

Supporting Materials

ADDITIONAL METHODS

S1 Washing procedure of oxidation products

Samples of chitosan oxidized with potassium persulfate were selected for the washing procedure and additional adsorption capacity test. The product (~0.5 g) was placed in a 50 mL centrifuge plastic tube with ~45 mL distilled water. The tube was shaken by hand for circa 1 min, then the product was separated from water by centrifugation for 10 min at 10000 r/min. The supernatant was removed and the product pellet was resuspended in distilled water. The washing and separation procedure were repeated three times.

ADDITIONAL FIGURES

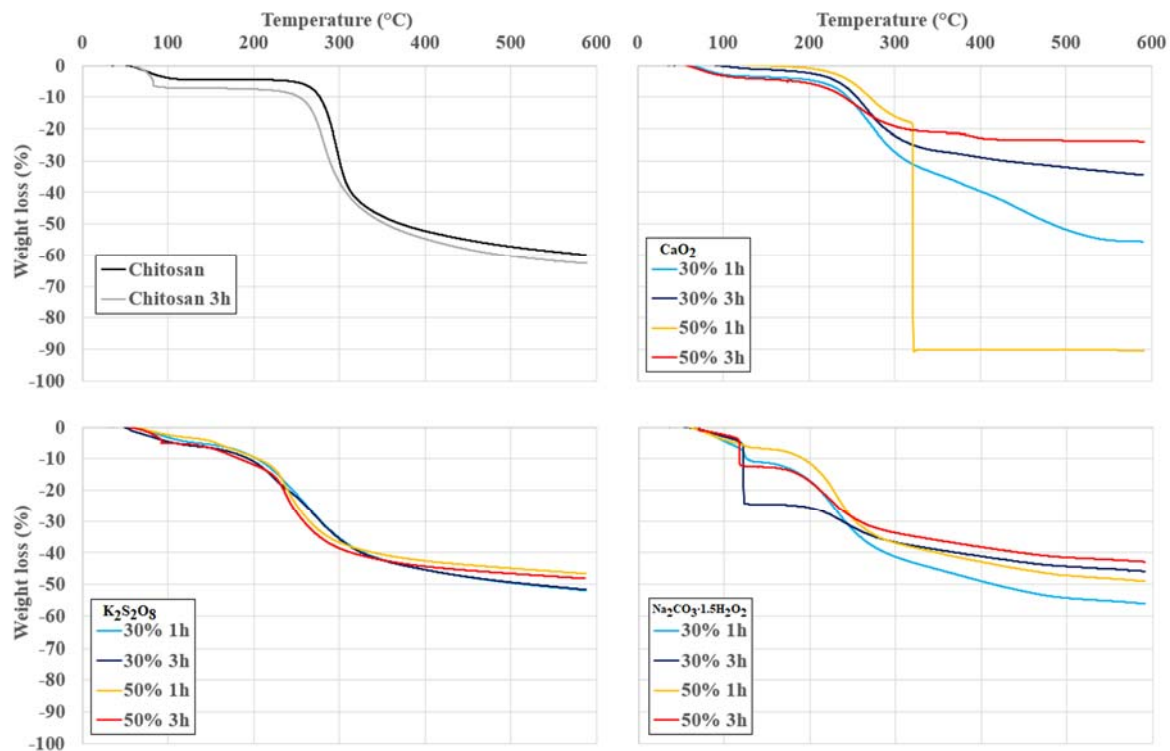


Fig. S1 Thermograms of chitosan and its oxidation products

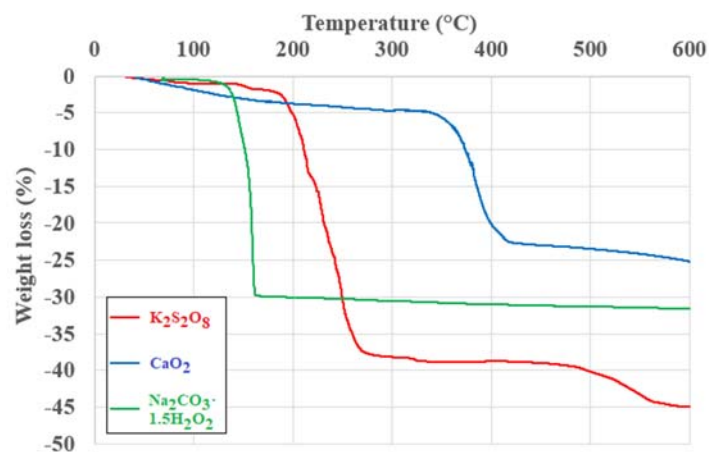


Fig. S2 Thermograms of oxidant reagents

ADDITIONAL TABLES

Table S1 Reactive red 2 maximum adsorption capacities of various adsorbents

Adsorbent	Maximum adsorption capacity (mg/g)	pH	Reference
Soybean meal	16.4	2	(Peng and Wang, 2011)
Tannery sludge activated carbon	55.86	2	(Geethakarthis and Phanikumar, 2011)
<i>Nymphaea rubra</i>	66.67	2	(Renganathan et al., 2009)
Fe ₃ O ₄ nanoparticle	97.8	3	(Lin et al., 2016)
Textile sludge	213.9	2	(Sonai et al., 2016)
Commercial activated carbon	285	3	(He and Hu, 2012)
Mesoporous carbon (CMK-3)	365	3	(He and Hu, 2012)
Ammonia-tailored CMK-3	548	3	(He and Hu, 2012)
Chitosan flakes	487.23	4	(Vakili et al., 2019)
Chitosan beads	597.6	4	(Vakili et al., 2019)
Chitosan + 50%CaO ₂ 2 h	710	6	Present study
DEO-chitosan beads	788.55	2	(Vakili et al., 2019)
Chitosan + 20%Na ₂ CO ₃ ·1.5H ₂ O ₂ 3 h	912	6	Present study
Chitosan + 30% K ₂ S ₂ O ₈ 1 h	974	6	Present study

Table S2 Adsorption capacities (mg/g) of washed and unwashed oxidation products (chitosan milled for 1 h with different K₂S₂O₈ mass percentages)

K ₂ S ₂ O ₈ mass percentage	Unwashed	Washed
20%	925.1	899.0
30%	973.7	966.3
40%	939.8	944.7
50%	918.2	908.1

References

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