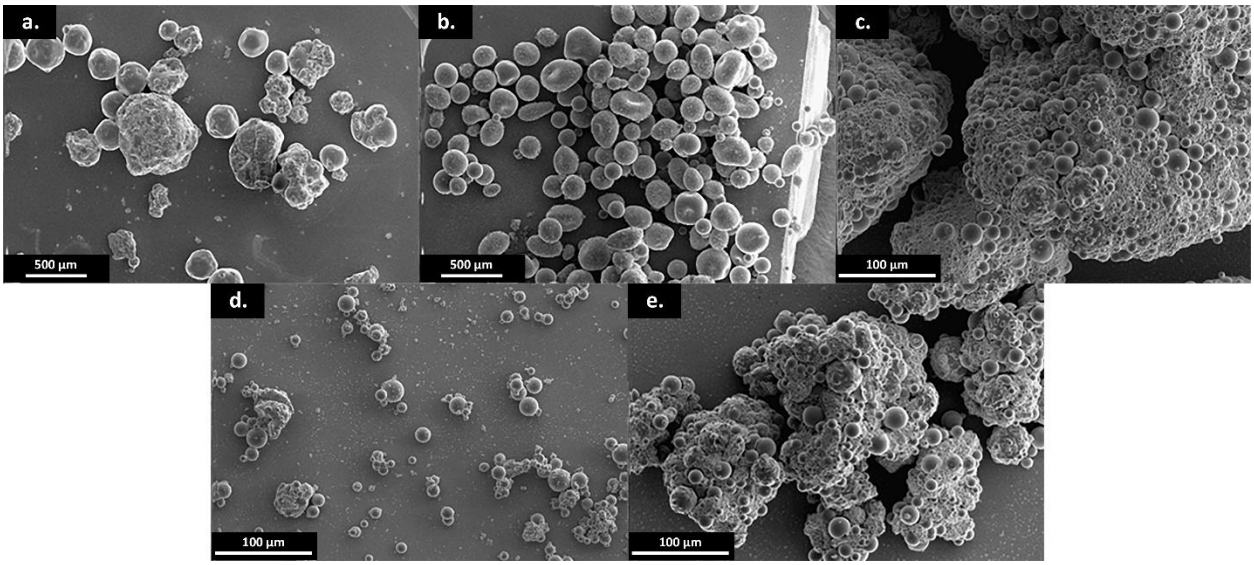

Figure S3. SEM images of CHCl:TA@SiO_2 microcapsules prepared using a. 0.05 g, b. 0.1 g, c. 0.2 g, d. 0.4 g, and e. 0.8 g of ABIL EM 90 and using xylene as the solvent in the dispersing phase.

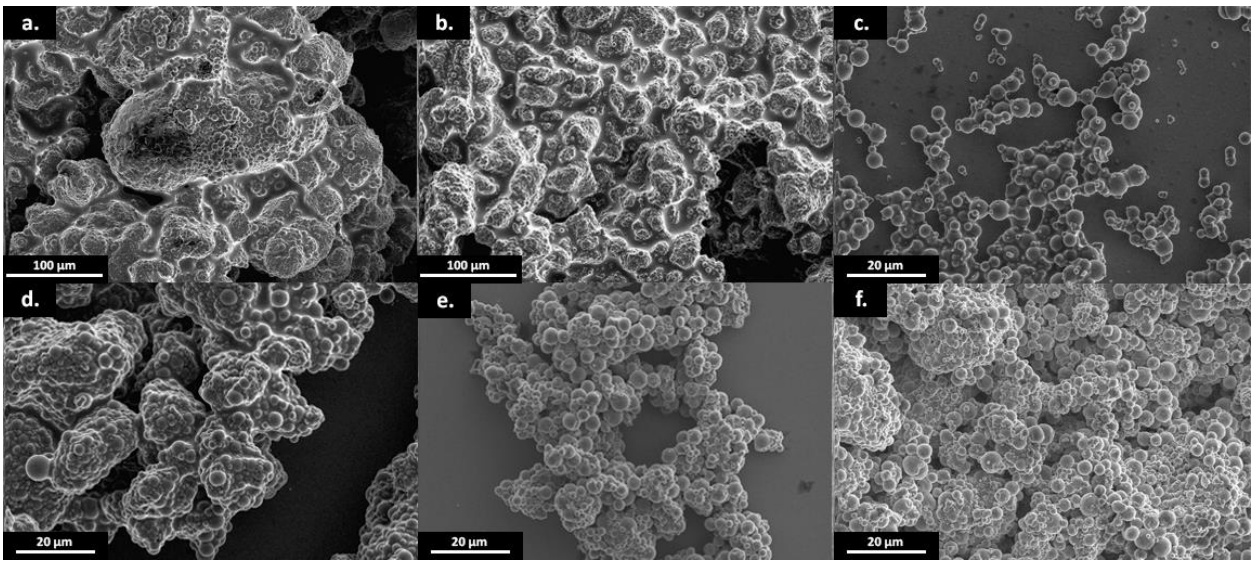

Figure S4. SEM images of CHCl:S@SiO_2 microcapsules prepared using a. 0.05 g, b. 0.2 g, c. 0.4 g, d. 0.8 g, e. 1 g, and f. 1.25 g of ABIL EM 90 and using heptane as the solvent in the dispersing phase.

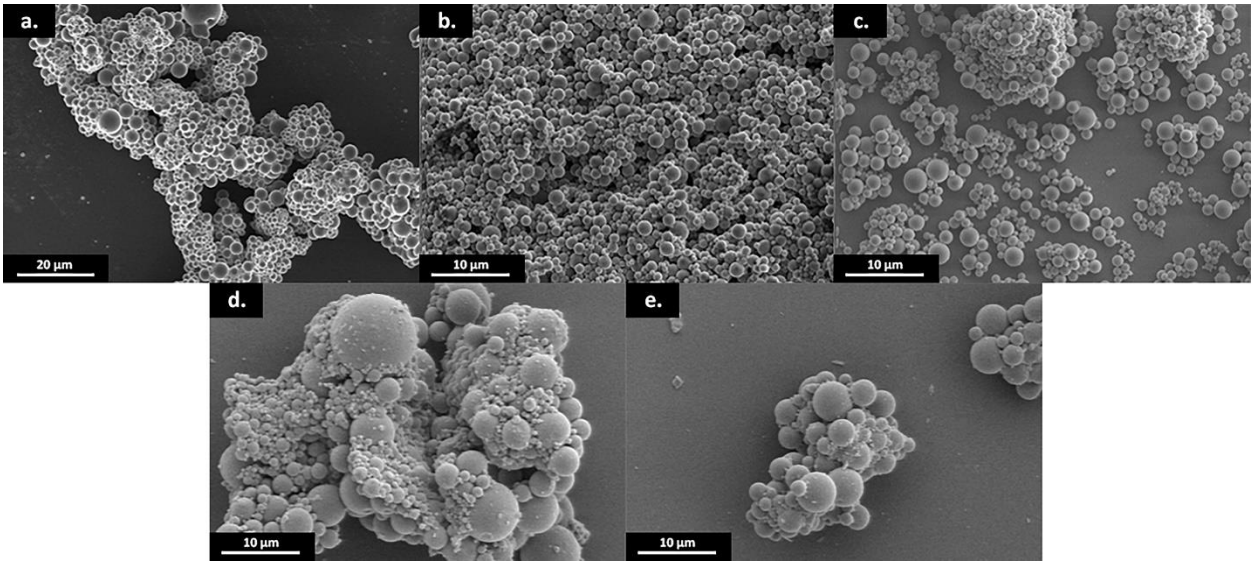

Figure S5. SEM images of a. CHCl:S@SiO_2, b. CHCl:U@SiO_2, c. CHCl:LA@SiO_2, d. CHCl:TSA@SiO_2, and e. CHCl:CSA@SiO_2 microcapsules prepared according to the general procedure in the experimental section but with PDMS as the silane monomer.

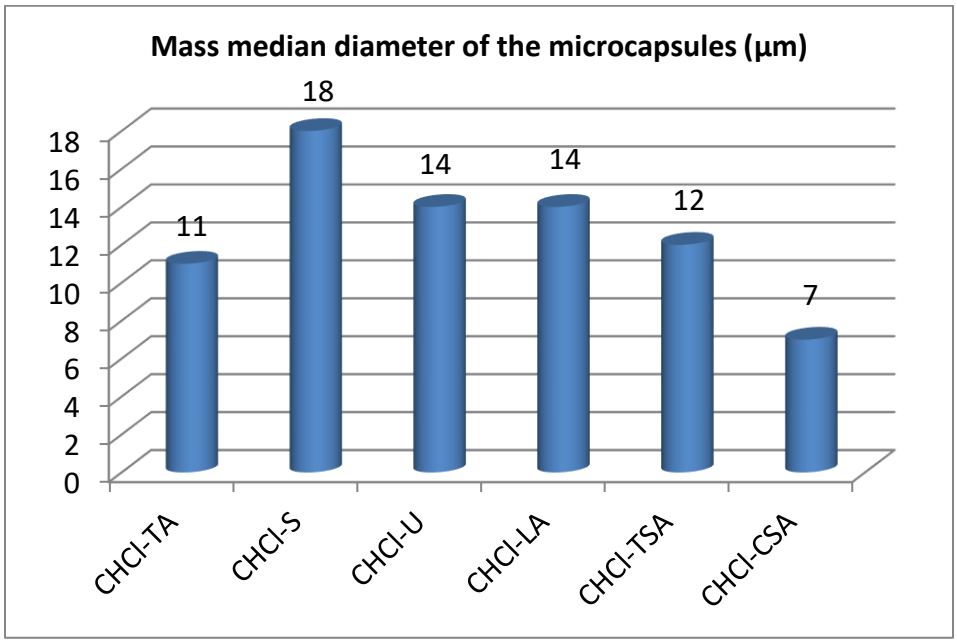

Figure S6. Mass median diameter in microns of the microencapsulated DESs according to Mastersier analysis.

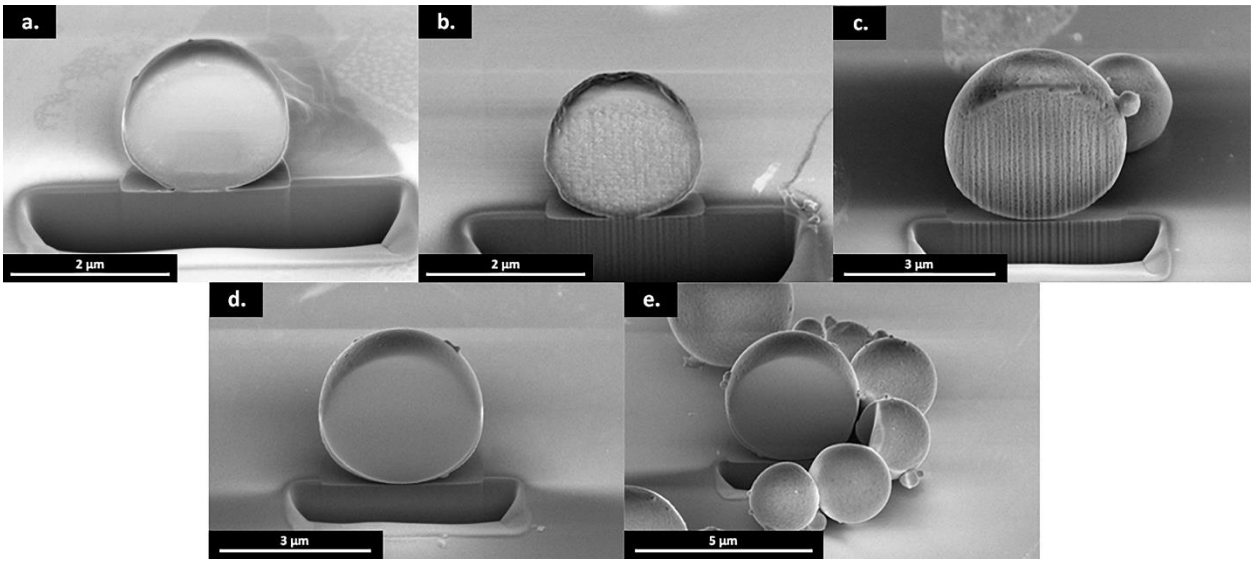

Figure S7. FIB images of a. CHCl:S@SiO_2, b. CHCl:U@SiO_2, c. CHCl:LA@SiO_2, d. CHCl:TSA@SiO_2, and e. CHCl:CSA@SiO_2 microcapsules prepared according to the general procedure in the experimental section but with PDMS as the silane monomer.

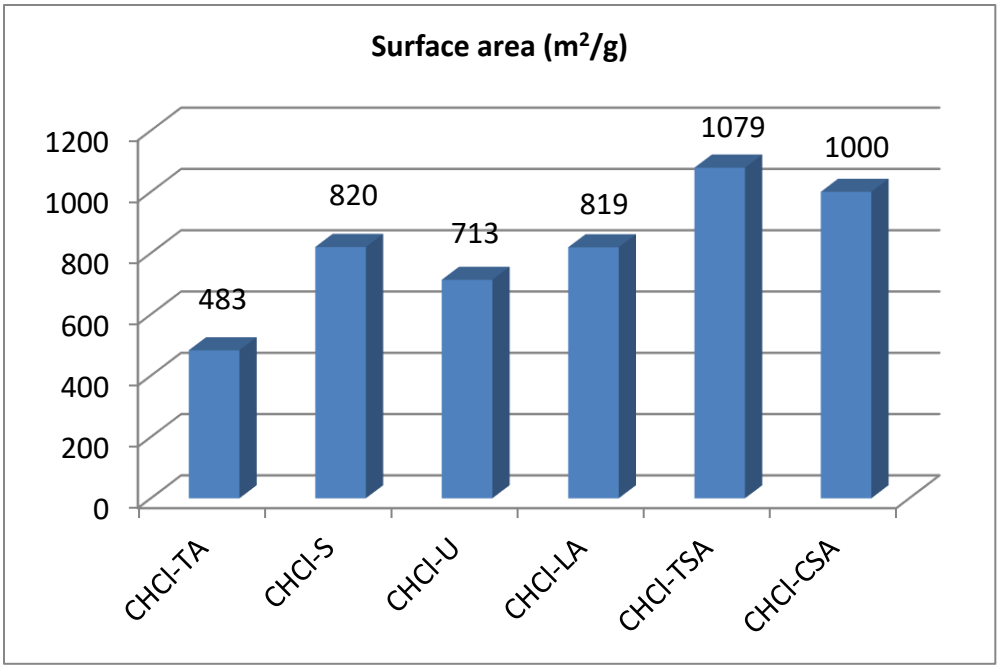

Figure S8. Surface area (m^2/g) of the microencapsulated DESs according to BET analysis.

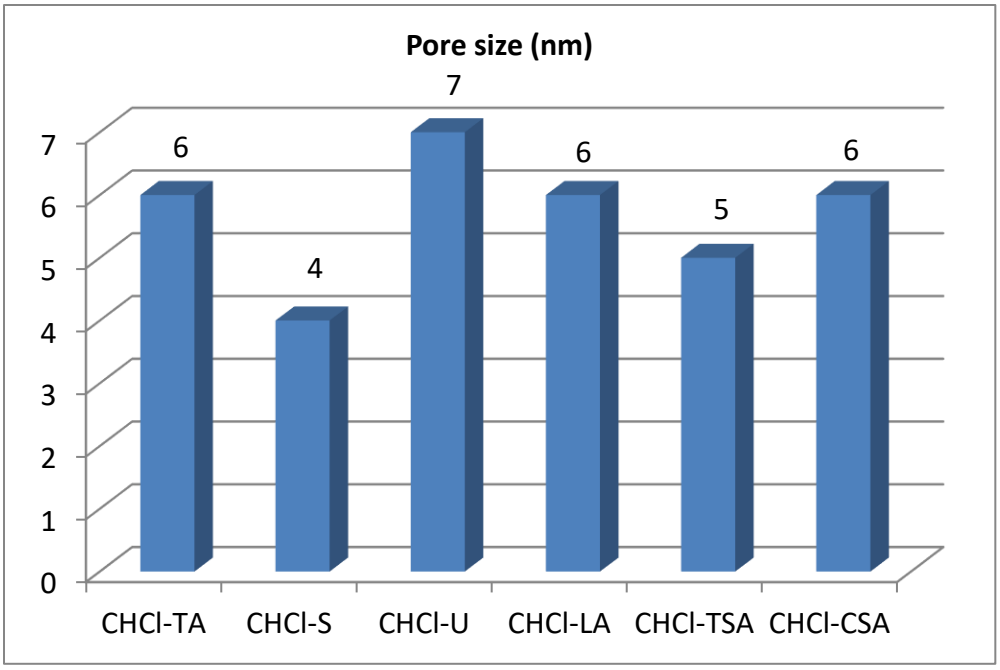

Figure S9. Pore size (nm) distribution of the microencapsulated DESs according to BET analysis.

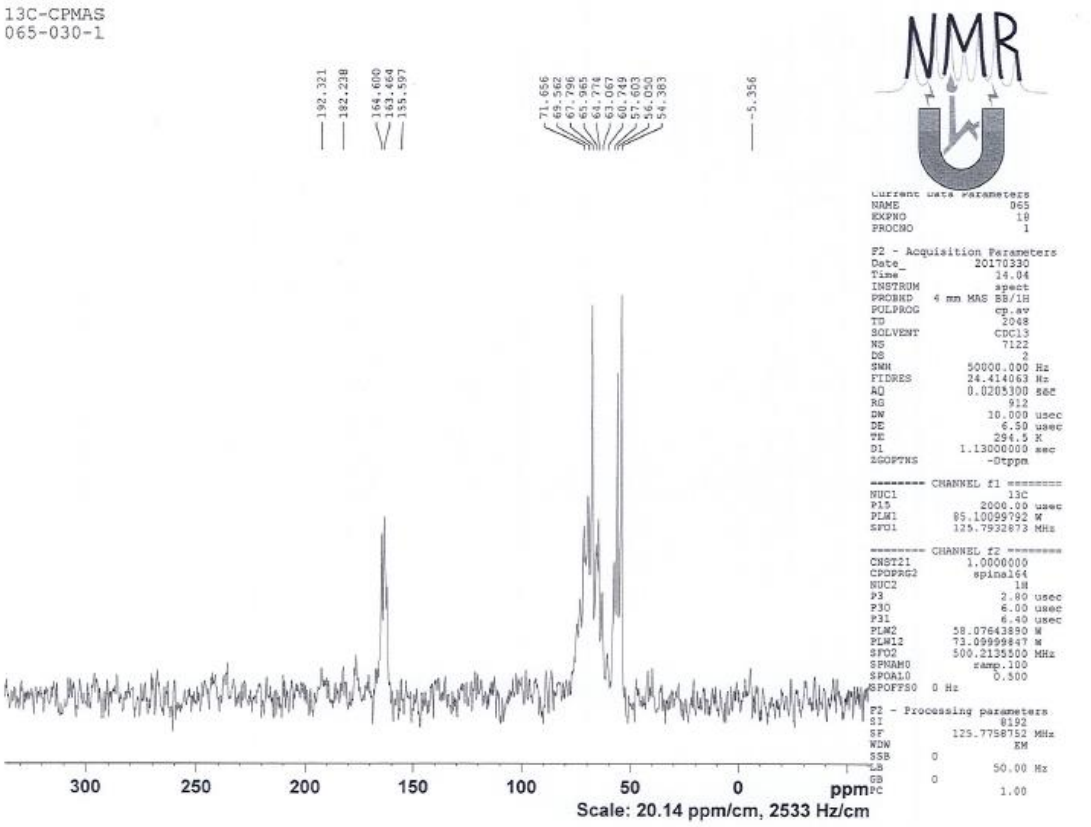

Figure S10. ^{13}C CP-MAS NMR of CHCl:S@SiO_2 microcapsules.

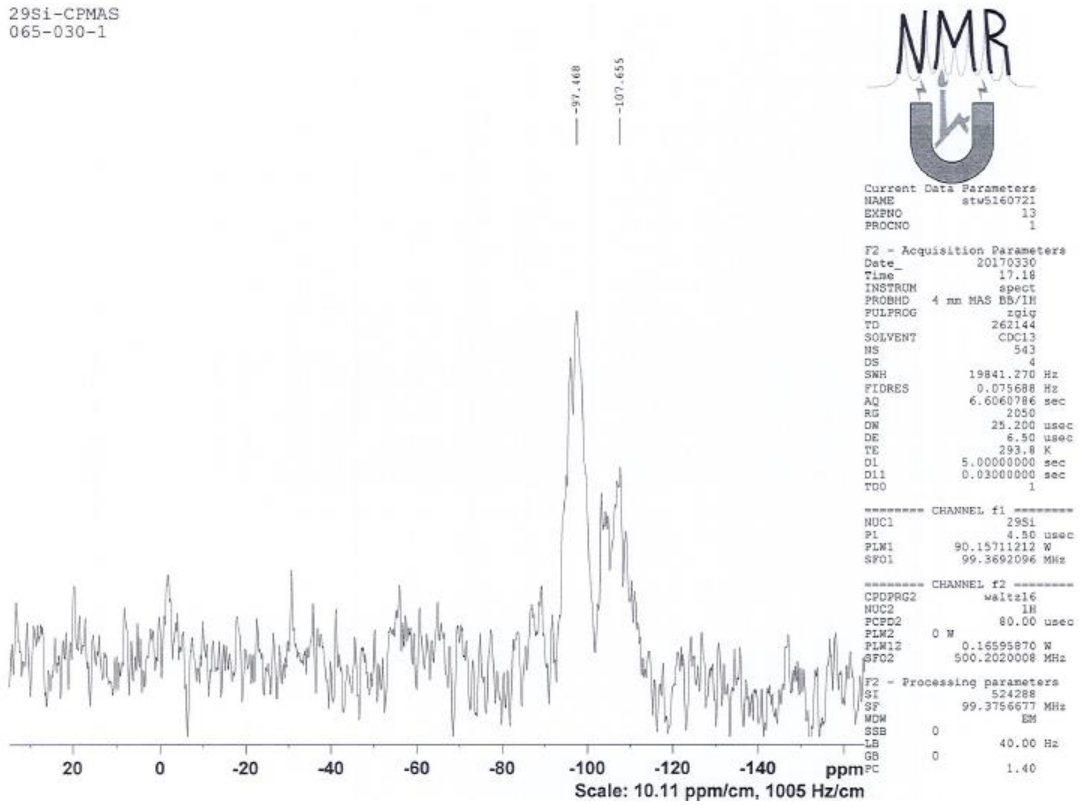

Figure S11. ^{29}Si CP-MAS NMR of CHCl:S@SiO_2 microcapsules

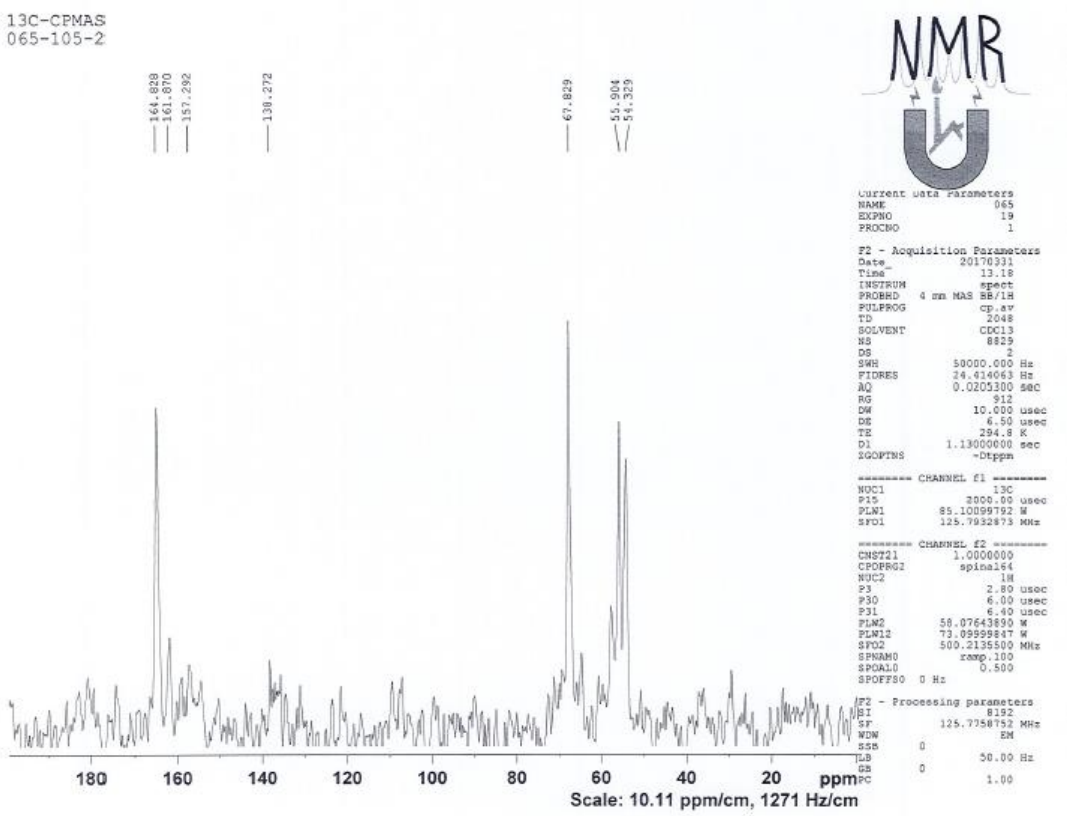

Figure S12. ^{13}C CP-MAS NMR of CHCl:U@SiO_2 microcapsules.

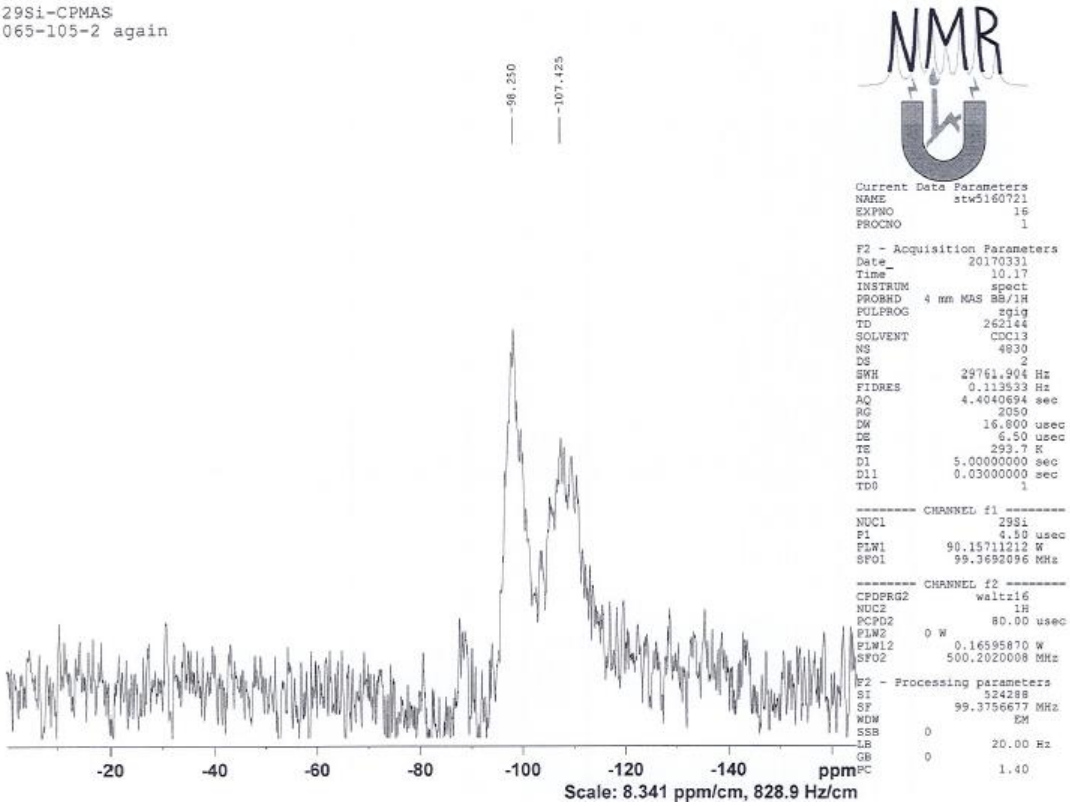

Figure S13. ^{29}Si CP-MAS NMR of CHCl:U@SiO_2 microcapsules.

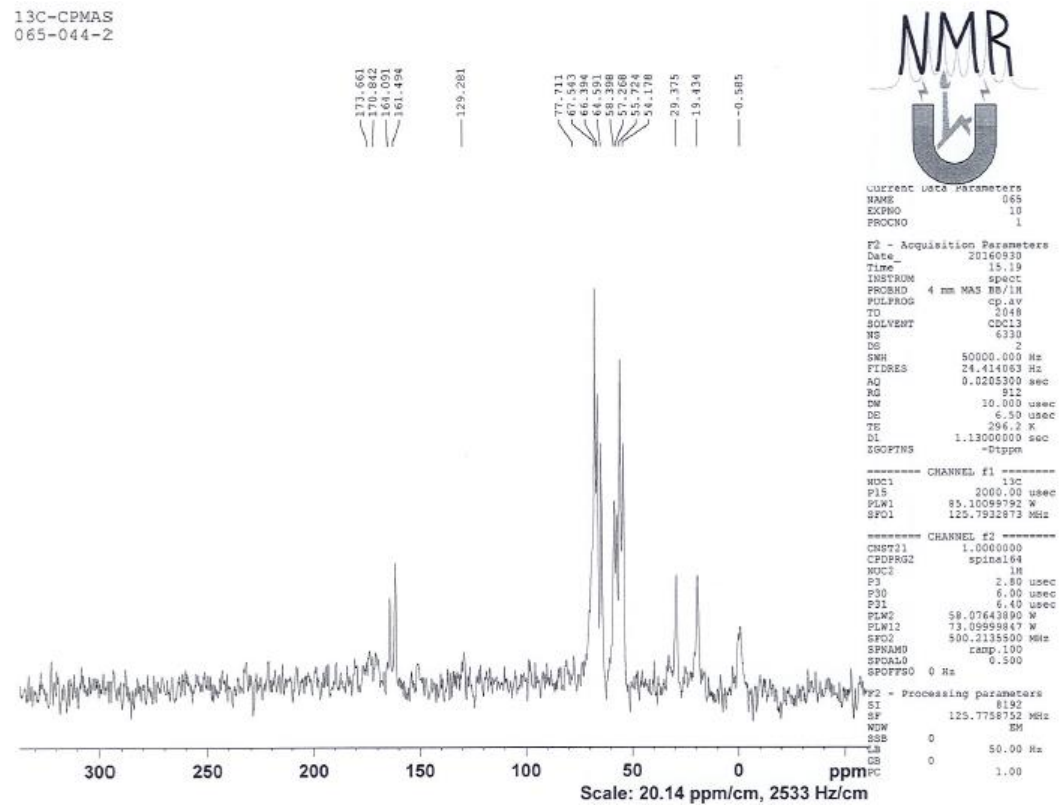

Figure S14. ^{13}C CP-MAS NMR of CHCl:LA@SiO_2 microcapsules

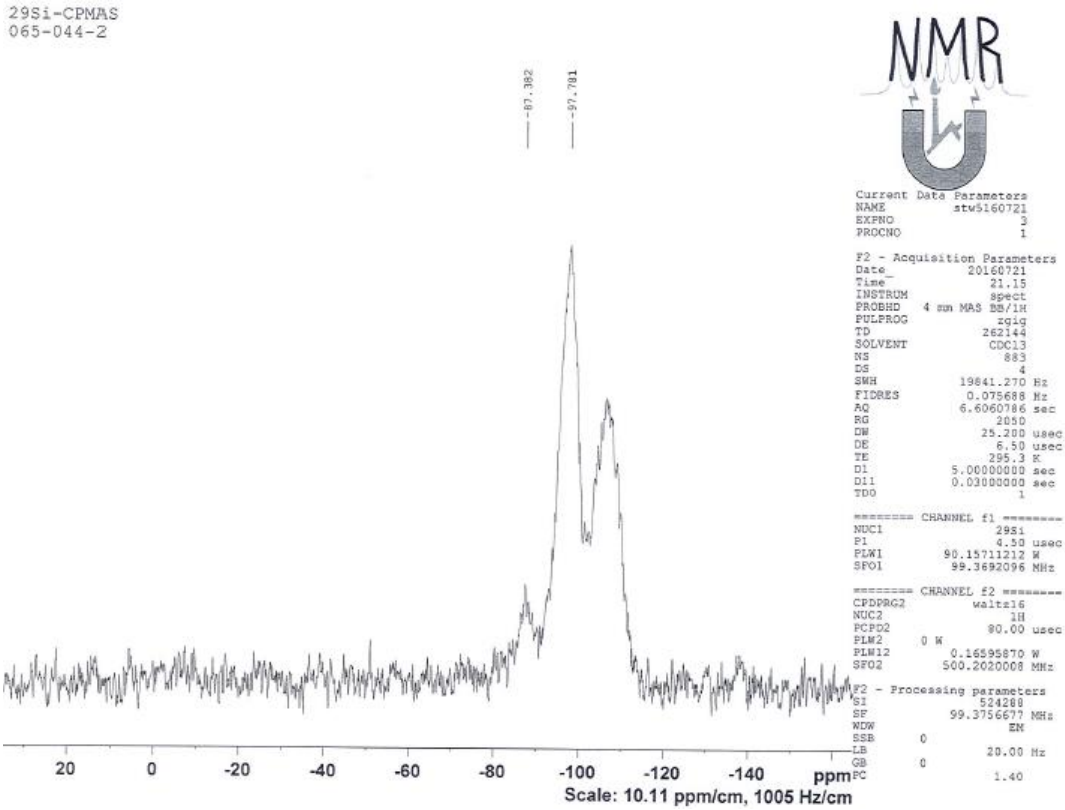

Figure S15. ^{29}Si CP-MAS NMR of CHCl:LA@SiO_2 microcapsules.

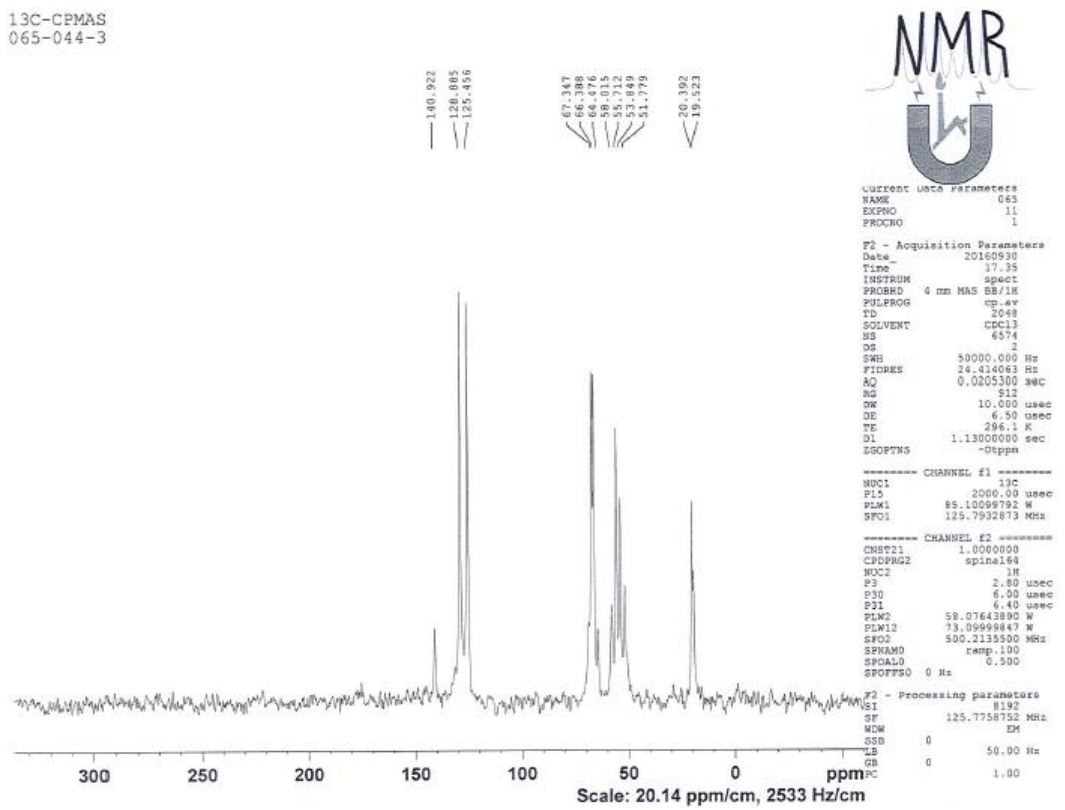

Figure S16. ^{13}C CP-MAS NMR of CHCl:TSA@SiO_2 microcapsules.

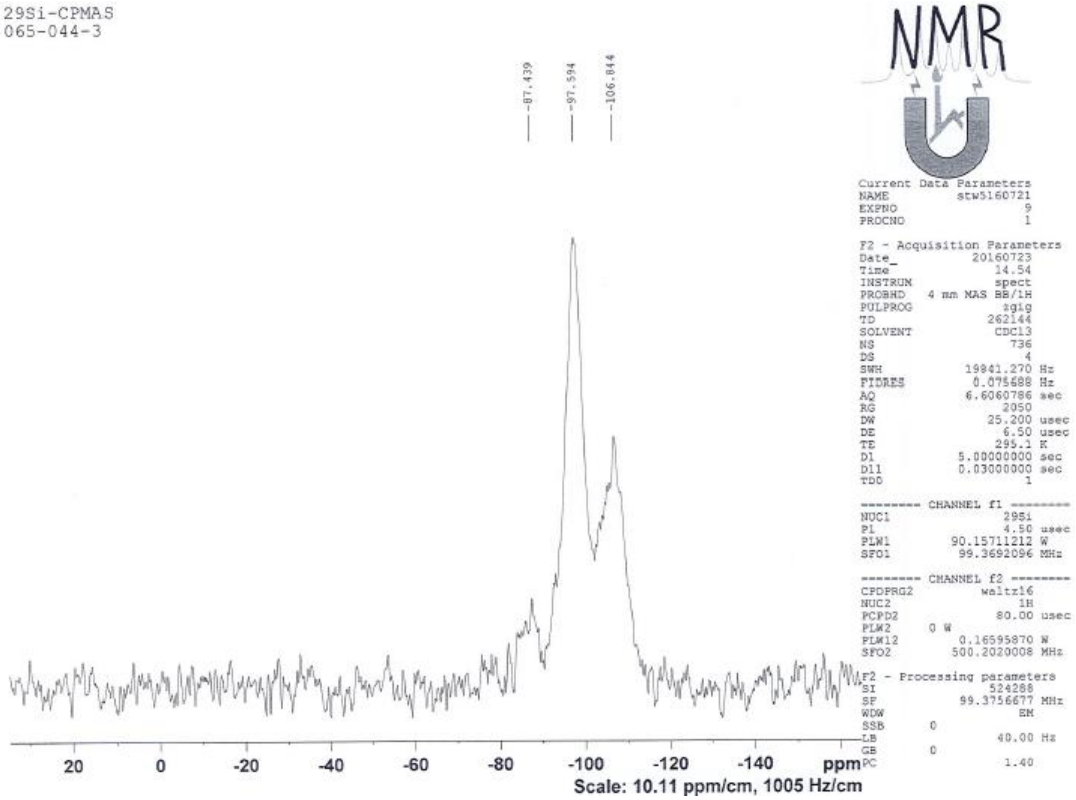

Figure S17. ^{29}Si CP-MAS NMR of CHCl:TSA@SiO_2 microcapsules.

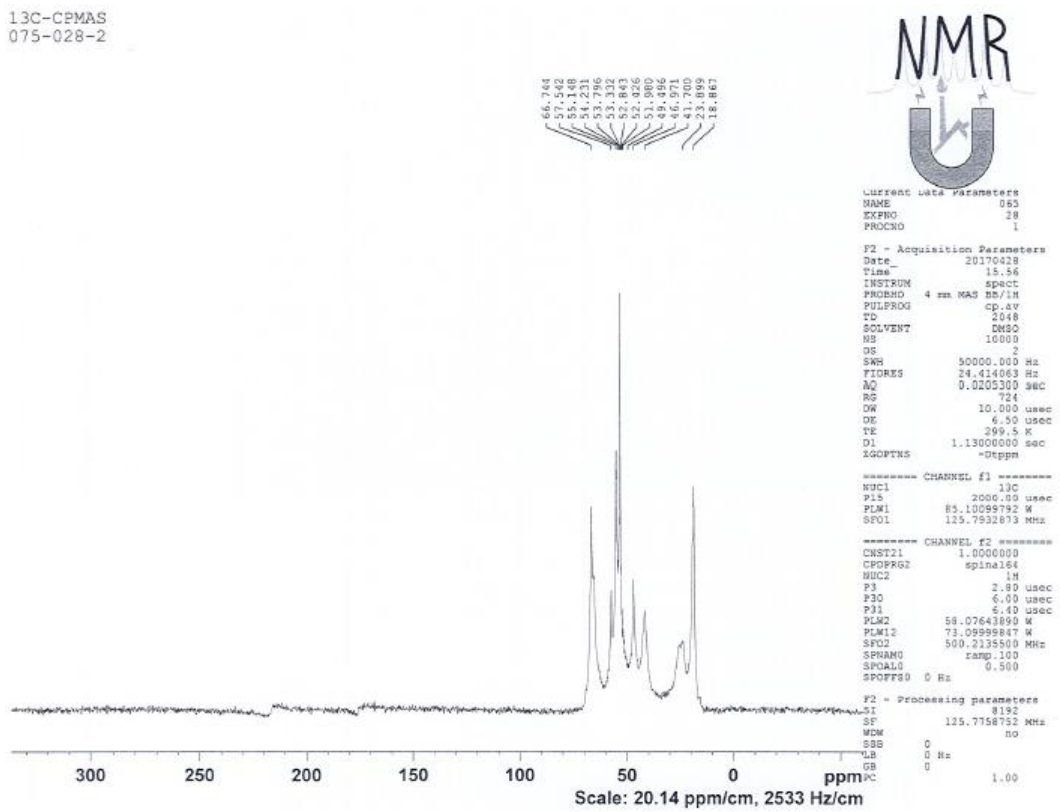

Figure S18. ^{13}C CP-MAS NMR of CHCl:CSA@SiO_2 microcapsules.

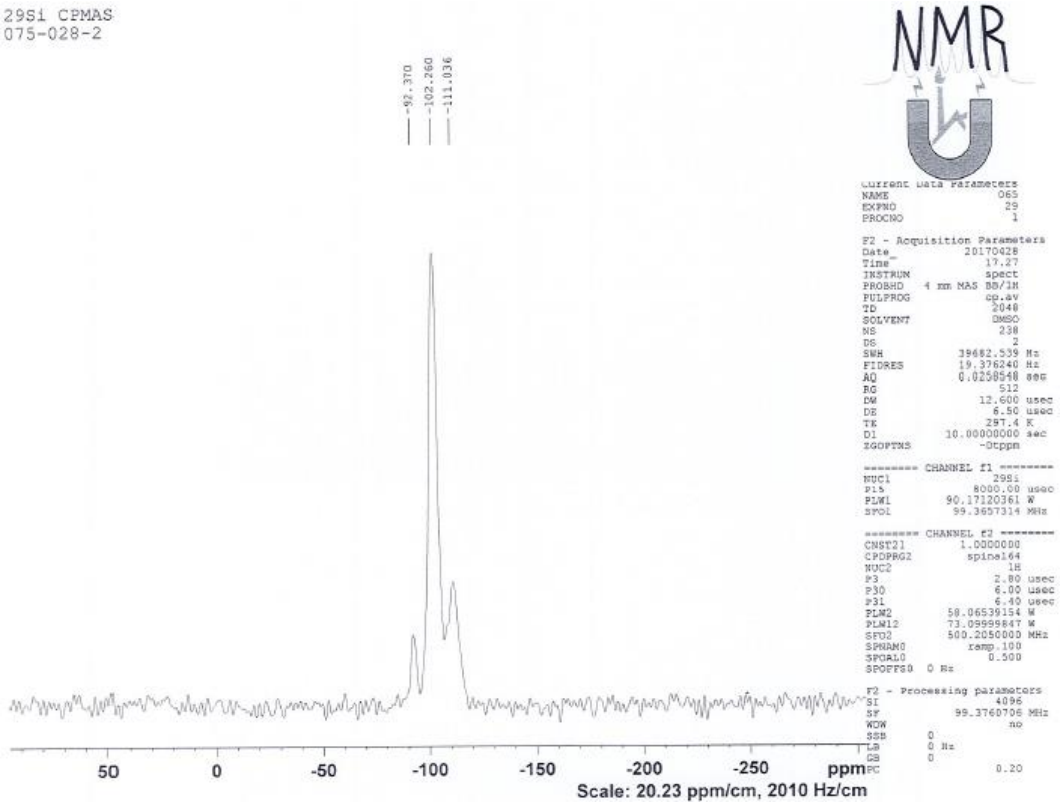

Figure S19. ^{29}Si CP-MAS NMR of CHCl:CSA@SiO_2 microcapsules.

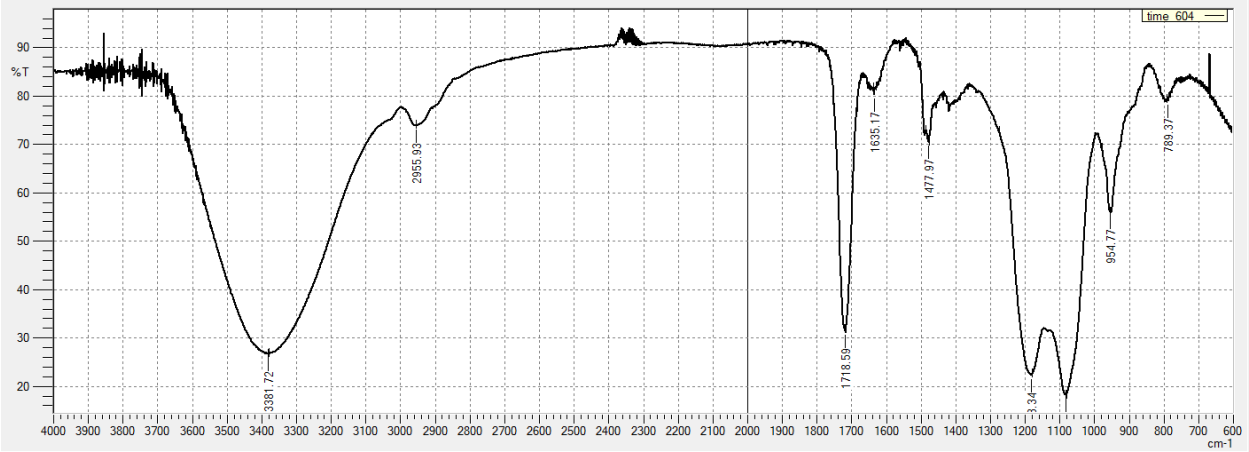

Figure S20. FTIR analysis of CHCl:S@SiO_2 microcapsules.

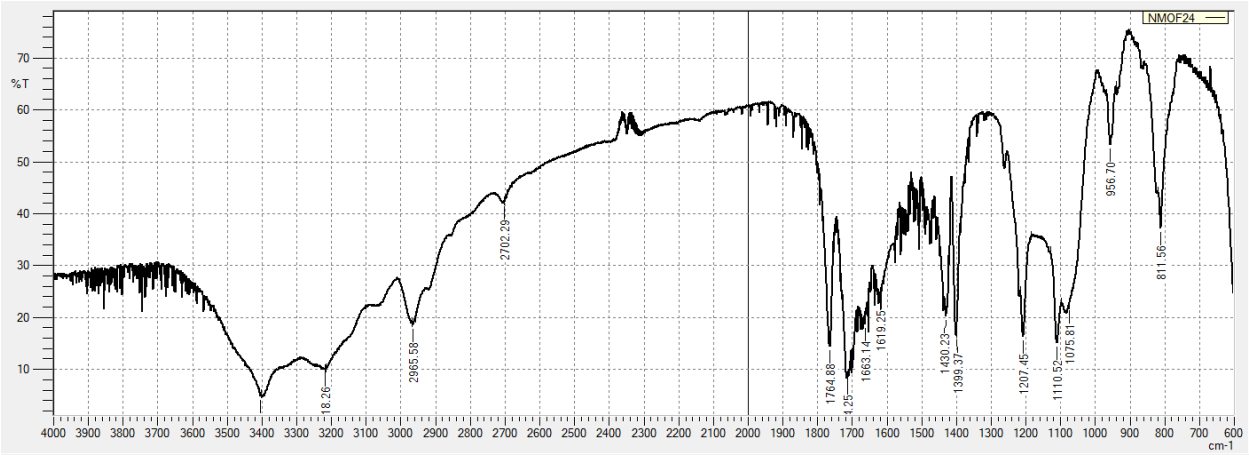

Figure S21. FTIR analysis of CHCl:U@SiO_2 microcapsules.

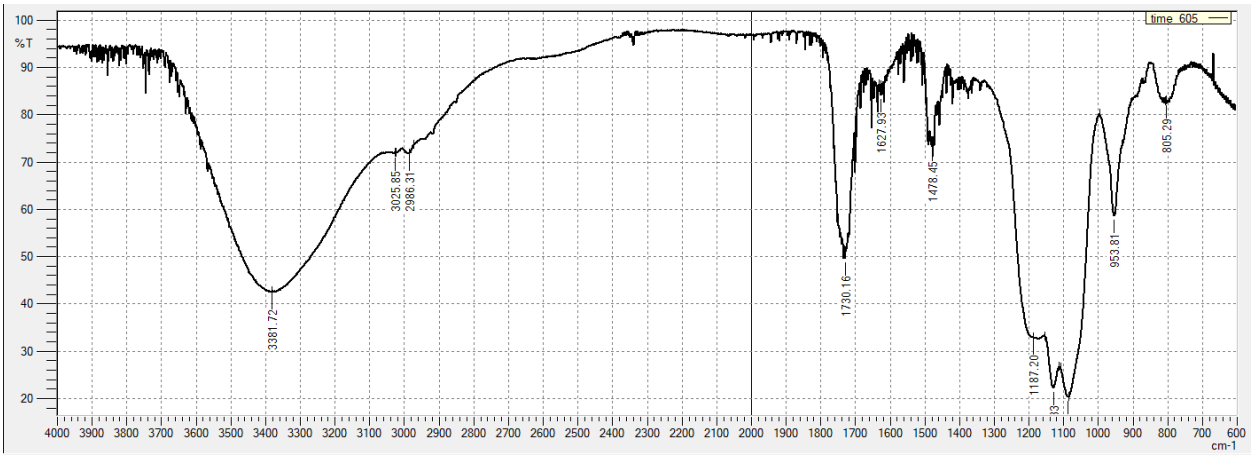

Figure S22. FTIR analysis of CHCl:LA@SiO_2 microcapsules.

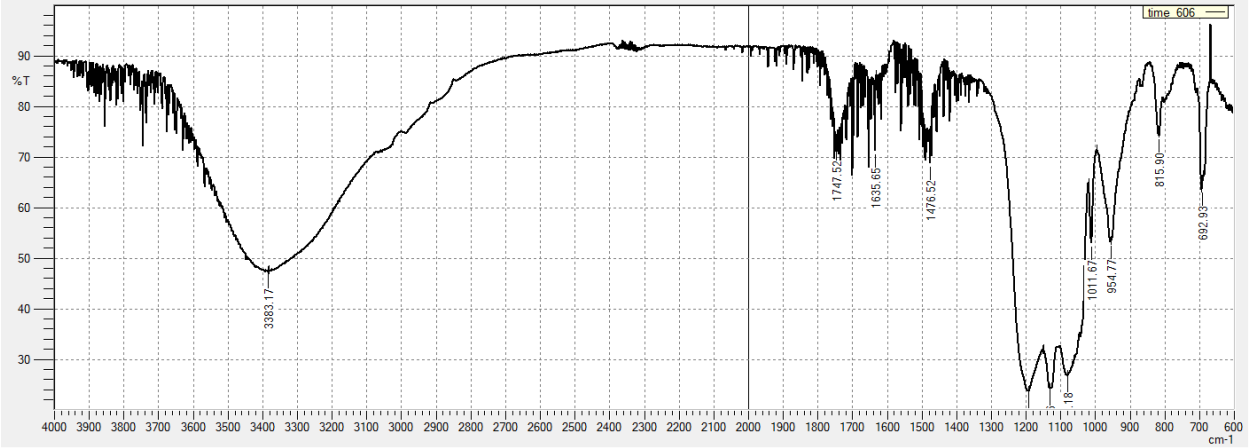

Figure S23. FTIR analysis of CHCl:TSA@SiO_2 microcapsules.

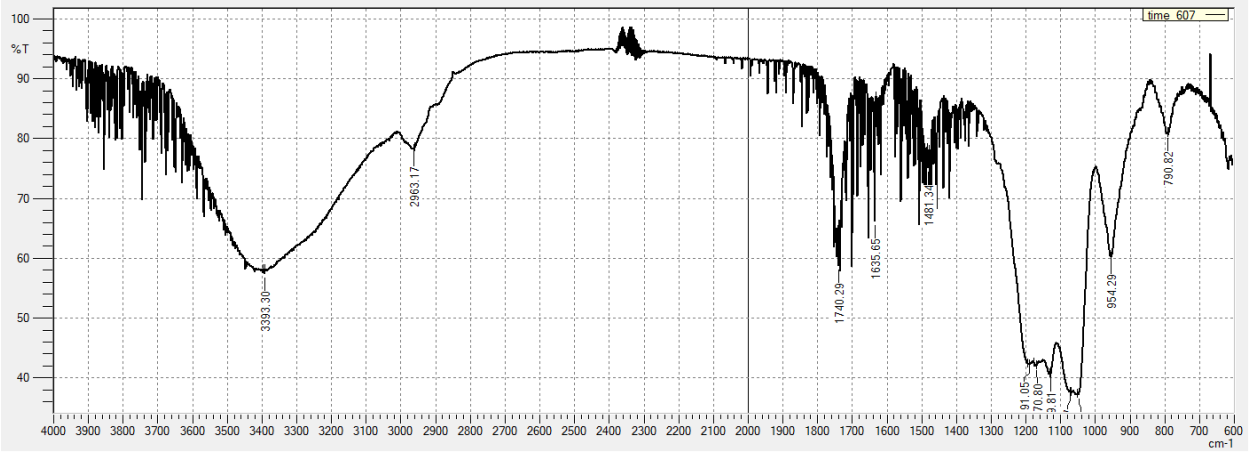

Figure S24. FTIR analysis of CHCl:CPA@SiO_2 microcapsules.

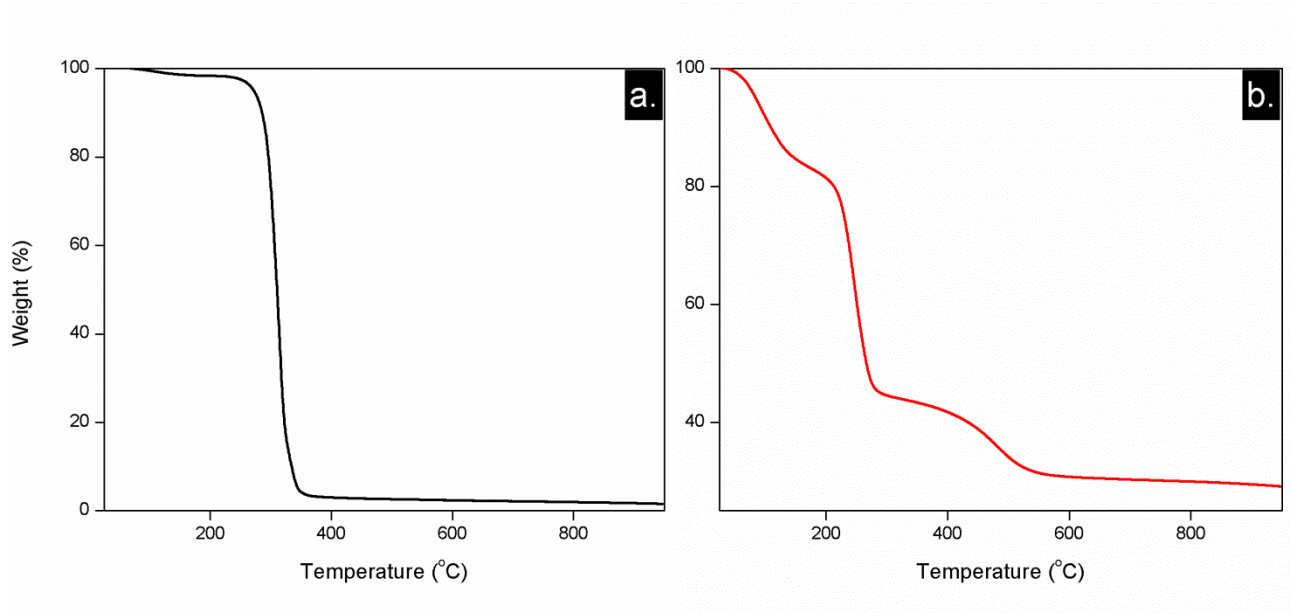

Figure S25. TGA analysis of a. CHCl:S, and b. CHCl:S@SiO_2 microcapsules under N_2 atmosphere.

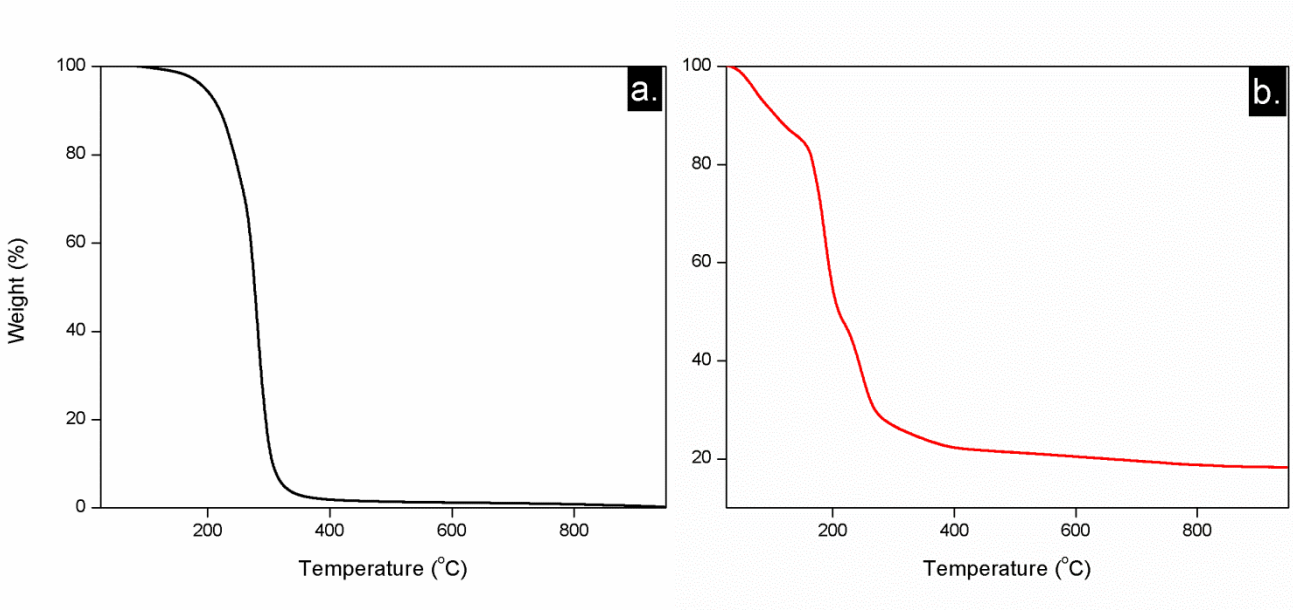

Figure S26. TGA analysis of a. CHCl:U, and b. CHCl:U@SiO_2 microcapsules under N_2 atmosphere.

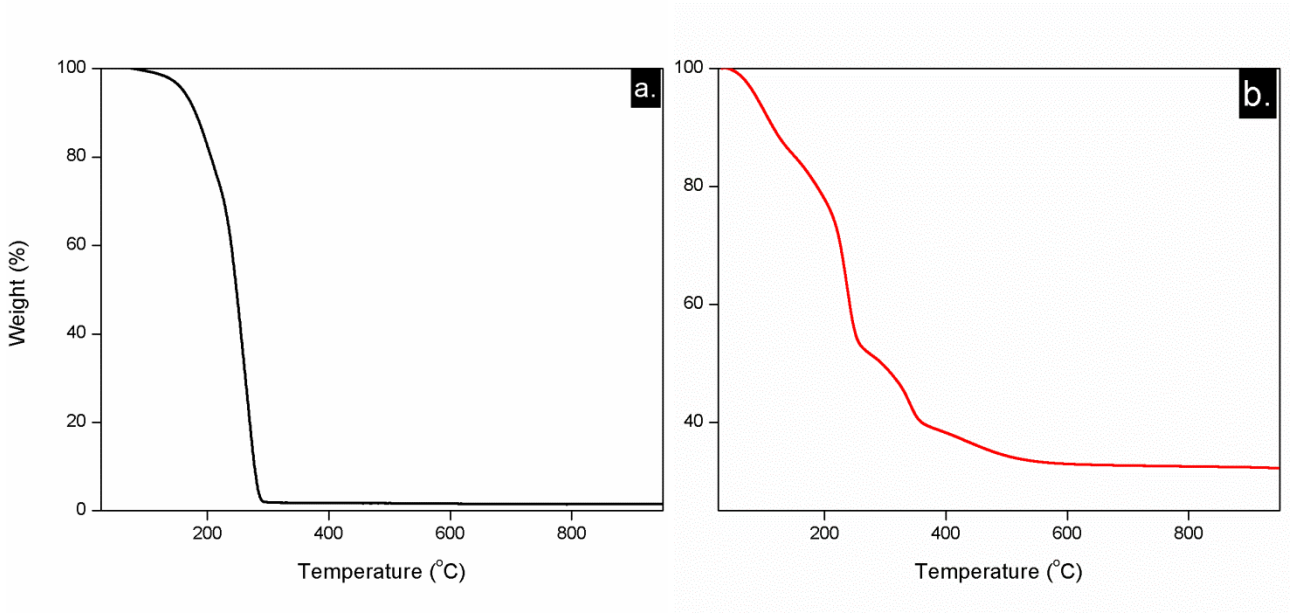

Figure S27. TGA analysis of a. CHCl:LA, and b. CHCl:LA@SiO_2 microcapsules under N_2 atmosphere.

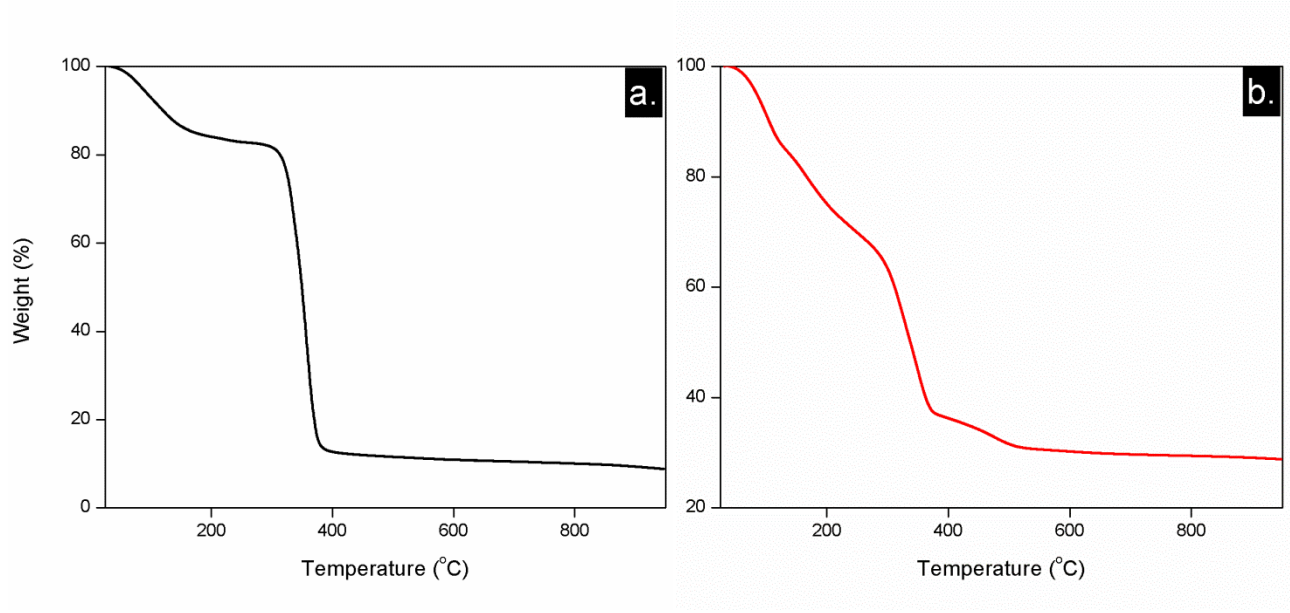

Figure S28. TGA analysis of a. CHCl:TSA, and b. CHCl:TSA@SiO_2 microcapsules under N_2 atmosphere.

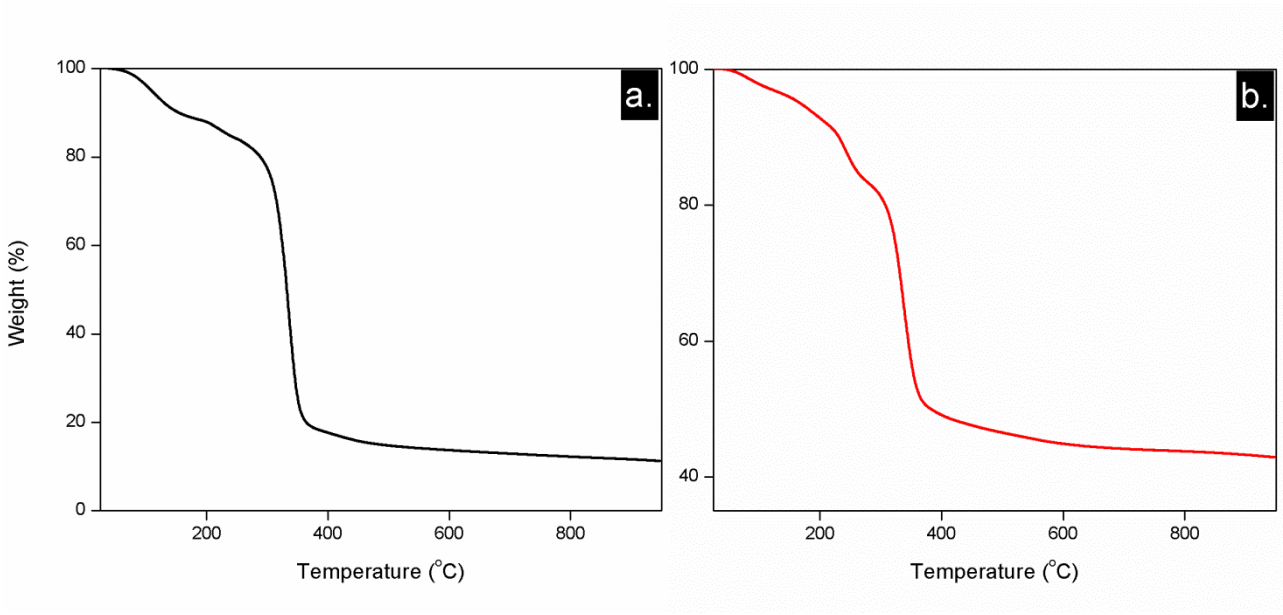

Figure S29. TGA analysis of a. CHCl:CSA, and b. CHCl:CSA@SiO_2 microcapsules under N_2 atmosphere.

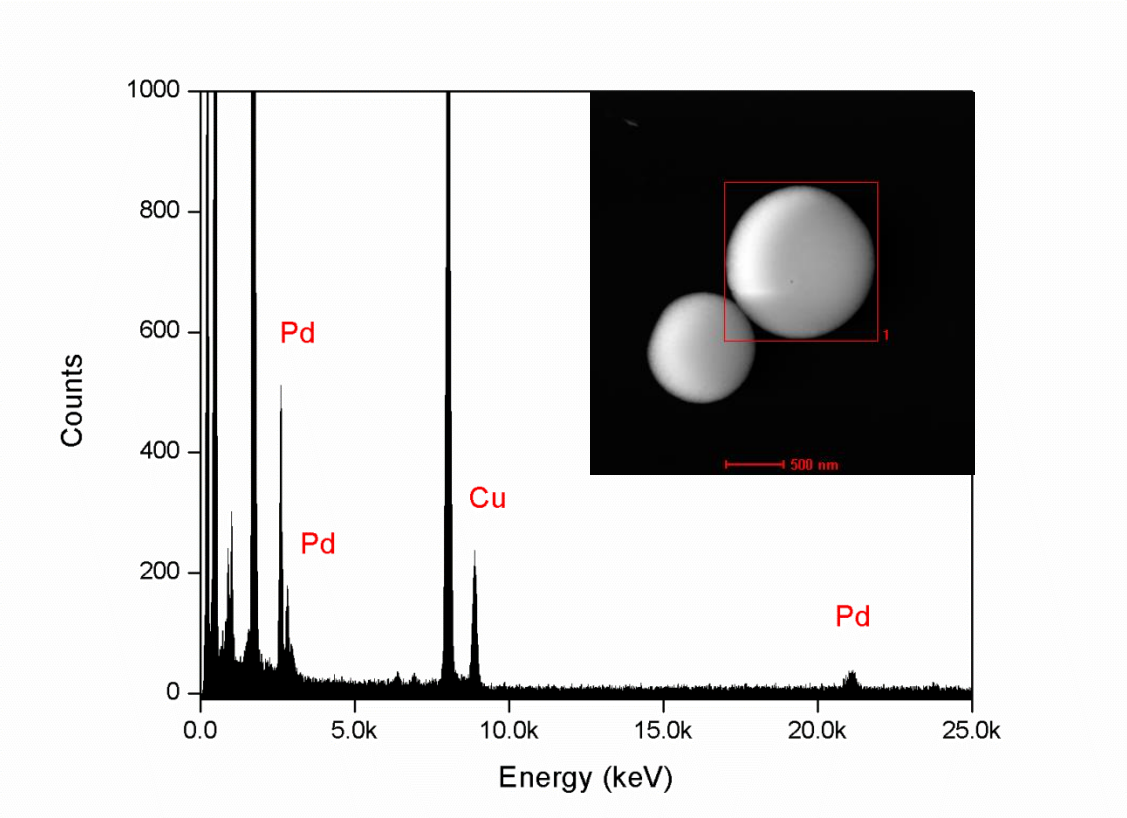

Figure S30. STEM image and EDS analysis of Na_2PdCl_4 entrapped inside CHCl:TA@SiO_2 microcapsules.

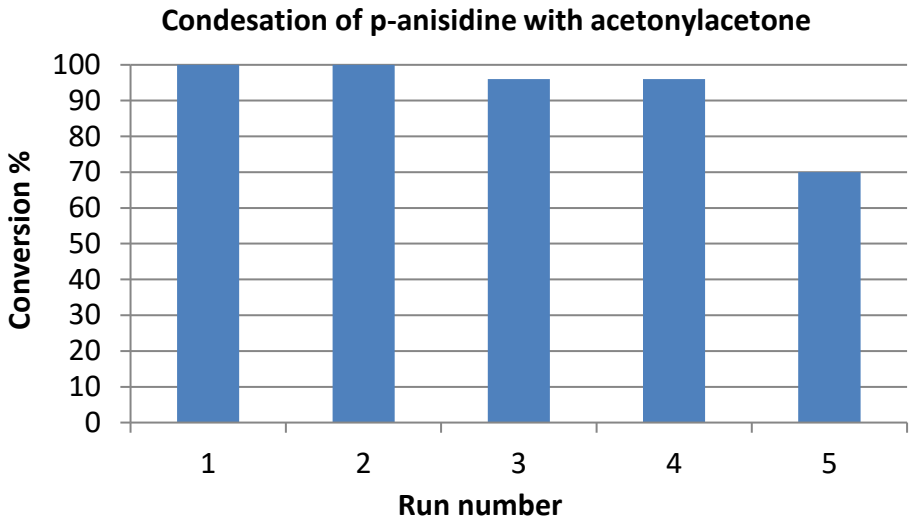

Figure S31. Recycling of CHCl:TA@SiO_2 microcapsules following the condensation of p-anisidine with acetonylacetone.

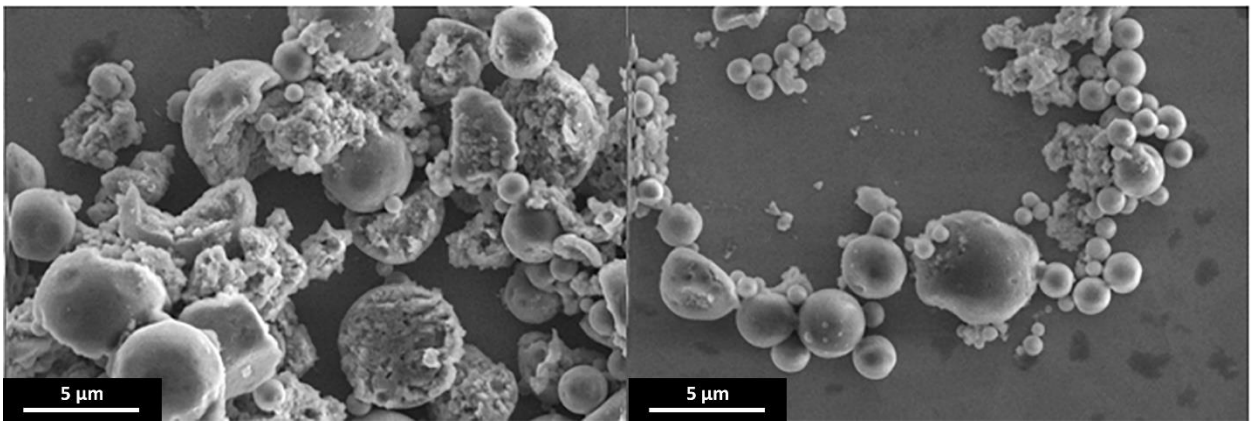

Figure S32. SEM images of CHCl:TA@SiO_2 microcapsules following the condensation of p-anisidine with acetonylacetone after the 4th run.