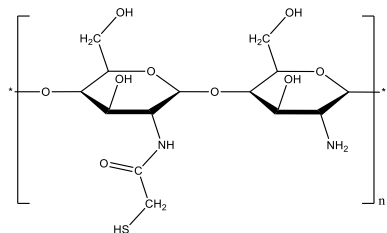


Sample Name:

Thiolated chitosan (thiolated with thioglycolic acid)

Sample #: P43917-TCS

Structure:

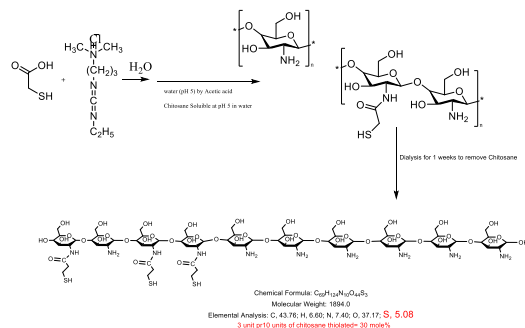


Composition:

<i>Dynamic viscosity of native chitosan:</i>	<i>Degree of thiolation:</i>
50–100 mPa·s, (0.5% in 0.5% Acetic Acid at 20°C)	28 mol%

Synthesis procedure:

The thiolated chitosan was prepared from chitosan using thioglycolic acid and EDAC•HCl. A scheme of reaction is shown below.



Purification:

The obtained thiolated chitosan was extensively dialyzed through cellulose membrane (MW cut-off, 5000) against water containing 5 mM HCl and 1% NaCl. The product was filtered off and lyophilized (freeze-dried).

The recommended storage temperature: around 4°C.

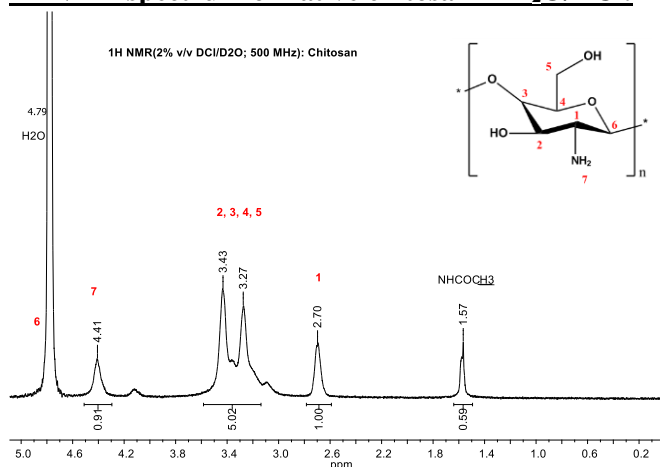
Characterization:

The product was analyzed by proton NMR and FT-IR spectroscopies. The degree of -SH functionalization was calculated from elemental analysis data.

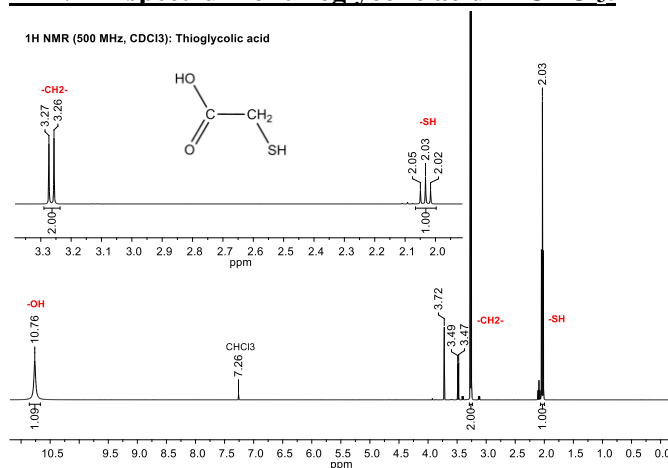
Solubility:

The polymer is soluble in water and aqueous pH < 7 solution, and has a limited solubility in DMSO.

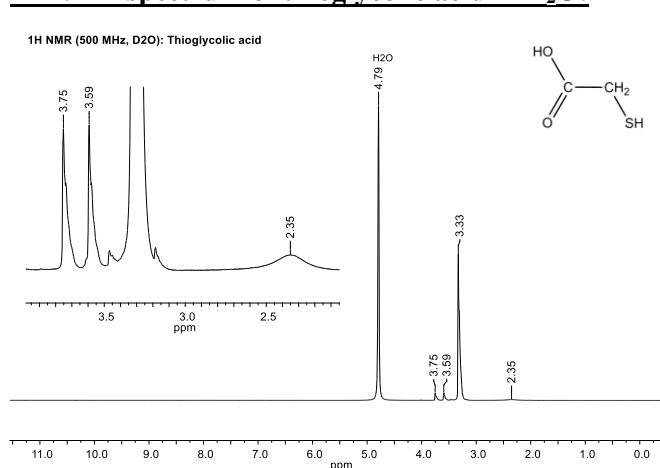
¹H NMR spectrum of native chitosan in D₂O/DCI:



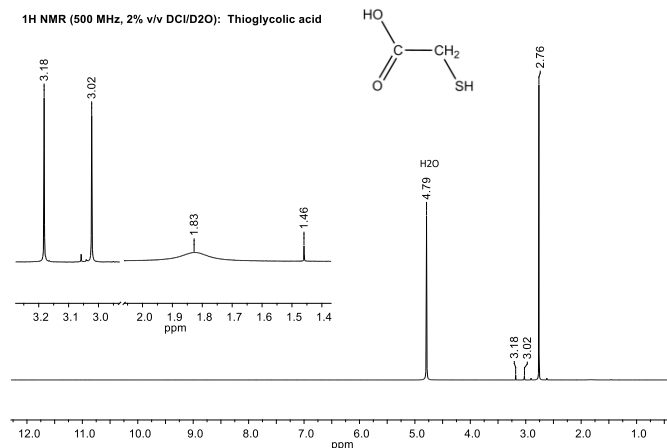
¹H NMR spectrum of thioglycolic acid in CDCl₃:



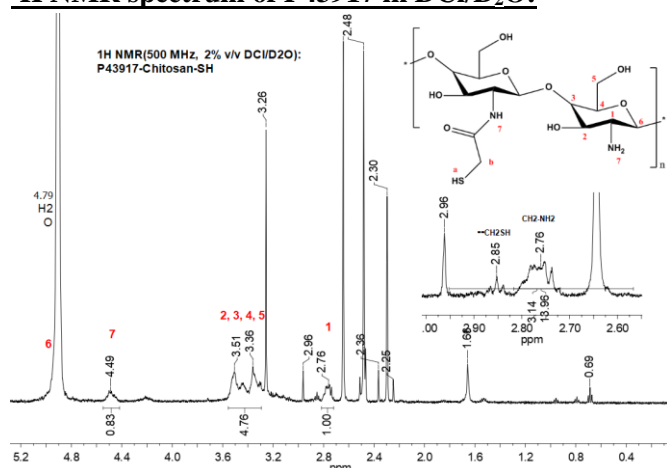
¹H NMR spectrum of thioglycolic acid in D₂O:



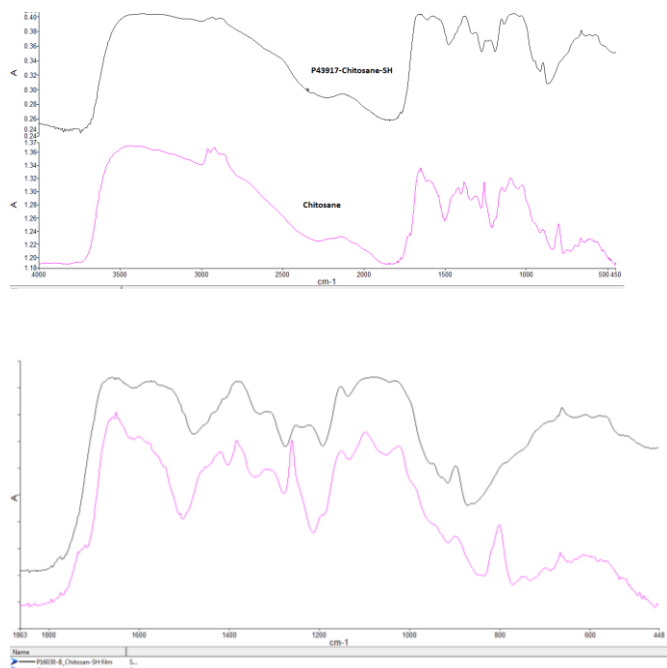
¹H NMR spectrum of thioglycolic acid in DCI/D₂O:



¹H NMR spectrum of P43917 in DCI/D₂O:



FT-IR absorption spectra of thiolated chitosan (bottom curve) and native chitosan (top curve):

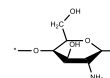


Elemental analysis of native chitosan:

Identification de l'échantillon: CHITOSAN
 Formule moléculaire: C₆H₁₁N O₄
 Méthode utilisée: 160531E

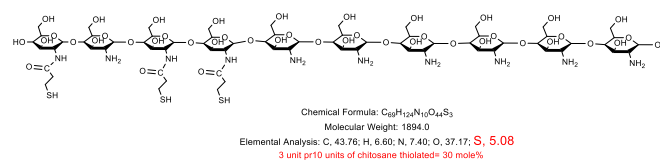
Sample Name	% Nitrogen	% Carbon	% Hydrogen
POL1-1	7,41	41,14	6,88
POL1-2	7,31	41,12	6,88

	% Nitrogen	% Carbon	% Hydrogen
Moyenne	7,36	41,13	6,88
Théorie:	8,70	44,70	6,90



Chemical Formula: C₆H₁₁NO₄²⁺
 Elemental Analysis: C, 44.72; H, 6.88; N, 8.69; O, 39.71

Elemental analysis of P43917 product:



Sample: P43917				
Lab ID: 2022-Q-4791		Received: 2022-07-15		
Analysis	Method	Result	Basis	Sample Amount Used
C : Carbon	GLI Procedure ME-14	36.76 %	As Received	2.313 mg
H : Hydrogen	GLI Procedure ME-14	6.99 %	As Received	2.313 mg
N : Nitrogen	GLI Procedure ME-14	7.60 %	As Received	2.313 mg
S : Sulfur	GLI Procedure E16-3	4.35 %	As Received	23.124 mg