



Supplementary material: Design and synthesis of triphenylphosphonium-porphyrin@xylan nanoparticles for anticancer photodynamic therapy

Document complémentaire : Conception et synthèse de nanoparticules constituées de xylane portant des porphyrines avec un groupement triphénylphosphonium pour la thérapie photodynamique anticancéreuse

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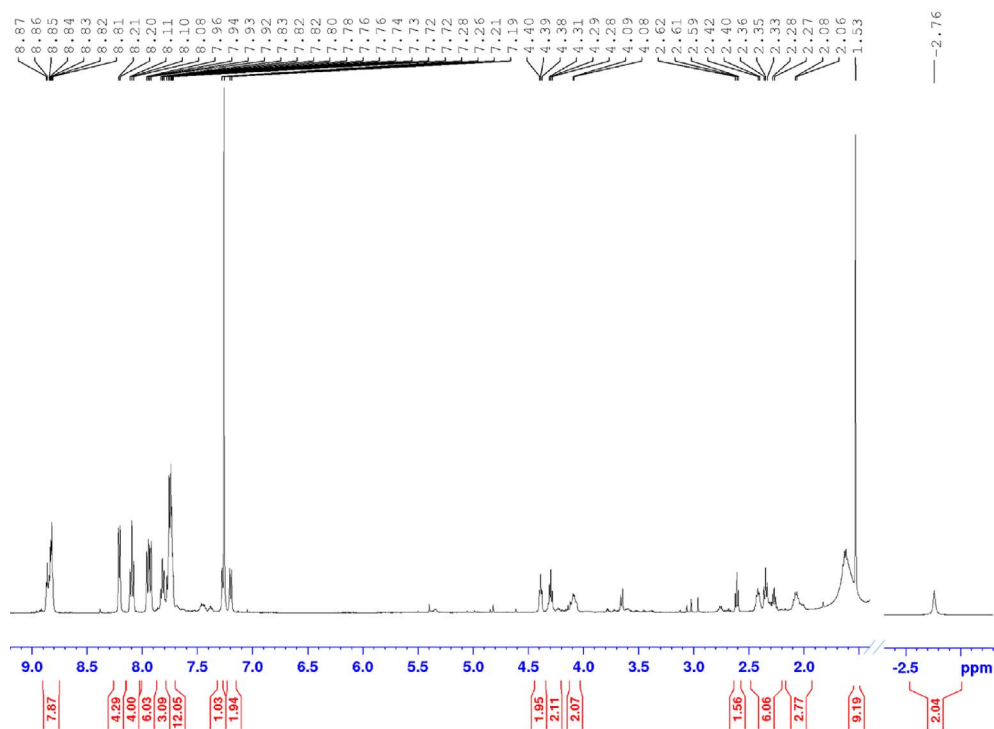
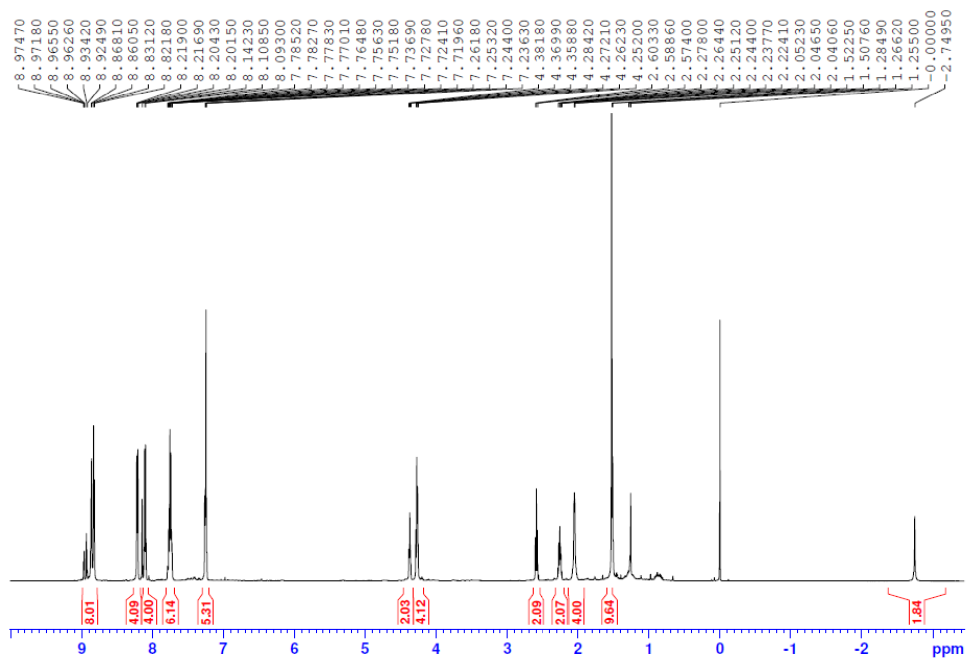
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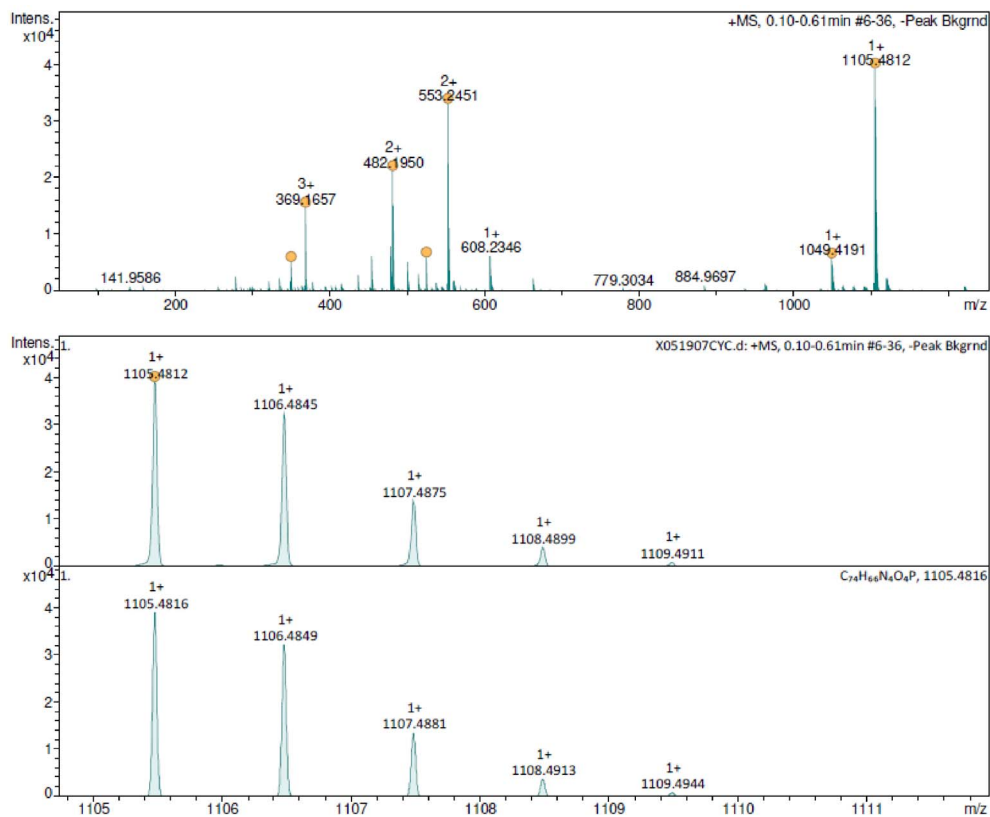
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Materials

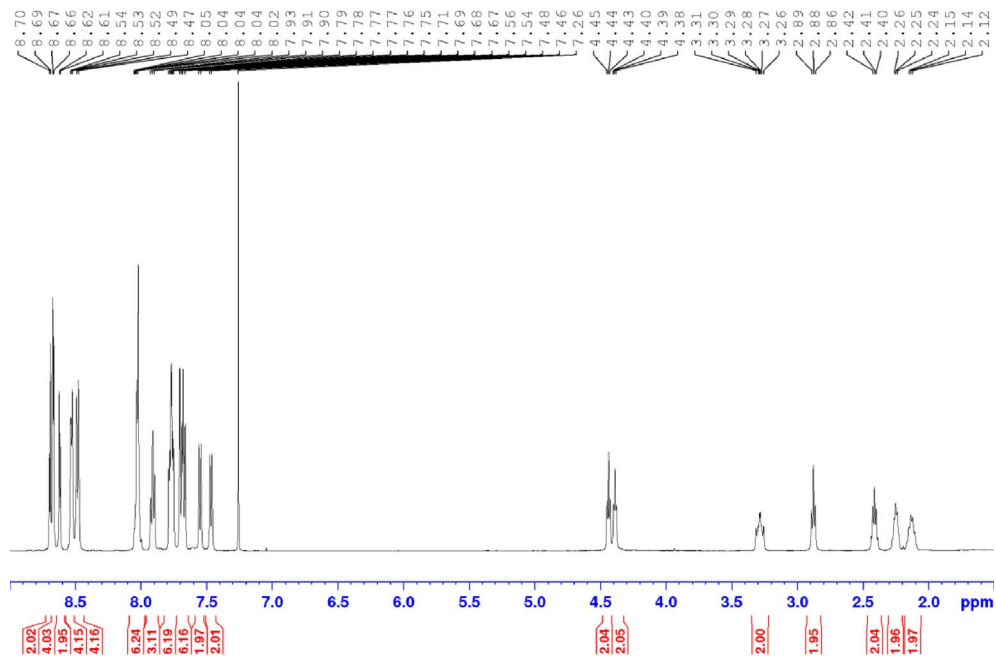
Beech xylan, potassium carbonate (K_2CO_3), sodium hydroxide (NaOH), 1,1'-carbonyldiimidazole (CDI) 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazoliumbromide (MTT) from Sigma-Aldrich Steinheim, Germany. 4-Hydroxybenzaldehyde, benzaldehyde, propionic acid, pyrrole, trifluoroacetic acid (TFA), tetraethoxysilane (TEOS), (3-Aminopropyl) triethoxysilane (APTES) and ammonium hydroxide, 28% NH_3 (NH_4OH) were purchased from Alfa Aesar. Petroleum spirit 40–60 °C, ethanol absolute and ethanol 96% were purchased from VWR Fontenay-sous-Bois, France. Ethyl 4-bromobutyrate, *N,N*-

dimethylformamide (DMF, extra dry) and dimethyl sulfoxide (DMSO, extra dry) were purchased from Acros Organics New Jersey, USA. Magnesium sulfate ($MgSO_4$), acetone, chloroform ($CHCl_3$), methanol (MeOH) and dichloromethane (CH_2Cl_2) were purchased from CARLO ERBA Val-de-Reuil, France. Hydrochloric acid (HCl, 37%) was purchased from Fisher Scientific Loughborough Leics, United Kingdom. Analytical thin layer chromatography (TLC, purchased from Merck, Darmstadt, Germany) was performed on Silica plates (Kieselgel60 F254, thickness 0.2 mm, Merck) and revealed by direct observation. RPMI-1640, DMEM, fetal bovine serum (FBS), penicillin/streptomycin and phosphate buffer were purchased from Gibco BRL Cergy-Pontoise, France.

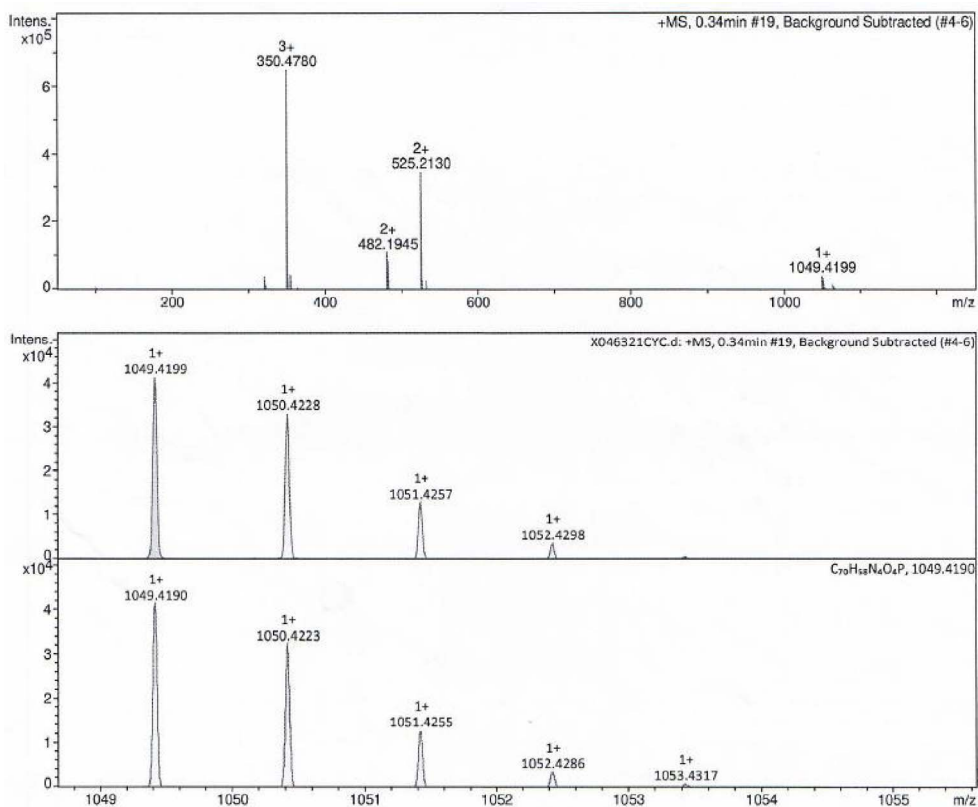




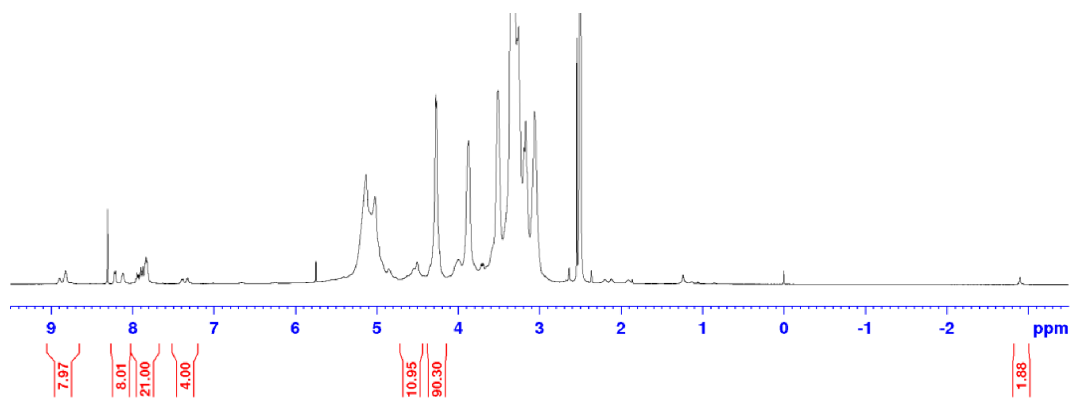
Supplementary Figure S3. HRMS (ESI) mass spectrum of compound 5.



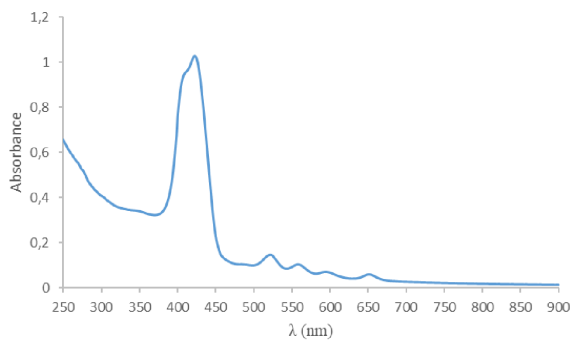
Supplementary Figure S4. 1H NMR Spectrum of compound 6 in $(CDCl_3 - 10\% TFA)$.



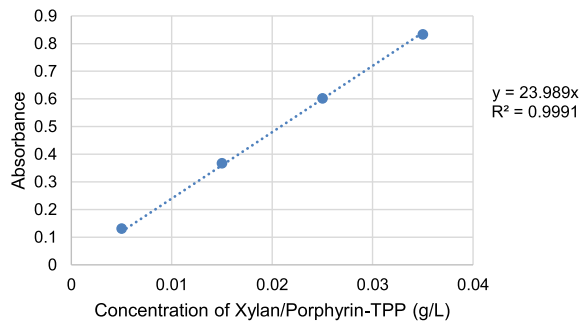
Supplementary Figure S5. HRMS (ESI) mass spectrum of compound **6**.



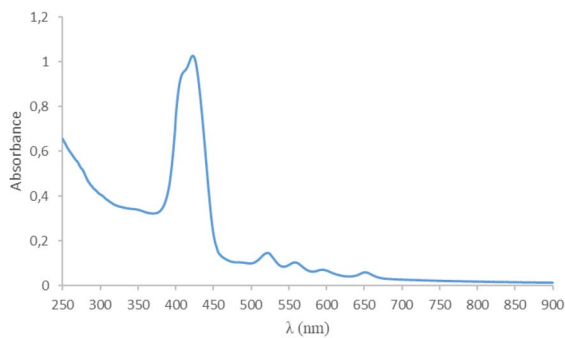
Supplementary Figure S6. ^1H NMR Spectrum of Xylan/Porphyrin-TPP (DS = 0.1) (DMSO).



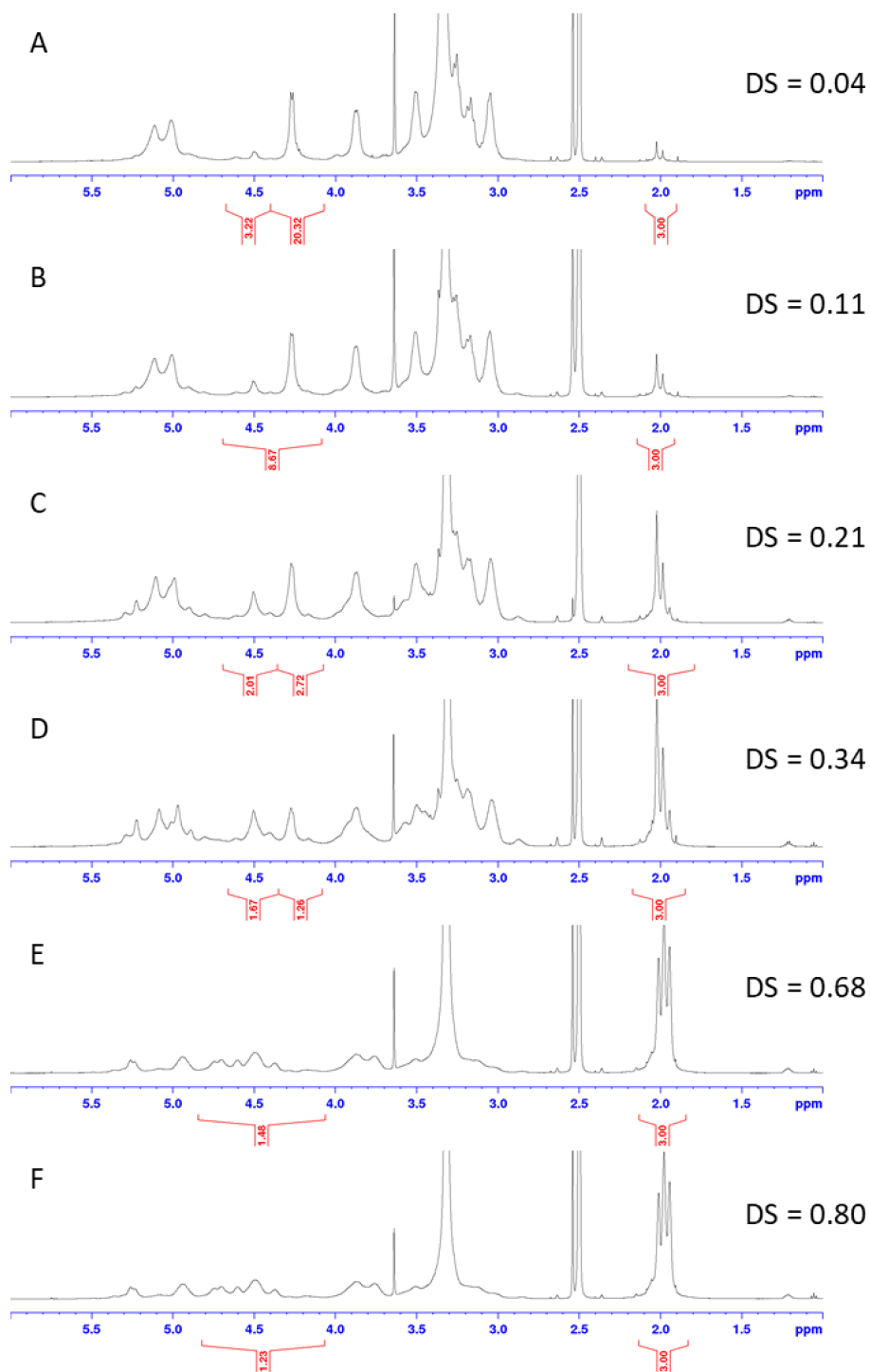
Supplementary Figure S7. UV-Visible spectrum of Xylan/Porphyrin-TPP (water).



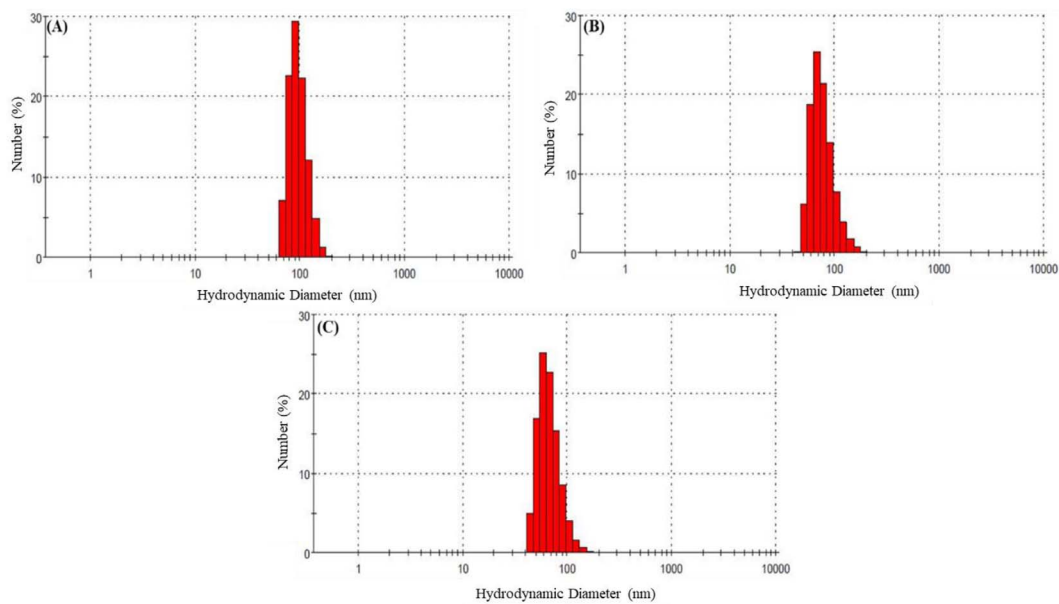
Supplementary Figure S8. Standard curve for the assessment of Xylan/Porphyrin-TPP in the hybrid nanoparticles NPS@Xylan/Porphyrin-TPP. Absorbance measurements at 420 nm for various concentrations of Xylan/Porphyrin-TPP dissolved in water.



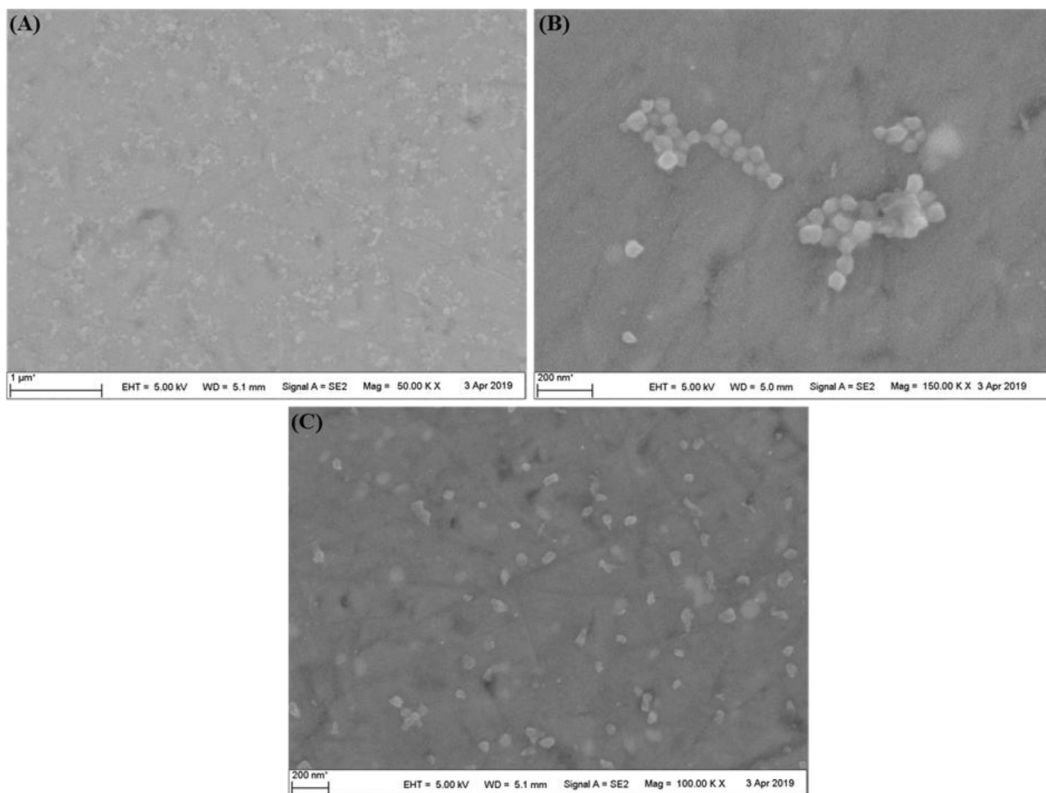
Supplementary Figure S9. UV-Visible spectrum of SiNPS@Xylan/Porphyrin-TPP in water.



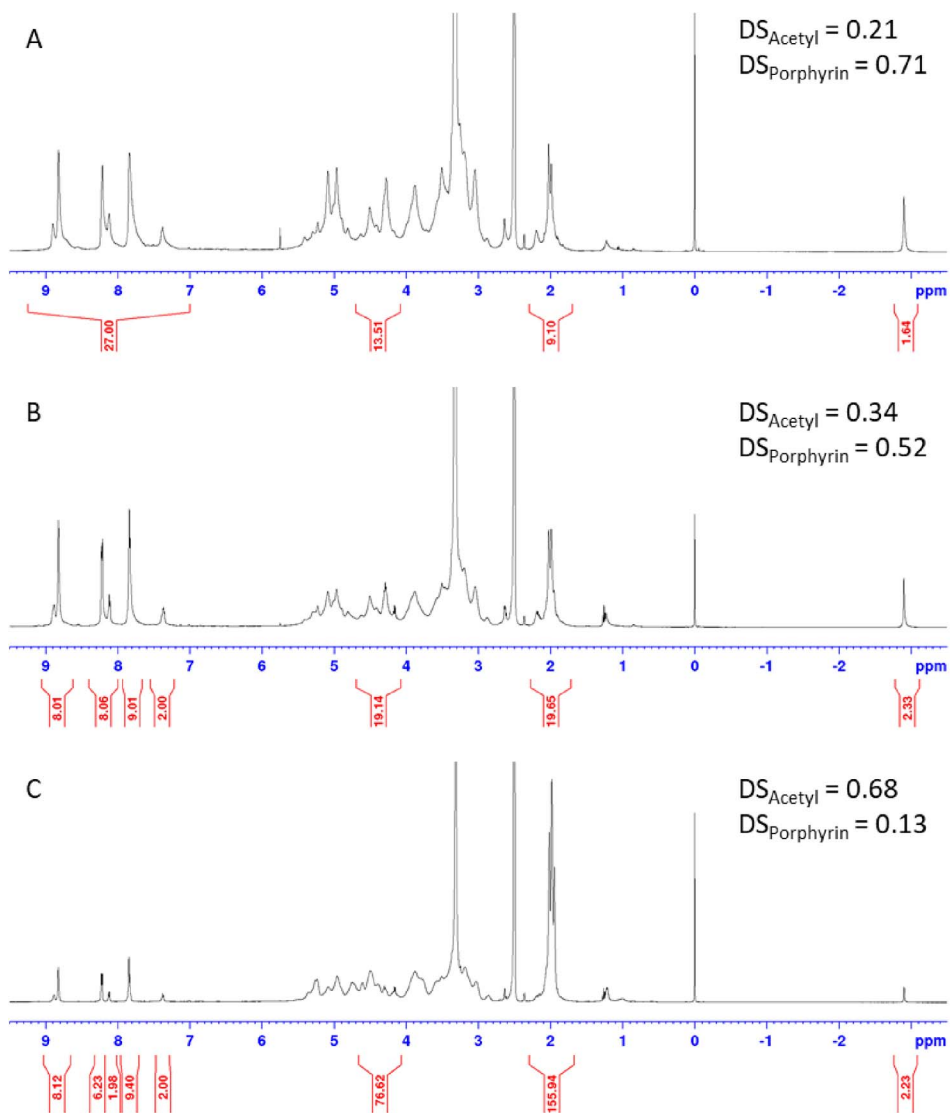
Supplementary Figure S10. ¹H NMR Spectrum of Ac-Xyl 1 (A), Ac-Xyl 2 (B), Ac-Xyl 3 (C), Ac-Xyl 4 (D), Ac-Xyl 5 (E) and Ac-Xyl 6 (F) in DMSO.



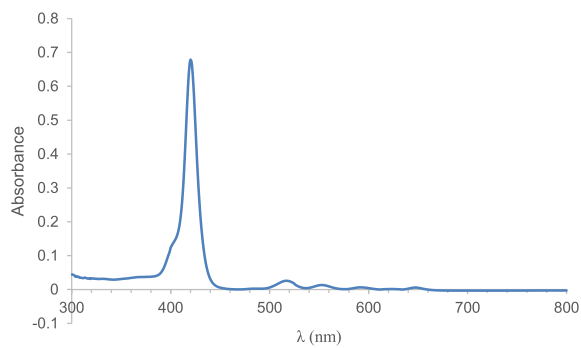
Supplementary Figure S11. Dynamic light scattering (DLS) size measurement of Ac-Xyl-5 (A), Ac-Xyl-6 (B) and Ac-Xyl-7 (C) particles.



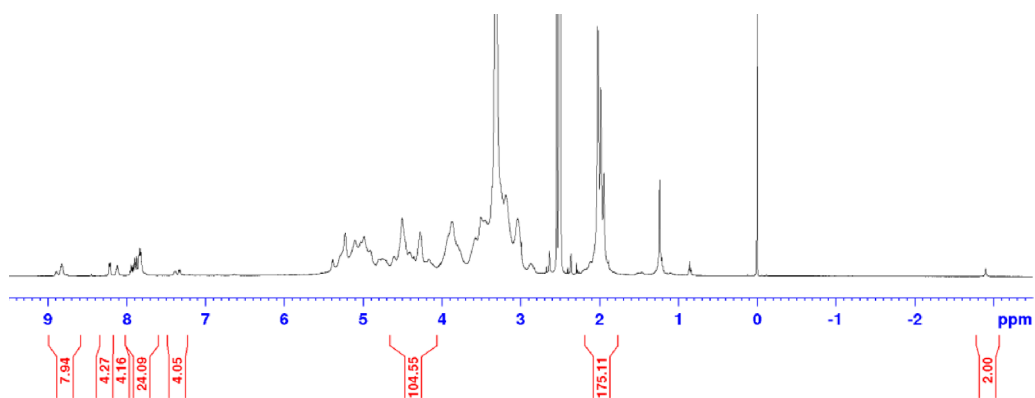
Supplementary Figure S12. SEM image of Ac-Xyl-5 (A), Ac-Xyl-6 (B) and Ac-Xyl-7 (C) particles.



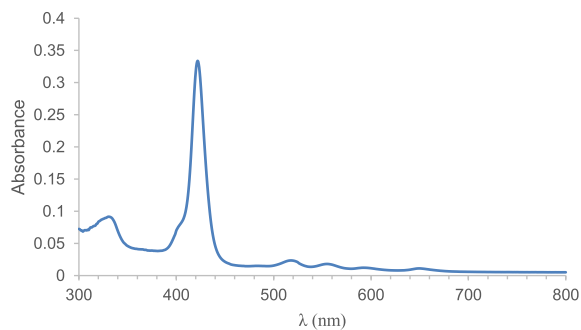
Supplementary Figure S13. ^1H NMR Spectrum of Ac-Xyl 3-Porphyrin (A), Ac-Xyl 4-Porphyrin (B), Ac-Xyl 5-Porphyrin (C) in DMSO.



Supplementary Figure S14. UV-Visible spectrum of Ac-Xyl 4-Porphyrin in DMSO.



Supplementary Figure S15. ^1H NMR Spectrum of Ac-Xyl 4-Porphyrin-TPP ($\text{DS}_{\text{acetyl}} = 0.34$, $\text{DS}_{\text{Porphyrin}} = 0.1$) in DMSO.



Supplementary Figure S16. UV-Visible spectrum of Ac-Xyl 4-Porphyrin-TPP in DMSO.