

Supporting Information

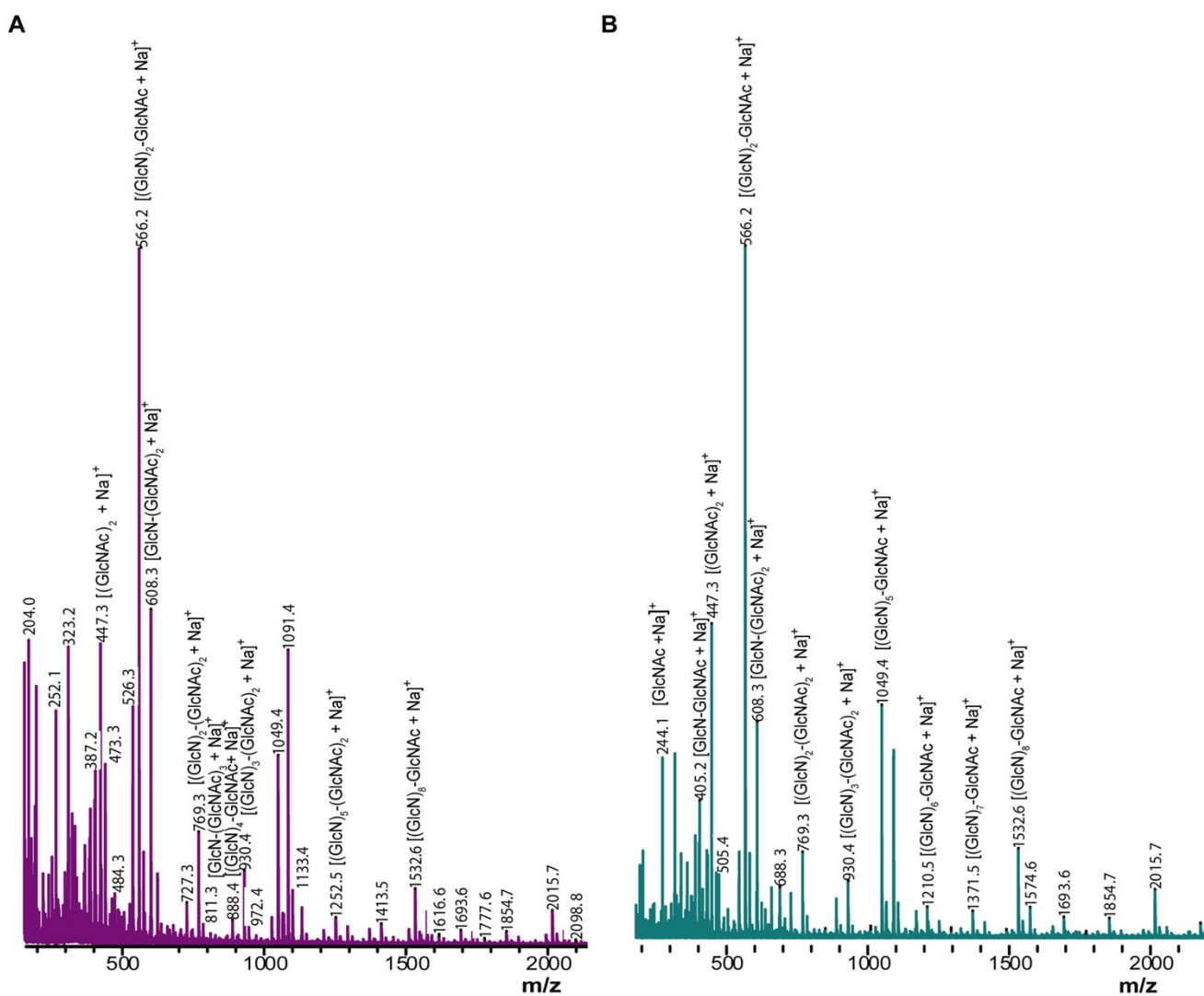


Fig. S1 MALDI-TOF MS analysis of COS produced from chitosan CHIT600

Table S1. Main peaks and intensities of the mass spectrum corresponding to the reaction mixture obtained with colloidal chitin as substrate and MNPs-Ga-Chit42.

m/z	Intensity (counts)	% intensity	Corresponding COS
204.048069	74792.8	97.1	Not identified
207.05111	2942.8	3.8	Not identified
222.069179	4040.5	5.2	[GlcNAc + H] ⁺
407.187317	35588.5	46.2	Not identified
410.105808	4425.5	5.7	Not identified
425.201267	9593.5	12.4	[(GlcNAc) ₂ + H] ⁺
445.138071	3029.5	3.9	Not identified
447.172791	19739.5	25.6	[(GlcNAc) ₂ + Na] ⁺
463.153265	77063.5	100.0	[(GlcNAc) ₂ + K] ⁺
484.255273	1188	1.5	Not identified
487.126793	1814	2.4	Not identified
543.226817	571	0.7	Not identified
564.20866	702.5	0.9	Not identified
569.217362	721.5	0.9	Not identified
586.278685	909	1.2	[GlcN-(GlcNAc) ₂ + H] ⁺
599.163938	547.3	0.7	Not identified
608.251569	597.5	0.8	[GlcN-(GlcNAc) ₂ + Na] ⁺
610.270897	2974.5	3.9	Not identified
613.142247	868.5	1.1	Not identified
624.222527	2661.5	3.5	[GlcN-(GlcNAc) ₂ + K] ⁺
625.176905	3654.5	4.7	Not identified
628.289805	3875.5	5.0	[(GlcNAc) ₃ + H] ⁺
632.250583	605.5	0.8	Not identified
648.226479	2439.5	3.2	Not identified
650.258982	11187.5	14.5	[(GlcNAc) ₃ + Na] ⁺
666.232806	55580.5	72.1	[(GlcNAc) ₃ + K] ⁺
675.305591	599.5	0.8	Not identified
677.144182	527.5	0.7	Not identified
690.208849	994	1.3	Not identified
692.185592	564	0.7	Not identified
789.328882	568	0.7	[GlcN-(GlcNAc) ₃ + H] ⁺
801.174723	314	0.4	Not identified
809.282388	296	0.4	Not identified
811.312296	460	0.6	[GlcN-(GlcNAc) ₃ + Na] ⁺
817.156321	526	0.7	Not identified
827.282118	2589	3.4	[GlcN-(GlcNAc) ₃ + K] ⁺
851.280029	640	0.8	Not identified
853.319461	2164	2.8	[(GlcNAc) ₄ + Na] ⁺
869.295538	9576.5	12.4	[(GlcNAc) ₄ + K] ⁺
885.28402	443.5	0.6	Not identified
911.291519	389.5	0.5	Not identified
989.296679	237.3	0.3	Not identified
1020.1958	178.3	0.2	Not identified

1030.33712	497.25	0.6	[GlcN-(GlcNAc) ₄ + K] ⁺
1054.32442	239	0.3	Not identified
1056.36676	1059	1.4	[(GlcNAc) ₅ + Na] ⁺
1072.34024	4313	5.6	[(GlcNAc) ₅ + K] ⁺
1232.31246	430.5	0.6	Not identified
1233.35933	424.5	0.6	[GlcN-(GlcNAc) ₅ + K] ⁺
1259.4089	519.5	0.7	[(GlcNAc) ₆ + Na] ⁺
1274.32257	559.5	0.7	Not identified
1275.38132	2447.5	3.2	[(GlcNAc) ₆ + K] ⁺
1436.43253	213.25	0.3	[GlcN-(GlcNAc) ₆ + K] ⁺
1462.45593	411.25	0.5	[(GlcNAc) ₇ + Na] ⁺
1478.42668	1456.25	1.9	[(GlcNAc) ₇ + K] ⁺
1665.48702	157.5	0.2	[(GlcNAc) ₈ + Na] ⁺
1681.47273	545	0.7	[(GlcNAc) ₈ + K] ⁺
1884.54628	211.5	0.3	[(GlcNAc) ₉ + K] ⁺

[M+H]⁺, [M+Na]⁺ and [M+K]⁺ peaks were detected in positive mode. Only main peaks in the referred mass interval was indicated.

Table S2. Main peaks and intensities of the mass spectrum corresponding to the reaction mixture obtained with colloidal chitin as substrate and CMS-Ga-Chit42 catalyst.

m/z	Intensity (counts)	% Intensity	Corresponding COS
204.049497	63304.0	64.2	Not identified
207.048784	6823.0	6.9	Not identified
222.072664	14991.8	15.2	[GlcNAc +H] ⁺
244.058167	44135.0	44.8	[GlcNAc +Na] ⁺
405.196503	5829.0	5.9	[GlcN-GlcNAc + Na] ⁺
407.193072	21113.0	21.4	Not identified
425.200914	5004.5	5.1	[(GlcNAc) ₂ + H] ⁺
447.178884	98596.5	100.0	[(GlcNAc) ₂ + Na] ⁺
463.169015	7959.5	8.1	[(GlcNAc) ₂ + K] ⁺
567.138515	1876.0	1.9	Not identified
582.125896	2187.5	2.2	[(GlcN) ₂ -GlcNAc + K] ⁺
598.280917	1580.0	1.6	Not identified
608.247828	4381.0	4.4	[GlcN-(GlcNAc) ₂ + Na] ⁺
628.292652	1968.0	2.0	[(GlcNAc) ₃ + H] ⁺
650.259767	37585.0	38.1	[(GlcNAc) ₃ + Na] ⁺
785.200548	3919.5	4.0	[(GlcN) ₂ -(GlcNAc) ₂ + K] ⁺
811.321106	3218.0	3.3	[GlcN-(GlcNAc) ₃ + Na] ⁺
818.357688	3247.0	3.3	Not identified
853.329302	9267.0	9.4	[(GlcNAc) ₄ + Na] ⁺
863.394904	1232.0	1.2	Not identified
926.43638	957.5	1.0	Not identified
930.418239	840.5	0.9	[(GlcN) ₃ -(GlcNAc) ₂ + Na] ⁺
965.415153	1019.5	1.0	Not identified
978.405773	809.0	0.8	Not identified
988.250199	989.5	1.0	[(GlcN) ₂ -(GlcNAc) ₃ + K] ⁺
997.29935	1822.0	1.8	Not identified
1056.37761	2413.0	2.4	[(GlcNAc) ₅ + Na] ⁺
1080.43919	627.5	0.6	Not identified
1102.47868	629.5	0.6	Not identified
1103.47238	677.5	0.7	Not identified
1172.48338	1499.5	1.5	Not identified
1194.47439	3195.5	3.2	Not identified
1216.50914	479.5	0.5	Not identified
1259.43605	1747.3	1.8	[(GlcNAc) ₆ + Na] ⁺
1308.5221	578.3	0.6	Not identified
1319.52684	3141.0	3.2	Not identified
1327.5064	650.0	0.7	Not identified
1341.51589	7222.0	7.3	Not identified
1357.48522	576.0	0.6	Not identified
1373.47513	388.0	0.4	Not identified
1381.43992	358.0	0.4	Not identified
1396.7048	1652.3	1.7	Not identified
1418.68813	895.3	0.9	Not identified
1432.58457	2125.3	2.2	Not identified

1454.57385	3835.0	3.9	Not identified
1462.45176	925.0	0.9	[(GlcNAc) ₇ + Na] ⁺
1470.56156	264.0	0.3	Not identified
1476.55369	358.0	0.4	Not identified
1486.51041	325.0	0.3	Not identified
1502.5326	498.0	0.5	Not identified
1524.53157	777.5	0.8	Not identified
1534.56763	363.5	0.4	Not identified
1546.60698	461.5	0.5	Not identified
1556.57897	449.5	0.5	Not identified
1568.59269	822.5	0.8	Not identified
1578.61127	692.5	0.7	Not identified
1607.59654	385.5	0.4	Not identified
1639.62893	368.0	0.4	Not identified
1649.59438	1079.0	1.1	Not identified
1665.51656	573.0	0.6	[(GlcNAc) ₈ + Na] ⁺
1671.57778	2464.0	2.5	Not identified
1693.59516	384.0	0.4	Not identified
1733.62895	474.0	0.5	Not identified
1754.64212	1460.0	1.5	Not identified
1762.63655	473.0	0.5	Not identified
1778.77784	271.0	0.3	Not identified
1779.63603	301.0	0.3	Not identified
1784.67223	529.0	0.5	Not identified
1867.71615	248.5	0.3	Not identified
1970.73674	374.0	0.4	Not identified
1992.71992	340.0	0.3	Not identified
2008.70343	232.0	0.2	Not identified
2063.75732	239.0	0.2	Not identified
2191.84781	216.0	0.2	Not identified
2213.82604	234.0	0.2	Not identified

[M+H]⁺, [M+Na]⁺ and [M+K]⁺ peaks were detected in positive mode. Only main peaks in the referred mass interval was indicated.

Table S3. Main peaks and intensities of the mass spectrum corresponding to the reaction mixture obtained with chitosan QS2 as substrate and MNPs-Ga-Chit42

m/z	Intensity (counts)	% Intensity	Corresponding COS
244.075319	3733	15.4	[GlcNAc + Na] ⁺
375.223997	2945	12.2	Not identified
389.278401	5913	24.4	Not identified
405.185555	4582	18.9	[GlcN-GlcNAc + Na] ⁺
413.31406	1381	5.7	Not identified
415.258987	2513	10.4	Not identified
433.27943	8460	35.0	Not identified
447.209059	4097	16.9	[(GlcNAc) ₃ + Na] ⁺
447.327028	24190	100.0	[(GlcNAc) ₂ + Na] ⁺
463.313956	2216.5	9.2	[(GlcNAc) ₂ + K] ⁺
473.311897	7506	31.0	Not identified
489.325217	945	3.9	Not identified
491.330494	1755	7.3	Not identified
505.373076	2892	12.0	Not identified
566.275309	1883	7.8	[(GlcN) ₂ -GlcNAc + Na] ⁺
608.283127	7899	32.7	[GlcN-(GlcNAc) ₂ + Na] ⁺
624.249757	496	2.1	[GlcN-(GlcNAc) ₂ + K] ⁺
727.317266	285	1.2	Not identified
769.336022	651.5	2.7	[(GlcN) ₂ -(GlcNAc) ₂ + Na] ⁺
784.281839	287.5	1.2	Not identified
785.245001	324.5	1.3	[(GlcN) ₂ -(GlcNAc) ₂ + K] ⁺
829.352002	276	1.1	Not identified
888.394671	200.5	0.8	[(GlcN) ₄ -GlcNAc + Na] ⁺
904.261944	243.5	1.0	Not identified
930.370396	185	0.8	[(GlcN) ₃ -(GlcNAc) ₂ + Na] ⁺
937.179722	221	0.9	Not identified
946.27019	504	2.1	[(GlcN) ₃ -(GlcNAc) ₂ + K] ⁺
1091.44316	276.5	1.1	Not identified

[M+Na]⁺ and [M+K]⁺ peaks were detected in positive mode. Only main peaks in the referred mass interval was indicated.

Table S4. Main peaks and intensities of the mass spectrum corresponding to the reaction mixture obtained with chitosan QS2 as substrate and CMS-Ga-Chit42.

m/z	Intensity (counts)	% Intensity	Corresponding COS
244.080374	7309.5	25.7	[GlcNAc + Na] ⁺
375.23495	3029	10.6	Not identified
389.285895	7060	24.8	Not identified
405.197915	11661	40.9	[GlcN-GlcNAc + Na] ⁺
413.316033	1073	3.8	Not identified
415.275152	3150	11.1	Not identified
431.276659	953	3.3	Not identified
433.285972	8515	29.9	Not identified
447.21611	5845	20.5	[(GlcNAc) ₂ + Na] ⁺
447.336815	28485	100.0	[(GlcNAc) ₂ + Na] ⁺
453.363094	901	3.2	Not identified
459.306122	684	2.4	Not identified
463.316791	2804	9.8	[(GlcNAc) ₂ + K] ⁺
473.319194	6373	22.4	Not identified
475.355835	10505	36.9	Not identified
489.310983	867.75	3.0	Not identified
491.339225	1512.75	5.3	Not identified
505.385862	2905.5	10.2	Not identified
544.29083	441	1.5	[(GlcN) ₂ -GlcNAc + H] ⁺
566.280329	10214	35.9	[(GlcN) ₂ -GlcNAc + Na] ⁺
575.226148	578	2.0	Not identified
582.258643	568	2.0	[(GlcN) ₂ -GlcNAc + K] ⁺
608.288274	12139.5	42.6	[GlcN-(GlcNAc) ₂ + Na] ⁺
624.272157	773.5	2.7	[GlcN-(GlcNAc) ₂ + K] ⁺
701.528964	2549	8.9	Not identified
727.344102	1287.5	4.5	[(GlcN) ₃ -GlcNAc + Na] ⁺
769.344413	2032	7.1	[(GlcN) ₂ -(GlcNAc) ₂ + Na] ⁺
784.264092	413	1.4	Not identified
829.344771	303	1.1	Not identified
888.379382	620	2.2	[(GlcN) ₄ -GlcNAc + Na] ⁺
904.261931	351	1.2	[(GlcN) ₄ -GlcNAc + K] ⁺
930.387986	281	1.0	[(GlcN) ₃ -(GlcNAc) ₂ + Na] ⁺
937.199359	515.75	1.8	Not identified
946.280822	413.75	1.5	[(GlcN) ₃ -(GlcNAc) ₂ + K] ⁺
1049.43242	1089	3.8	[(GlcN) ₅ -GlcNAc + Na] ⁺
1091.43683	276	1.0	Not identified
1210.4502	267.5	0.9	[(GlcN) ₆ -GlcNAc + Na] ⁺
1252.49444	139	0.5	Not identified
1371.51045	193	0.7	[(GlcN) ₇ -GlcNAc + Na] ⁺
1532.54891	166.5	0.6	[(GlcN) ₈ -GlcNAc + Na] ⁺

[M+H]⁺, [M+Na]⁺ and [M+K]⁺ peaks were detected in positive mode. Only main peaks in the referred mass interval was indicated.