

Supplementary Information  
**Regioselective Thioacetylation of Chitosan End-Groups for  
Nanoparticle Gene Delivery Systems**  
V. D. Pickenhahn *et al.*

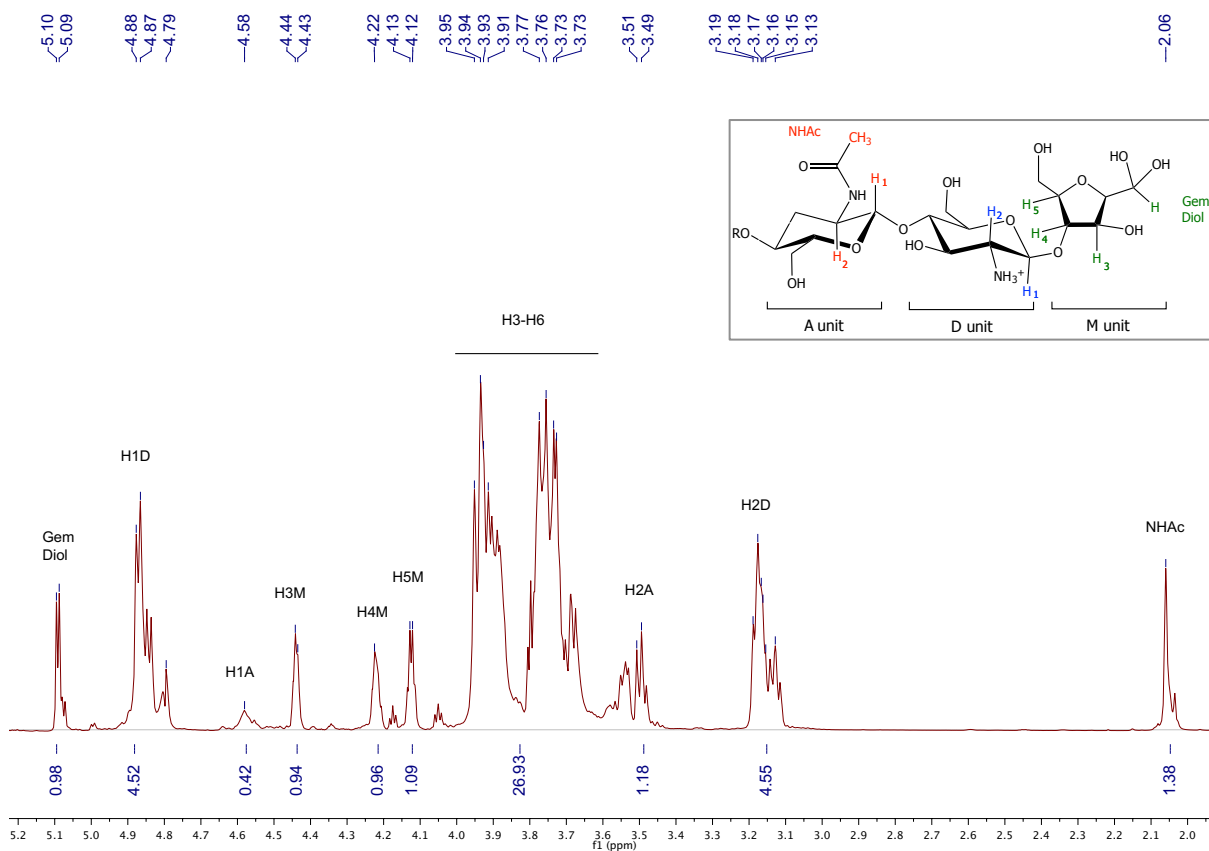


Figure S. 1. <sup>1</sup>H NMR spectrum of the CS 92-1 depolymerization medium (D<sub>2</sub>O/DCI (50 mM), T=70°C, HOD peak was presaturated, number of scans (ns) = 2000, relaxation period (d1) = 6s, Acquisition time=2s, Exponential apodization = 1 Hz). No aldehyde proton peak was observed around 8-10 ppm, the hydrated *gem*-diol form remaining predominant.

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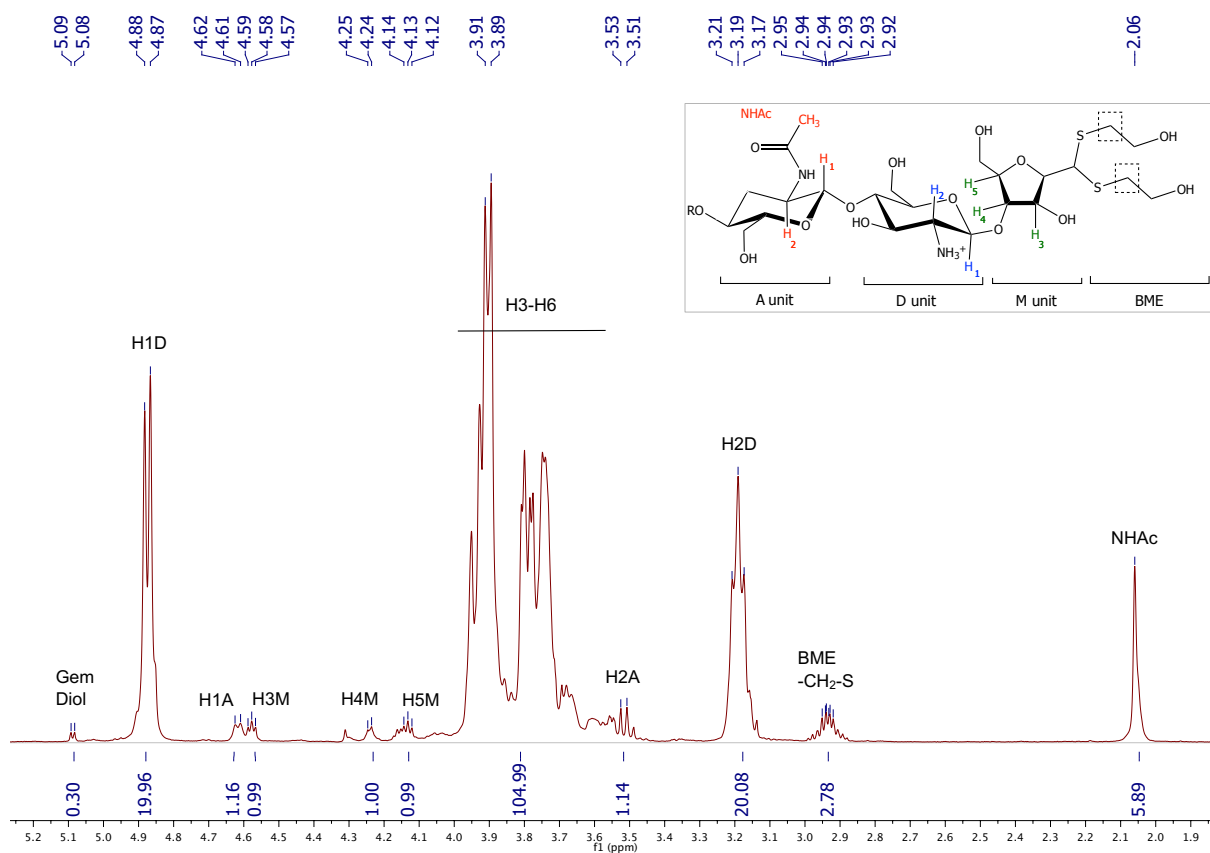


Figure S. 2. <sup>1</sup>H NMR spectrum of the CS-BME product after workup II (D<sub>2</sub>O/DCI, T=70°C, HOD peak was presaturated, number of scans (ns) = 64, relaxation period (d1) = 6s, Acquisition time=2s, Exponential apodization = 1 Hz). Integration of BME (-CH<sub>2</sub>-S-) protons peaks was used to calculate the functionalization degree (F=70% in this particular case, according to Equation 2).

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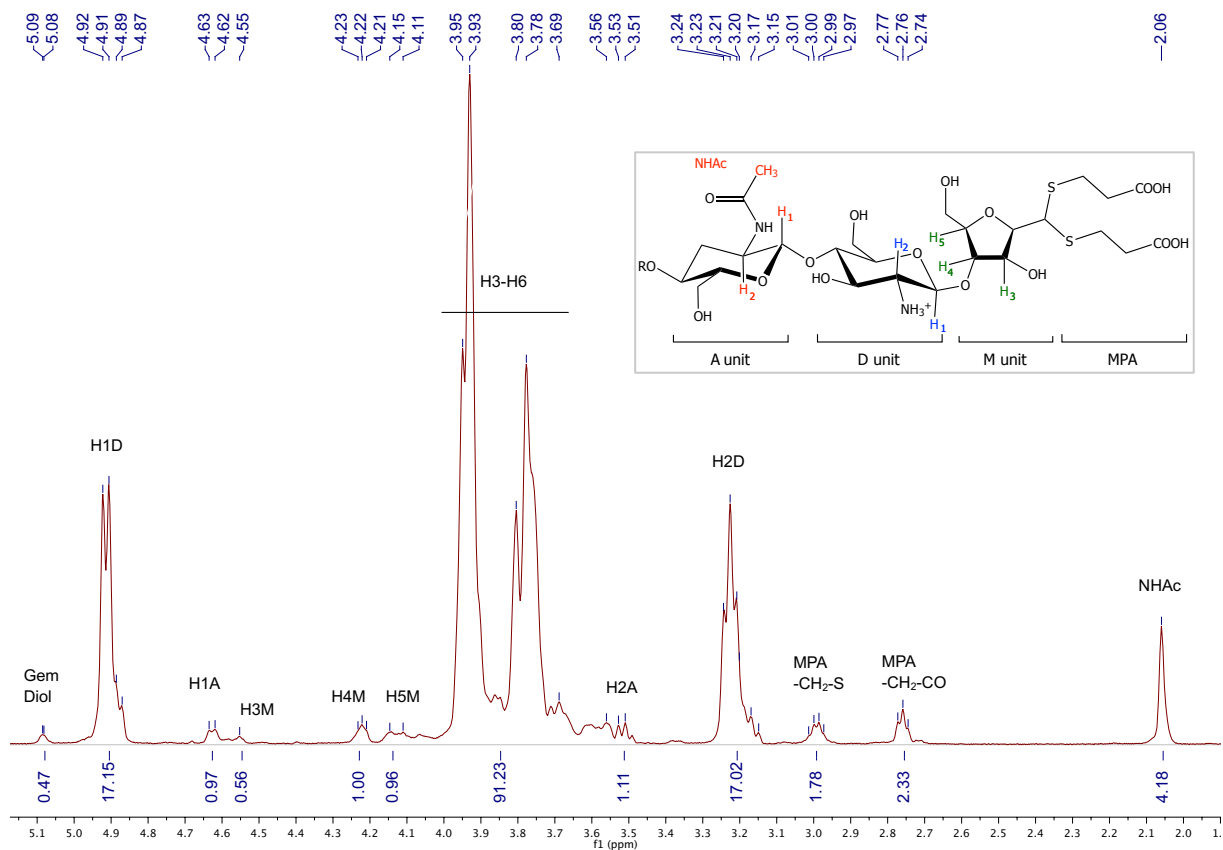


Figure S. 3. <sup>1</sup>H NMR spectrum of the CS-MPA product after workup II (D<sub>2</sub>O/DCI, T=70°C, HOD peak was presaturated, number of scans (ns) = 64, relaxation period (d1) = 6s, Acquisition time=2s, Exponential apodization = 1 Hz). Integration of MPA protons peaks was used to calculate the functionalization degree (F=52% in this particular case, according to Equation 3).

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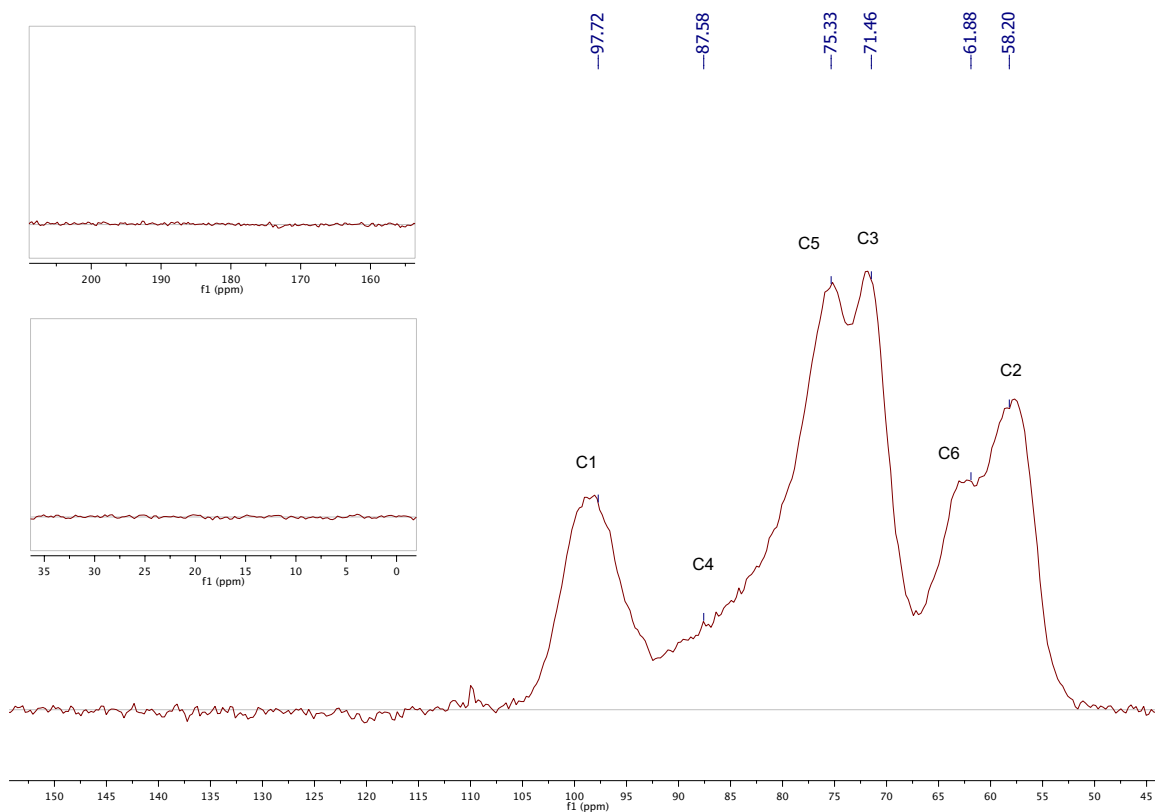


Figure S. 4.  $^{13}\text{C}$  solid state NMR (CP-MAS) of an extra-dried CS 99-1 salt. The sample preparation as well as the analysis was performed under inert atmosphere ( $\text{N}_2$ ) to avoid contact with water content in air. ( $T=25^\circ\text{C}$ ,  $t=6\text{h}$ ,  $\nu=12\text{kHz}$ ).

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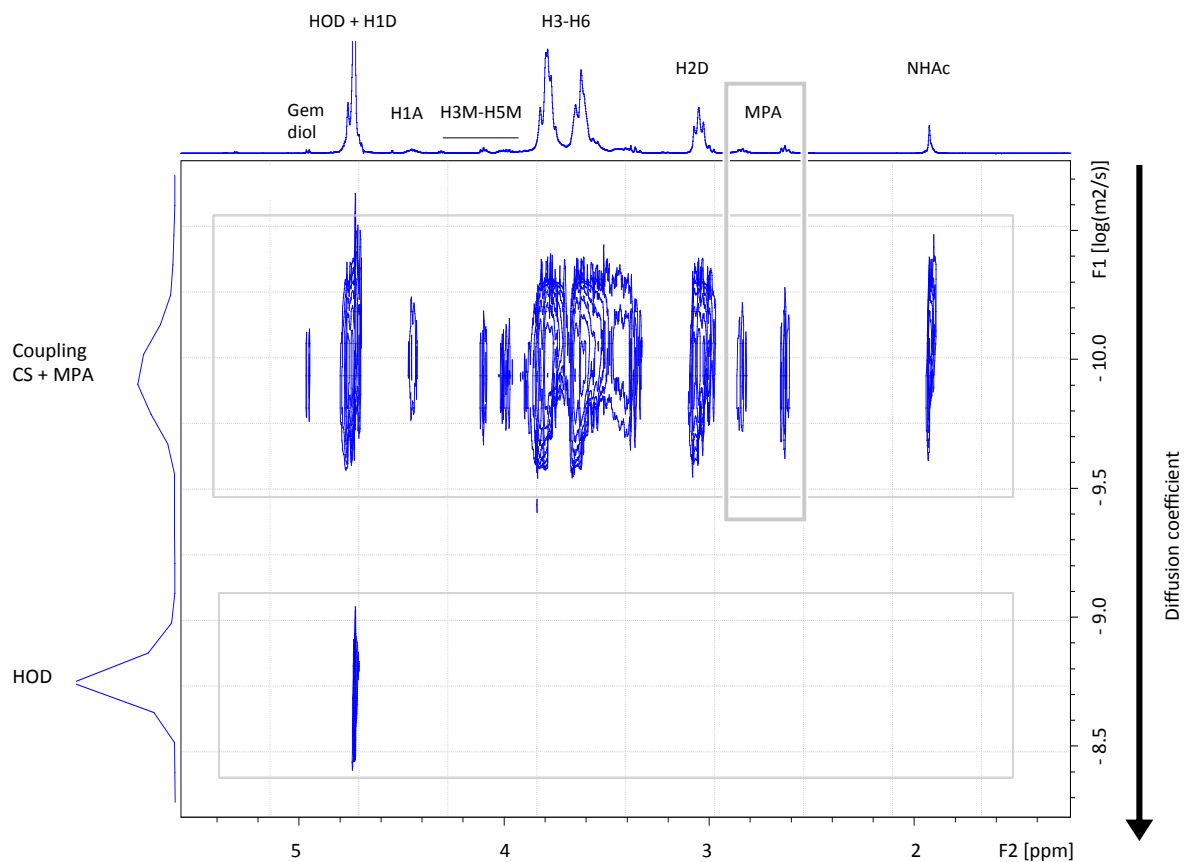


Figure S. 5. DOSY spectrum of the CS HCl salt M-Unit conjugated to MPA. 32 gradients between 11.2 and 358.4 gauss.cm<sup>-1</sup> with a gradient pulse ( $\delta$ ) of 1 ms, a diffusion time ( $\Delta$ ) of 60 ms. Both CS and MPA have the same translational diffusion coefficient at 25°C in 2% DCl in D<sub>2</sub>O.