

Synthesis and spectroscopic studies of Berberine immobilized cellulose material

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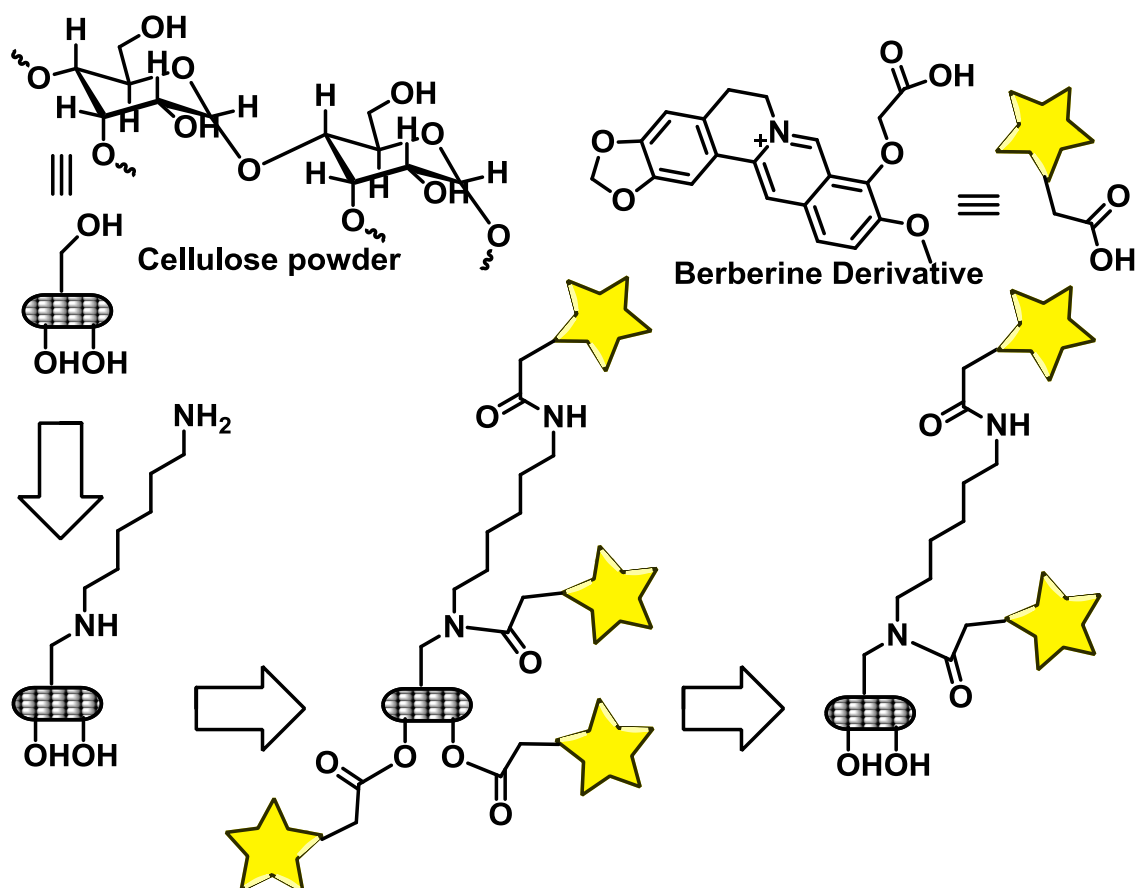
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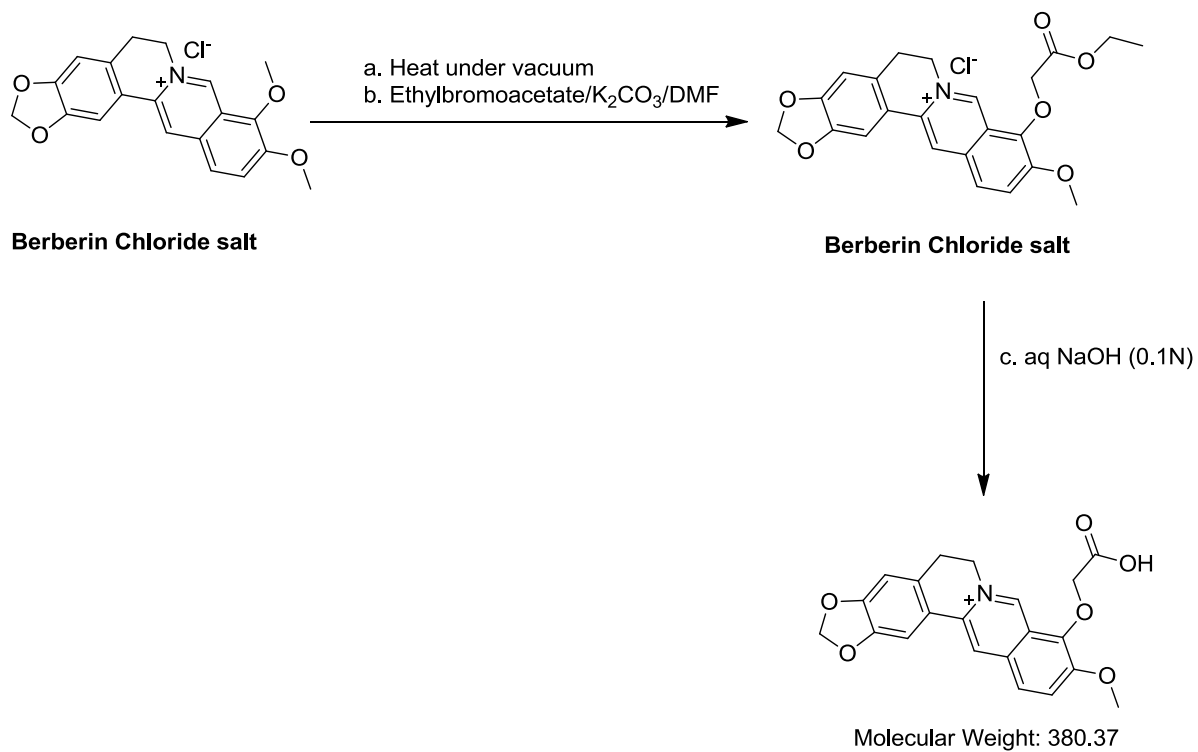
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1. Synthesis of Berberine Derivative*



*W.-J. Zhang et al. *Bioorg. Med. Chem.* 15 (2007) 5493–5501

2. $^1\text{H-NMR}$ of Berberine ester Derivative ester

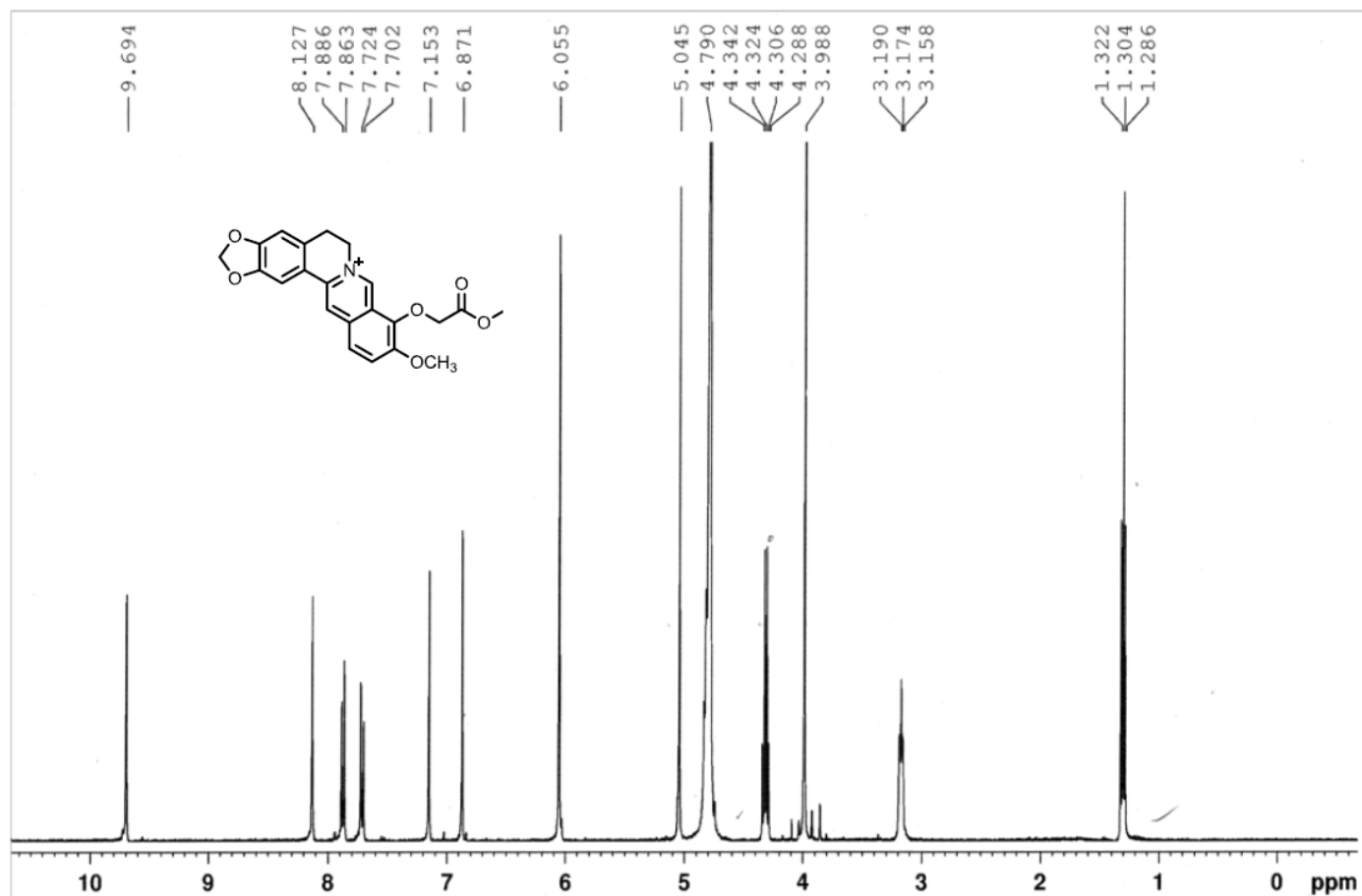


Figure S1. $^1\text{H-NMR}$ of ester functionalized modified berberine

3. $^1\text{H-NMR}$ of Berberine acid Derivative (4)

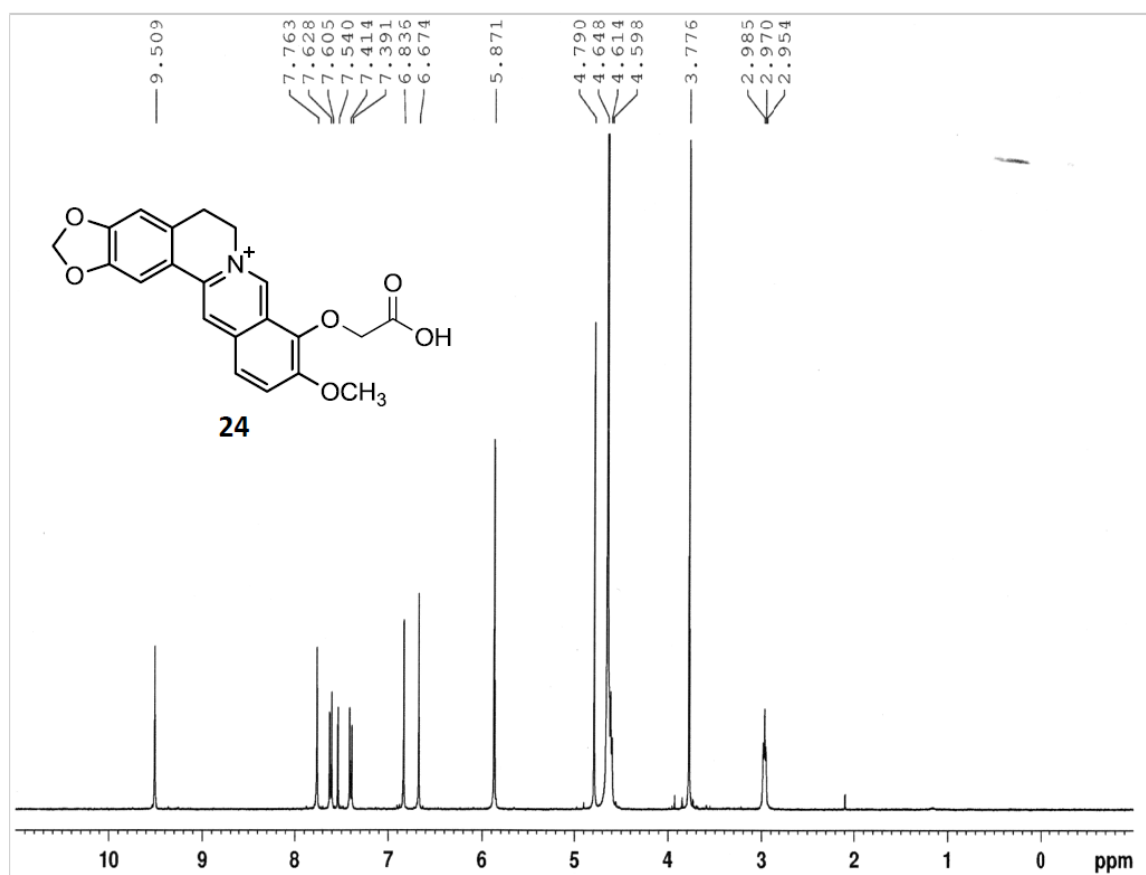


Figure S2. $^1\text{H-NMR}$ of acid functionalized modified berberine

Display Report

Analysis Info

Analysis Name D:\Data\APRIL_JUNE-2013\NKS\NKS-Cell-Mass\050312-NKS-CEL-BERB.d
Method Pso_tune_wide.m
Sample Name TBPC
Comment

Acquisition Date 3/5/2012 5:27:40 PM
Operator RAJESH VASHISTH
Instrument micrOTOF-Q II 10337

Acquisition Parameter

Source Type	ESI	Ion Polarity	Positive	Set Nebulizer	0.4 Bar
Focus	Not active	Set Capillary	4500 V	Set Dry Heater	180 °C
Scan Begin	50 m/z	Set End Plate Offset	-500 V	Set Dry Gas	4.0 l/min
Scan End	3000 m/z	Set Collision Cell RF	650.0 Vpp	Set Divert Valve	Waste

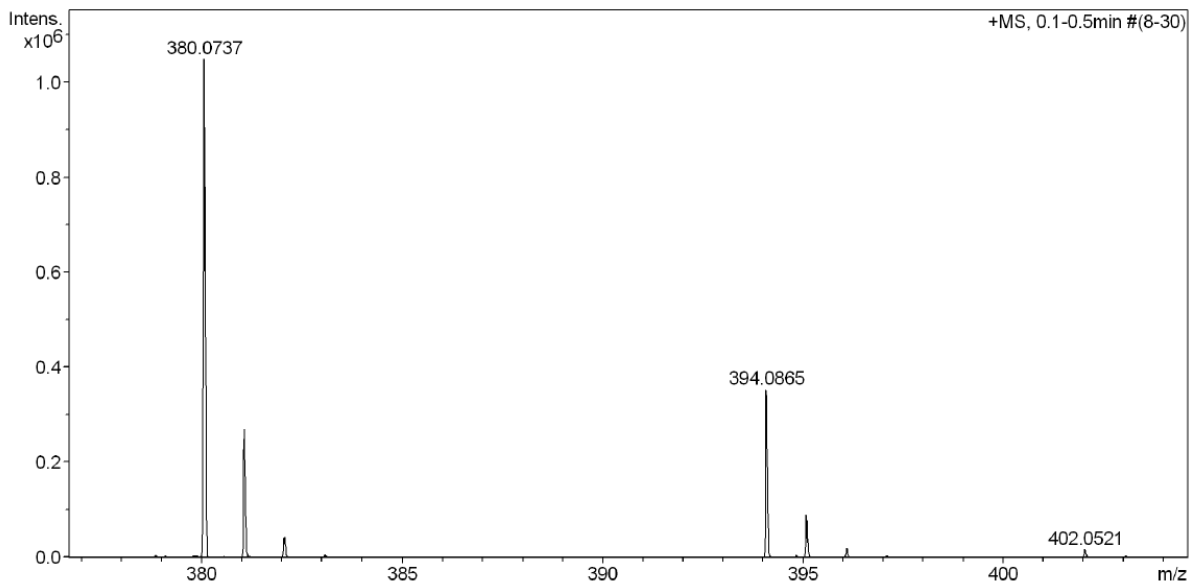
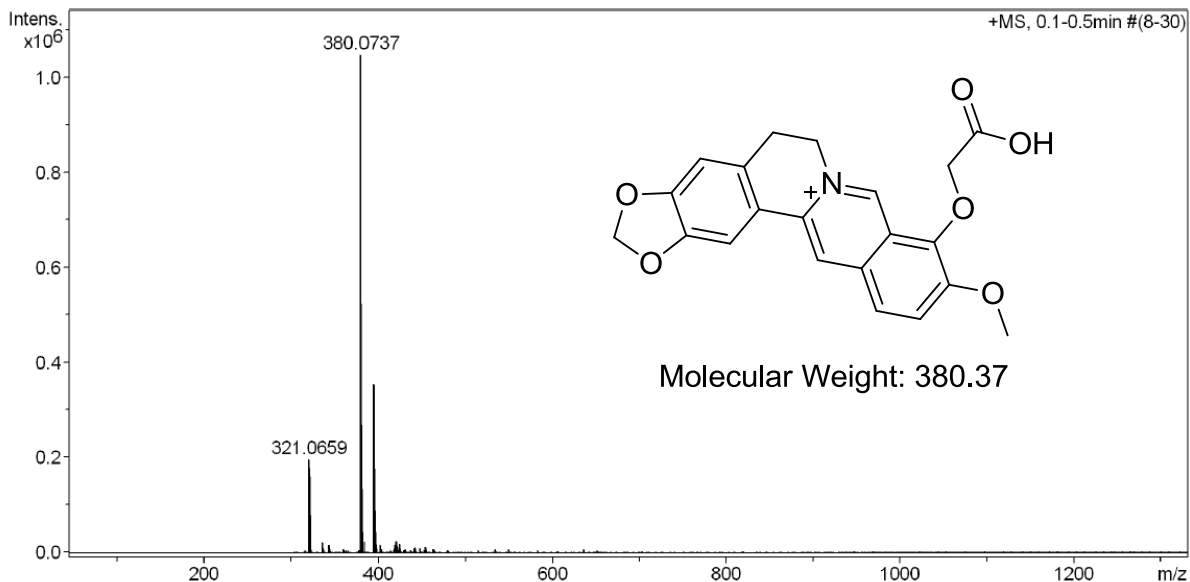


Figure S3. ESI-Mass of Berberine in MeOH:H₂O:Fomic acid (50:49.9:0.1)

3. ^{13}C -NMR of cellulose (1)

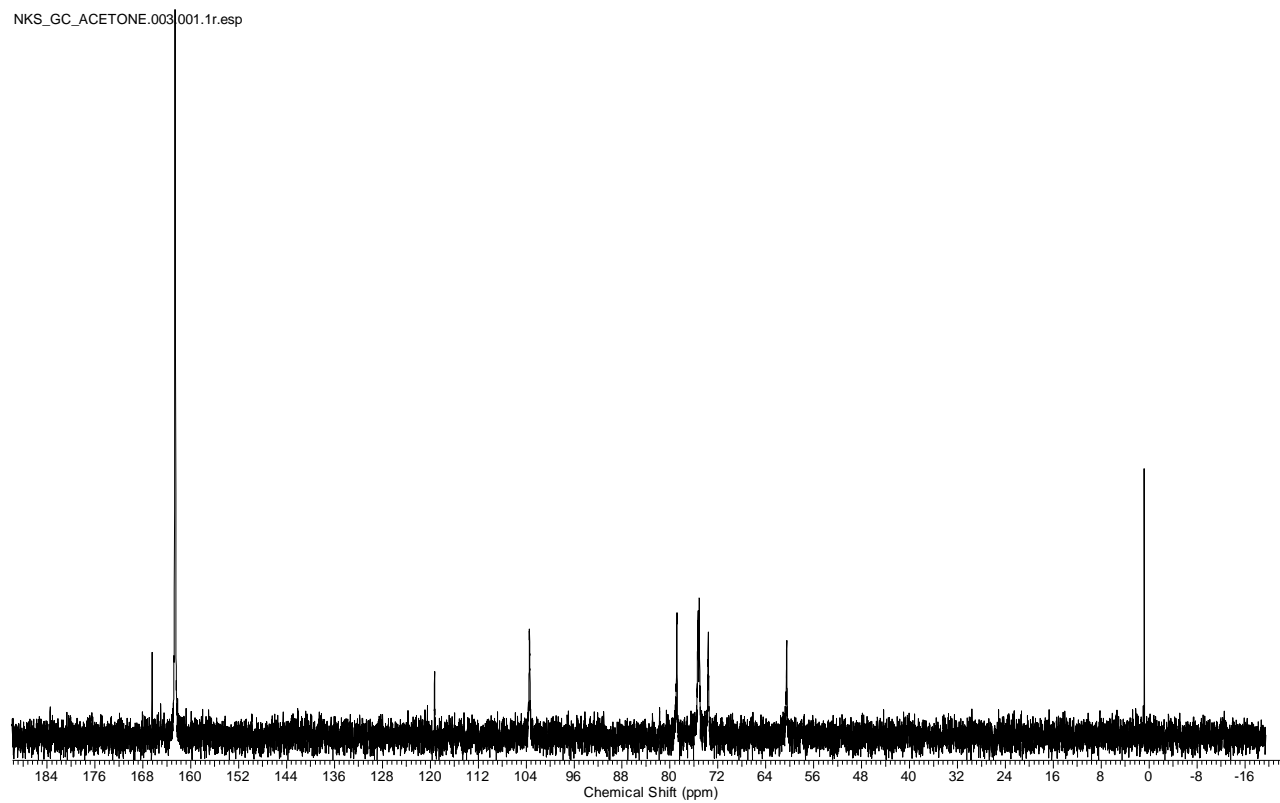


Figure S4. ^{13}C -NMR of native cellulose (1)

4. ^1H -NMR of cellulose (1)

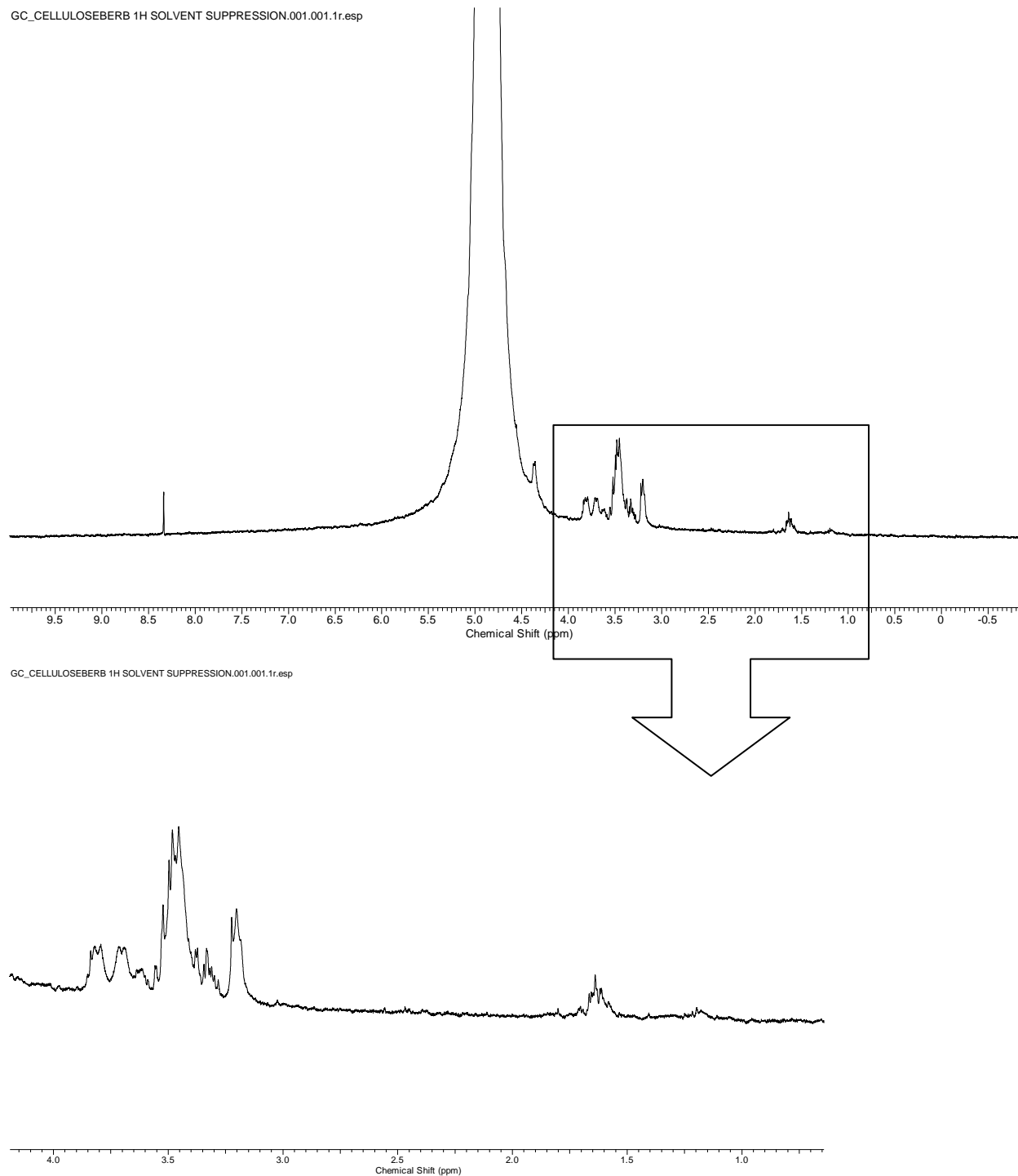


Figure S5. ^1H -NMR of native cellulose (1)

5. SEM image of Native Cellulose (1)

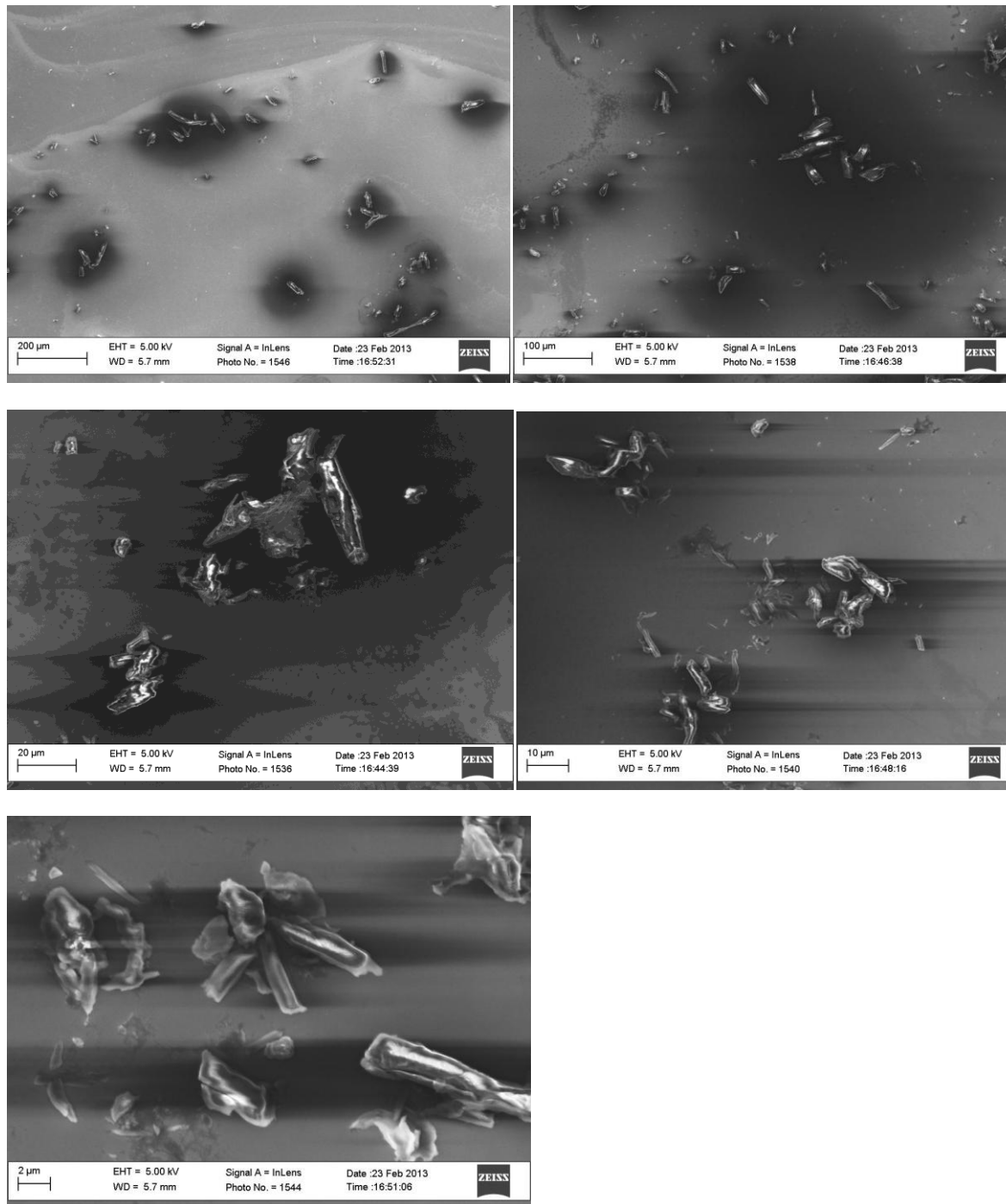


Figure S6. SEM image of native cellulose

6. Energy dispersive X-ray analysis (EDX) of Control sample Native Cellulose (1)

Energy-dispersive X-ray spectroscopy (EDS, EDX or XEDS) or Energy dispersive X-ray analysis (EDXA) is an analytical technique used for the elemental analysis or chemical characterization of sample

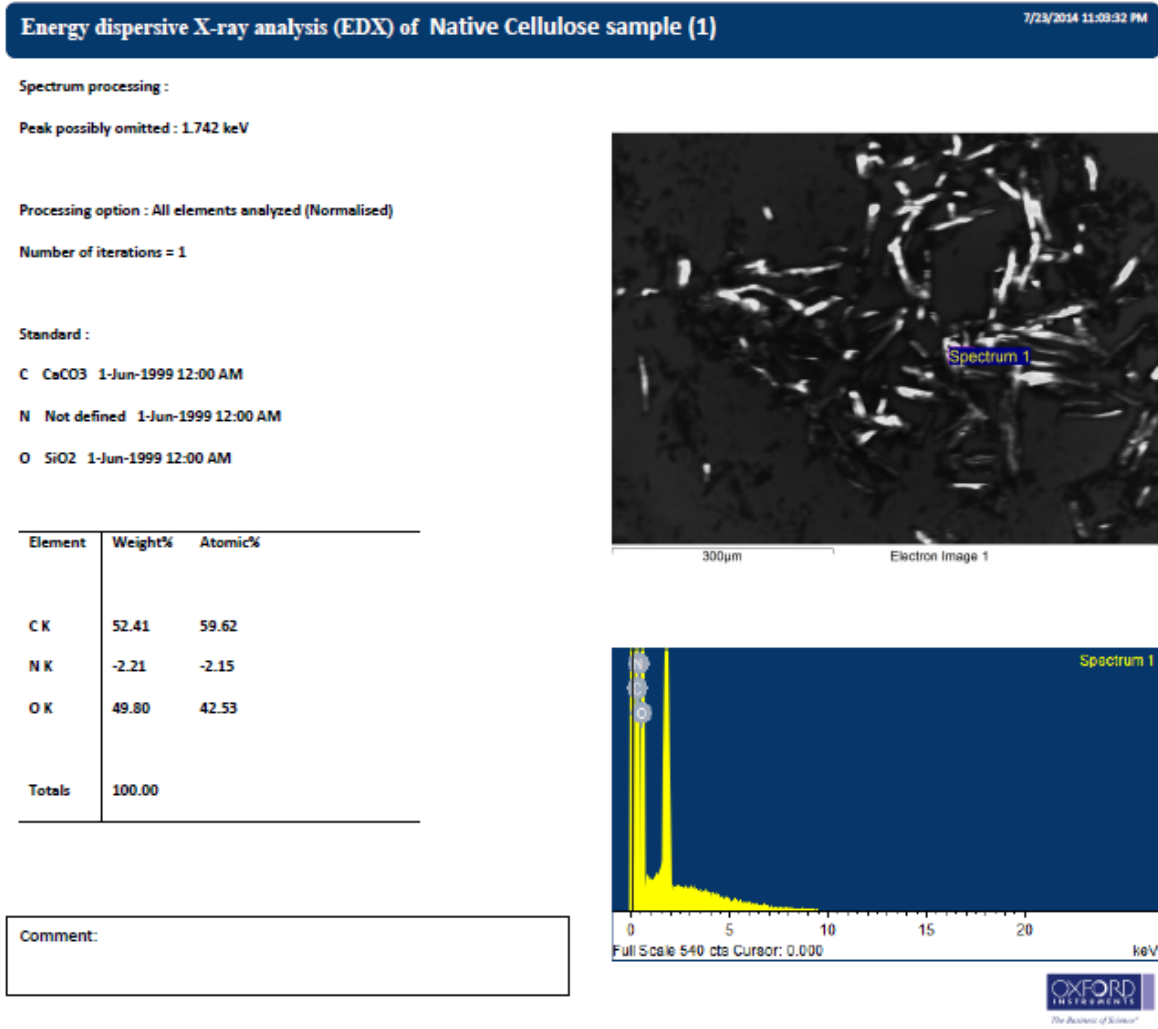
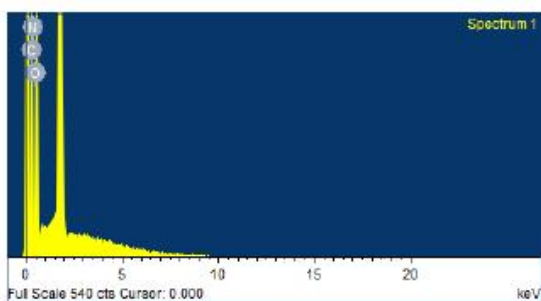
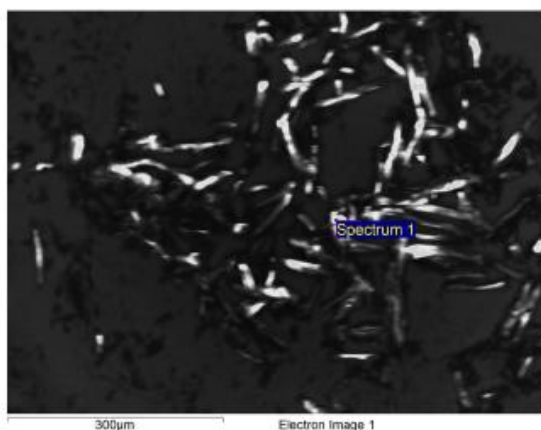
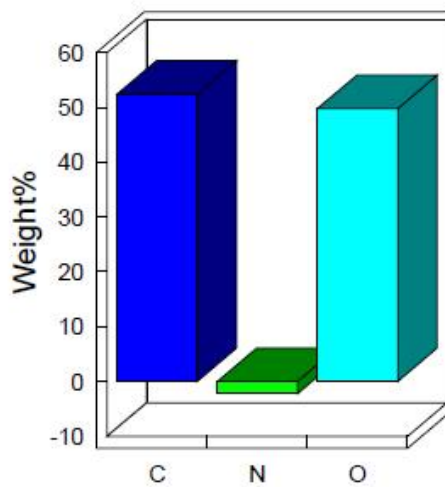


Figure S7. EDX of Control sample Native Cellulose (1)



Quantitative results



Comment:



Figure S8. EDX of Control sample Native Cellulose (1)

7. Amino functionalized modified Cellulose (3)

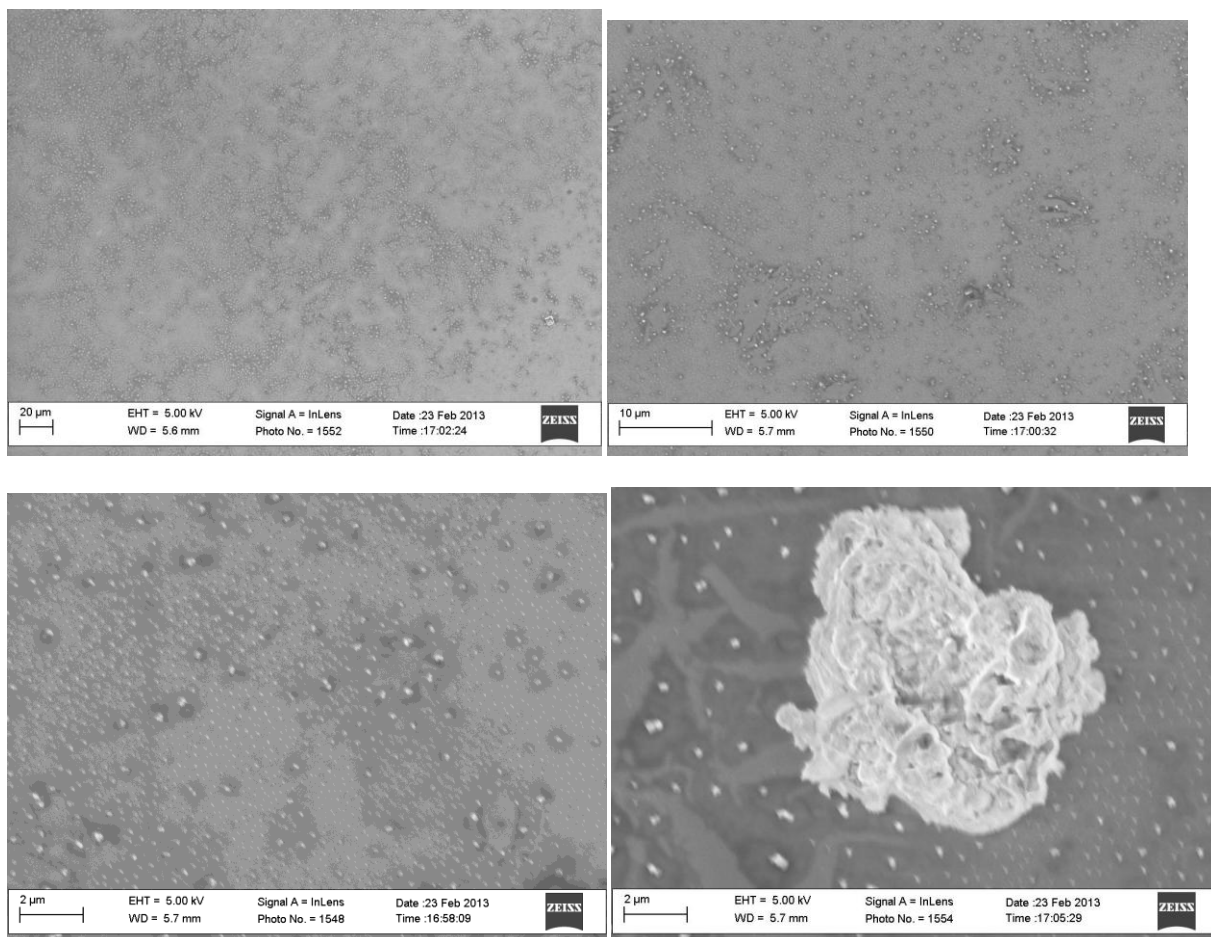


Figure S9. SEM image of amino functionalized modified cellulose

8. Acid functionalized Berberine derivative (4)

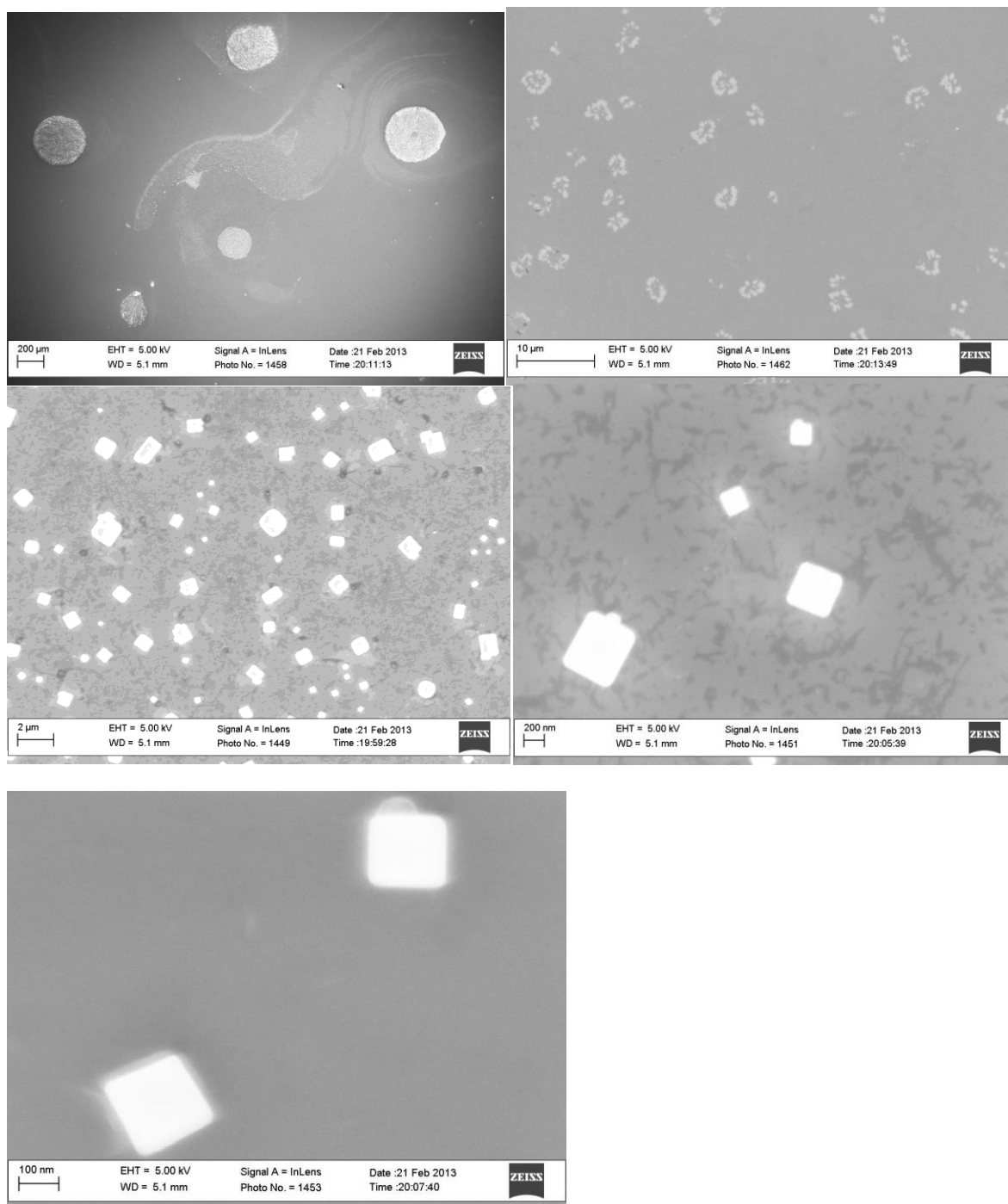


Figure S10. SEM image of modified berberine derivative

9. Energy dispersive X-ray analysis (EDX) of Berberine Derivative (4)

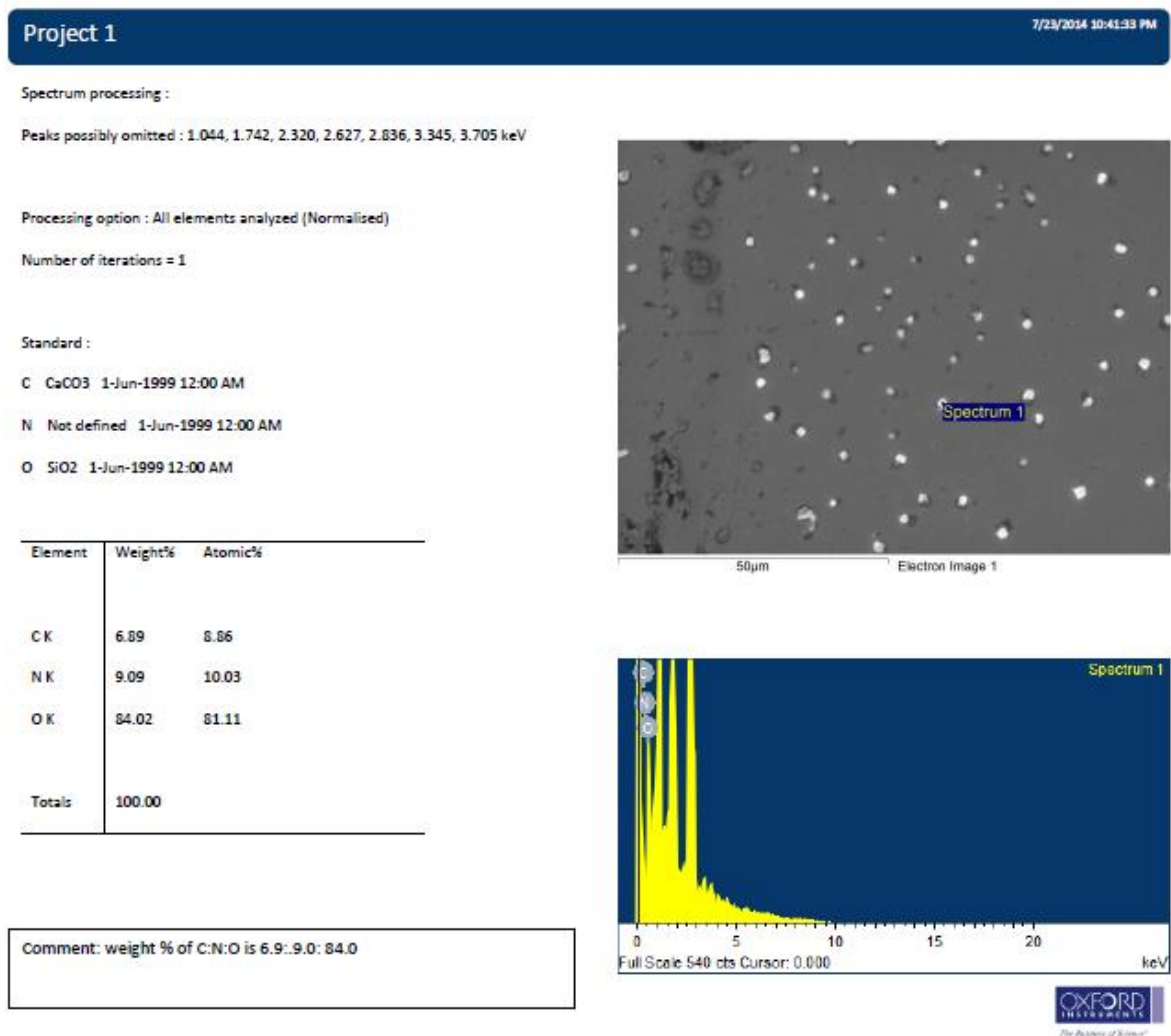
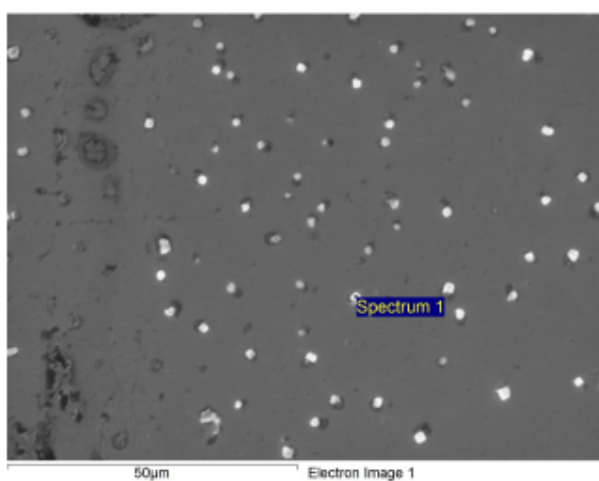
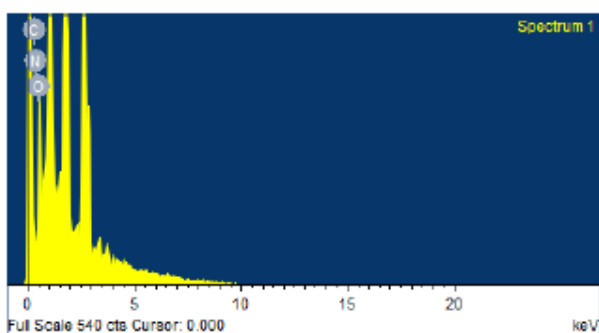
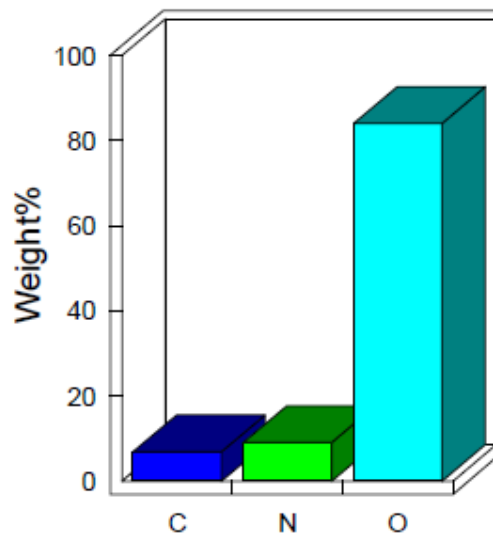


Figure S11. EDX of Berberine Derivative (4)



Quantitative results



Comment:



Figure S12. EDX of Berberine Derivative (4)

10. Berberine Immobilized modified cellulose derivative (5)

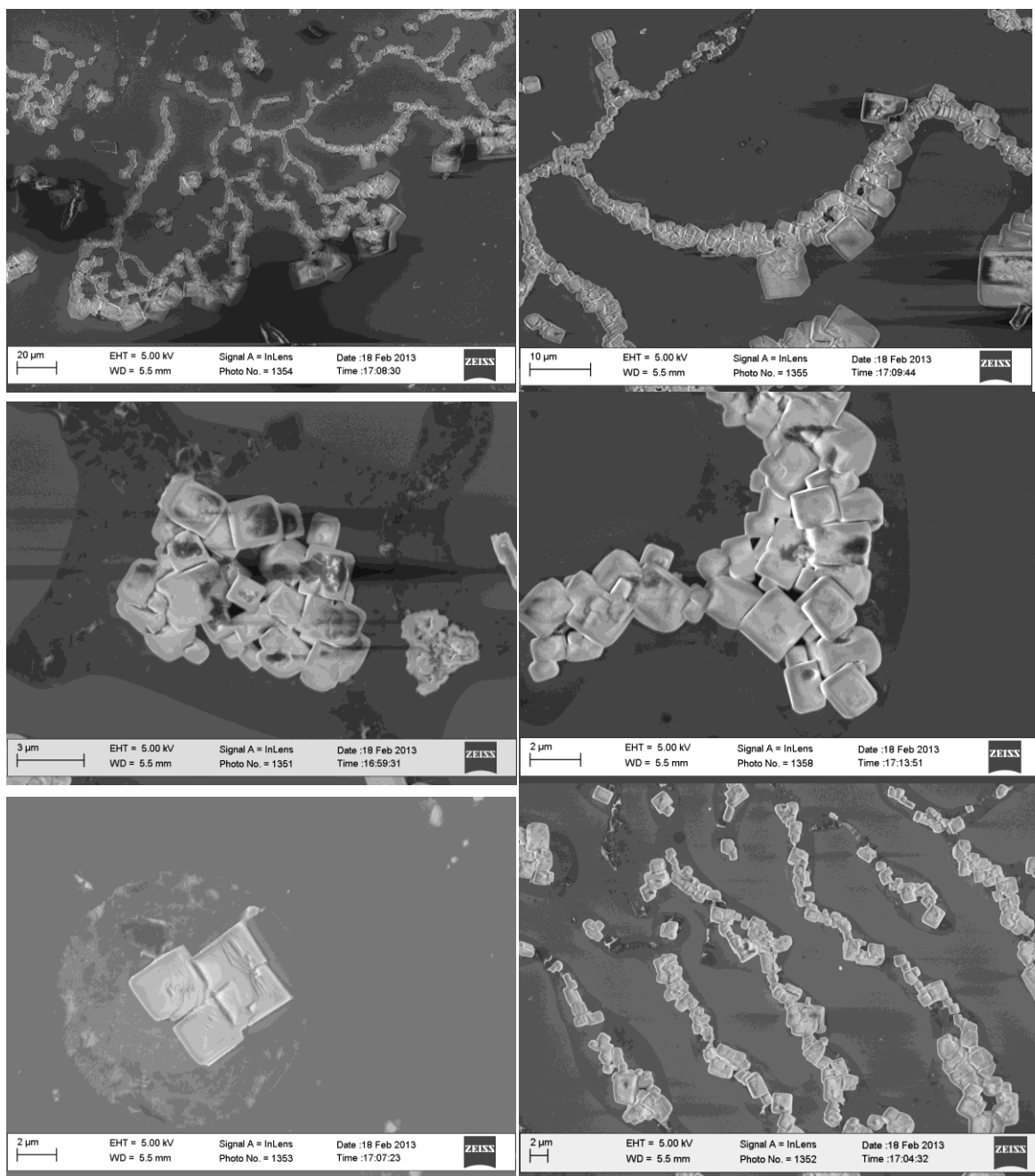


Figure S13. SEM image of Berberine immobilized modified cellulose via ester or/and amide bond

11. Modified berberine immobilized Cellulose (6)

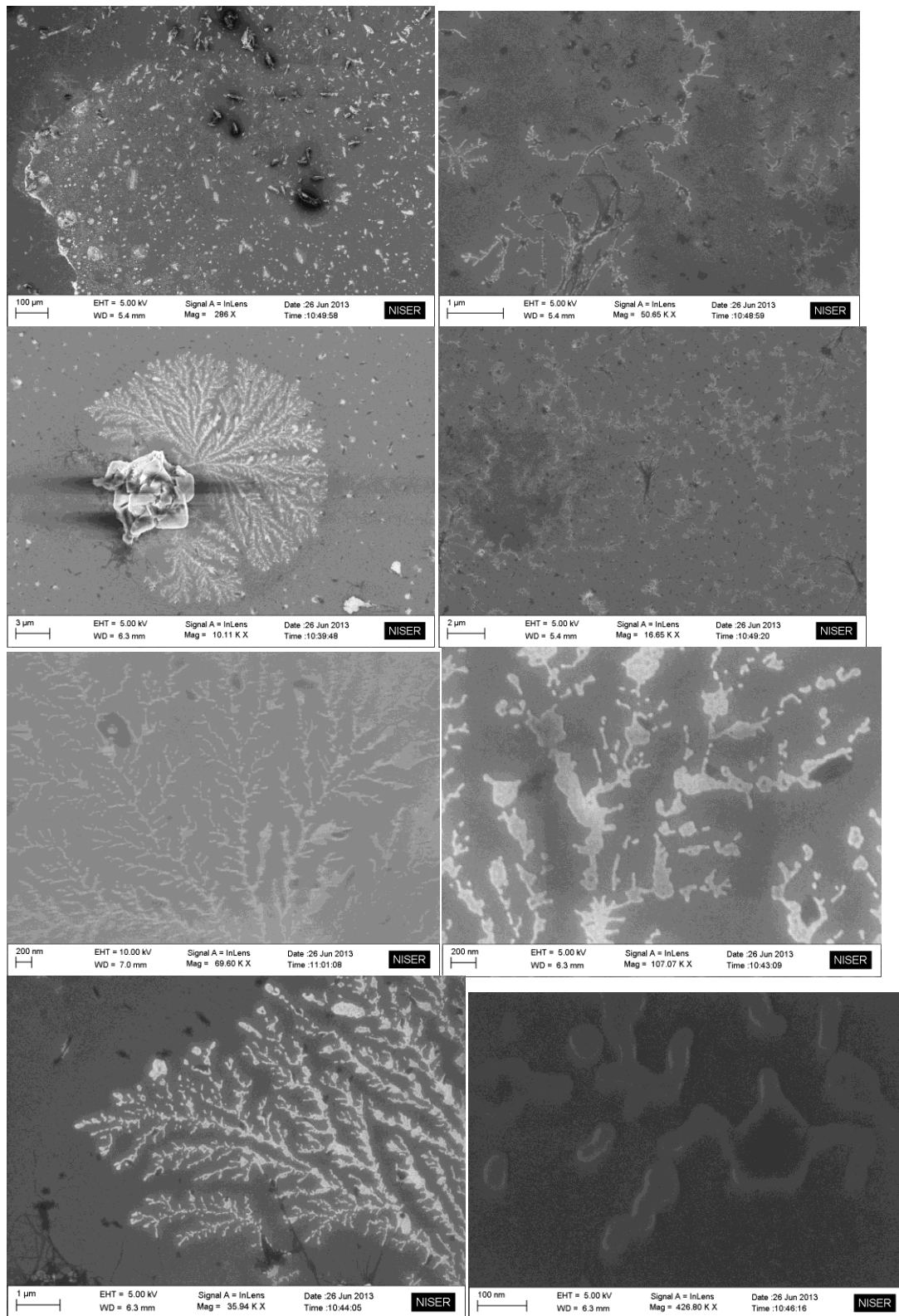


Figure S14. SEM image of berberine immobilized modified cellulose via bond amide

12. Energy dispersive X-ray analysis (EDX) of Berberine Immobilized modified Cellulose (6)

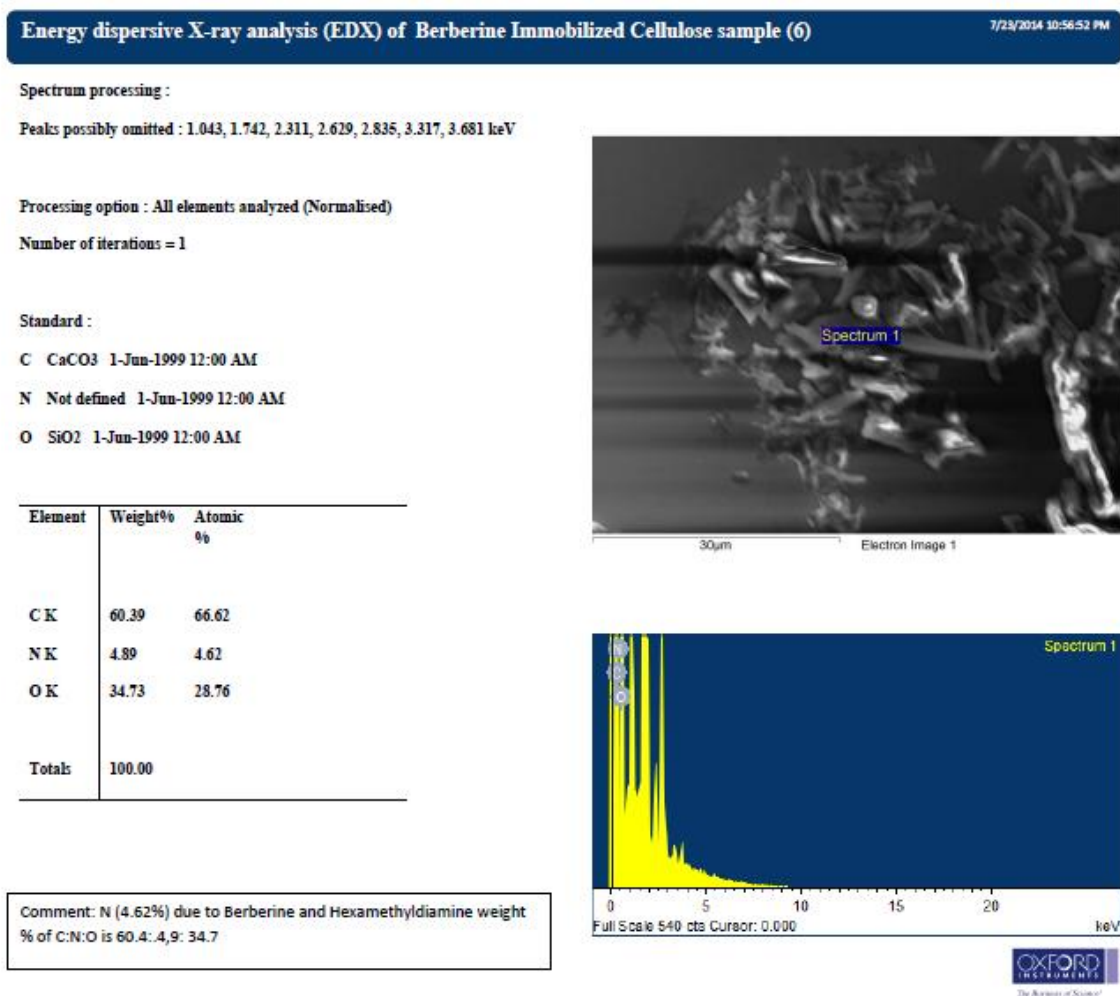
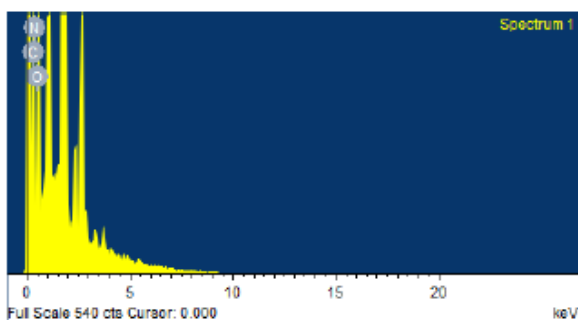
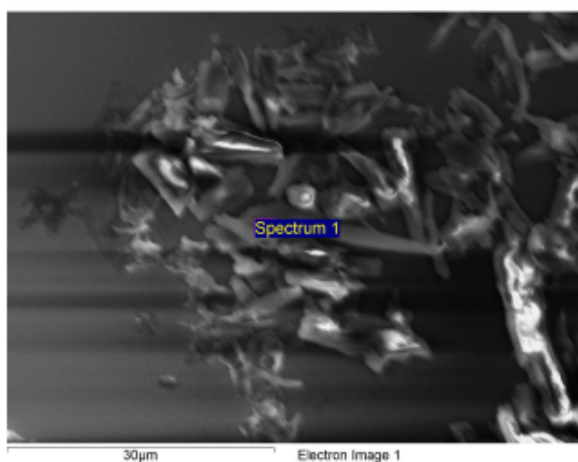
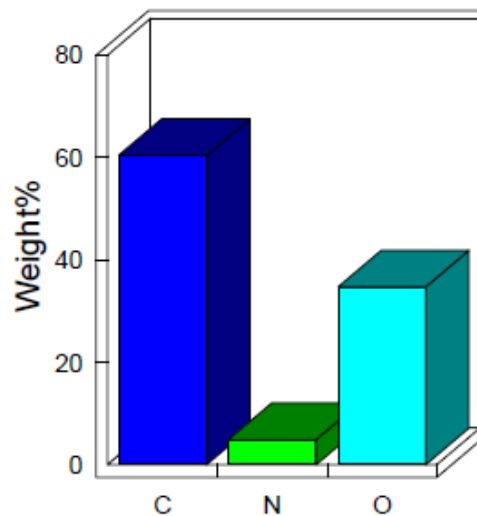


Figure S15. EDX of Berberine Immobilized modified Cellulose (6)



Quantitative results



Comment:
N (4.62%) due to Berberine and Hexamethyldiamine



Figure S16. EDX of Berberine Immobilized modified Cellulose (6)

13. Fluorescence microscopic images of acid functionalized berberine derivative (4)



Figure S17. Fluorescence microscopic images of acid functionalized berberine derivative

11. Fluorescence microscopic images of berberine immobilized cellulose (5)

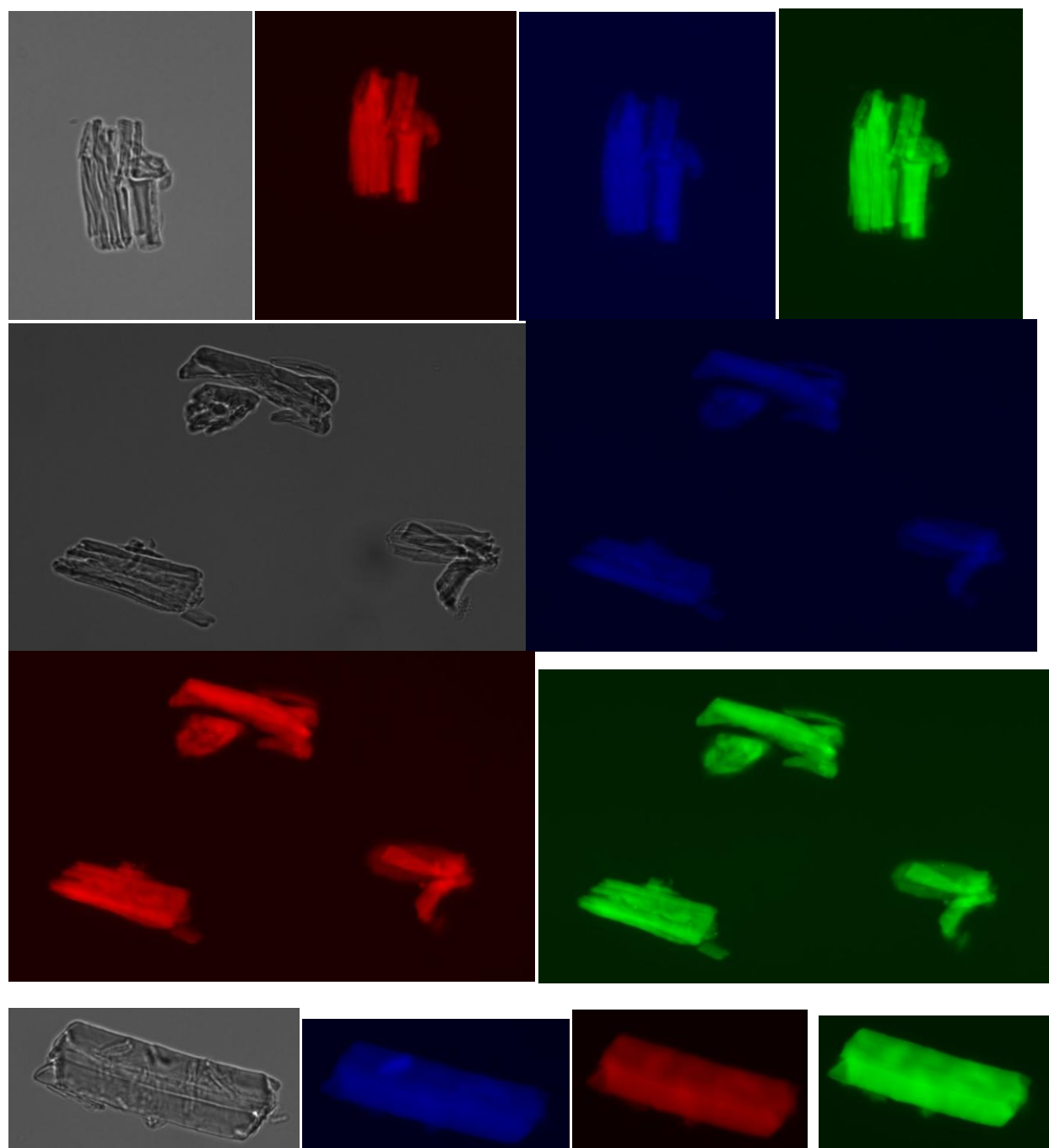


Figure S18. Fluorescence microscopic images of berberine immobilized cellulose (5)

12. Fluorescence microscopic images of berberine immobilized cellulose (6)

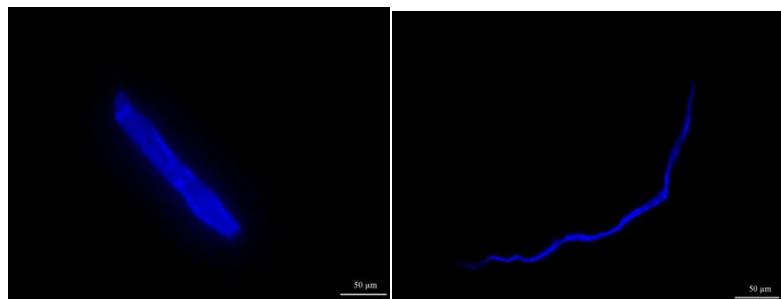


Figure S19. Fluorescence microscopic images of berberine immobilized cellulose

13. Confocal Image of berberine immobilized cellulose (6)

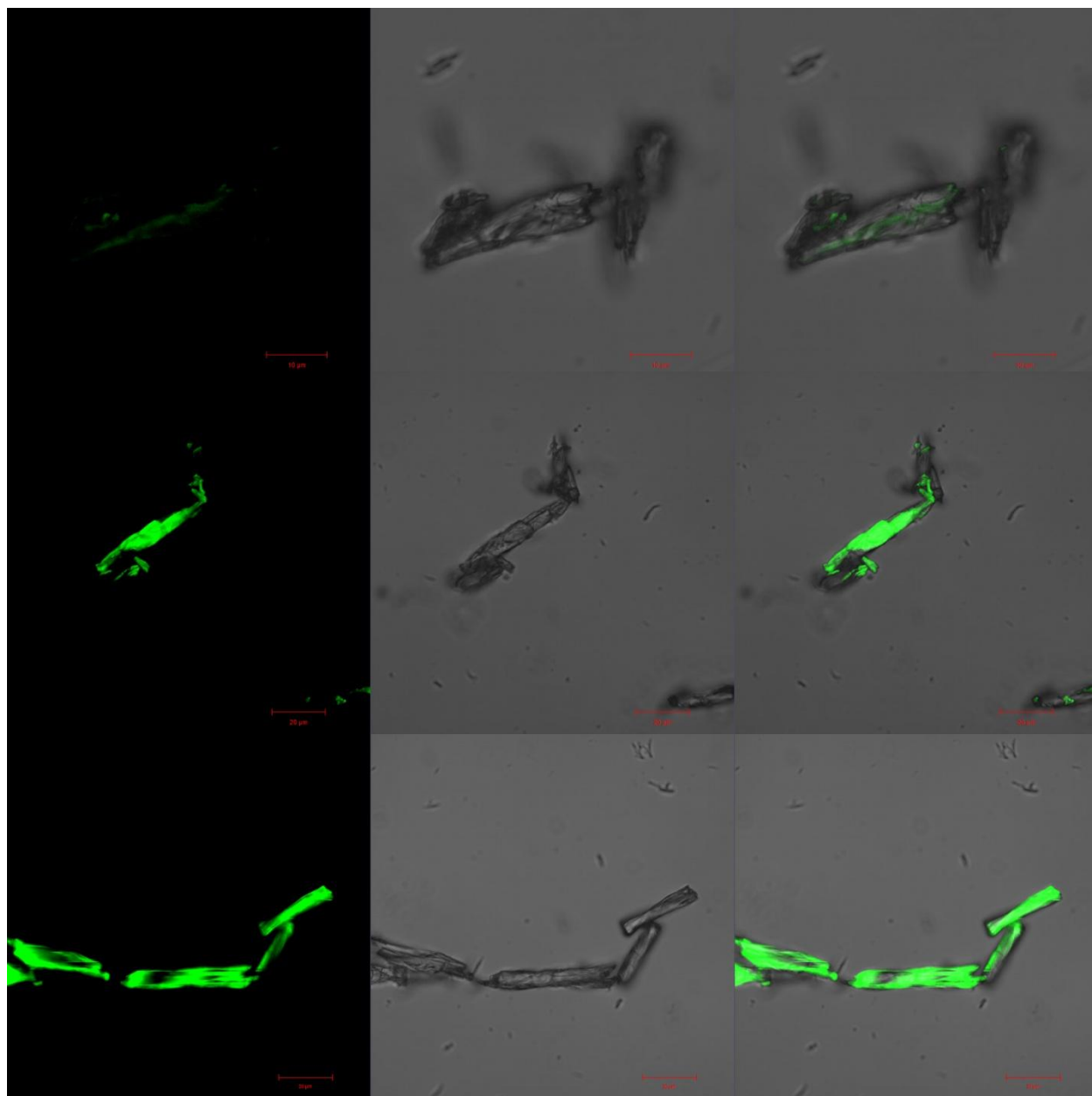


Figure S20. Confocal Image of Berberine immobilized cellulose at resolution of 30 μ m

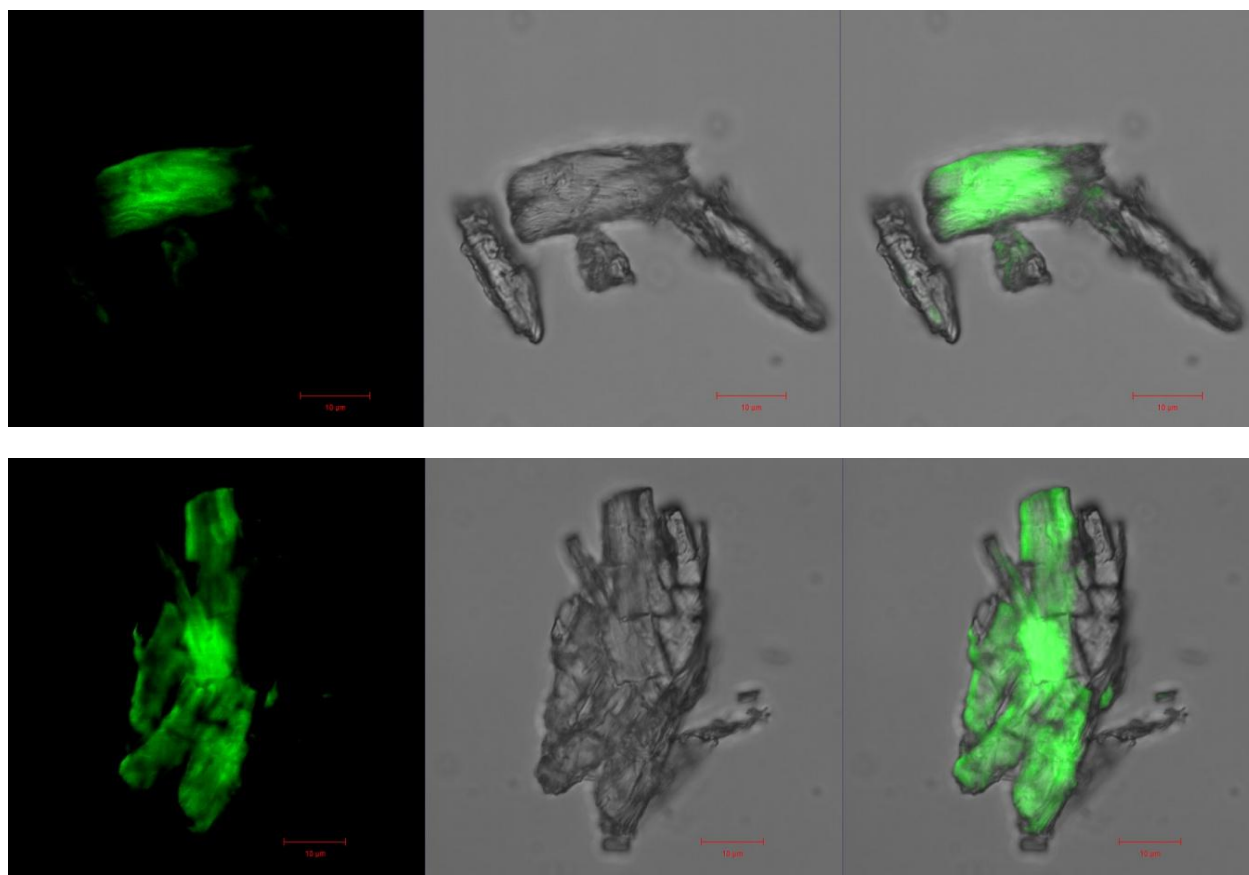


Figure S21. Confocal Image of berberine immobilized cellulose resolution of $5\mu\text{m}$