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Synergistic effect of PMS activation by $LaCoO_3$/g-C_3N_4 for degradation of Tetracycline hydrochloride: performance, mechanism and phytotoxicity evaluation

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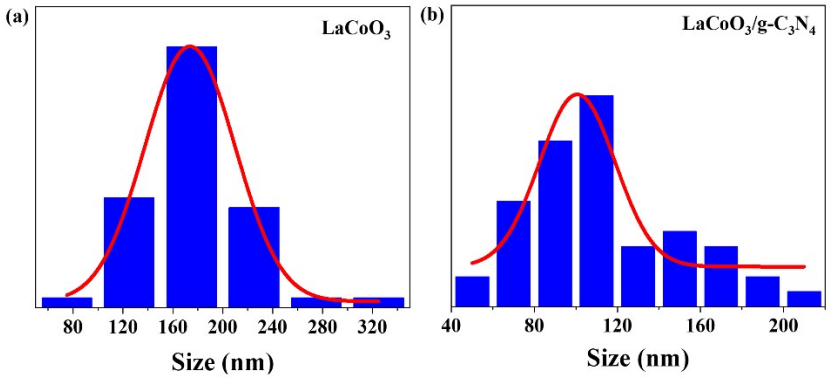

Fig. S1. The particle size distribution of the (a) $LaCoO_3$ catalyst, and (b) $LaCoO_3$/g-C_3N_4 catalyst.

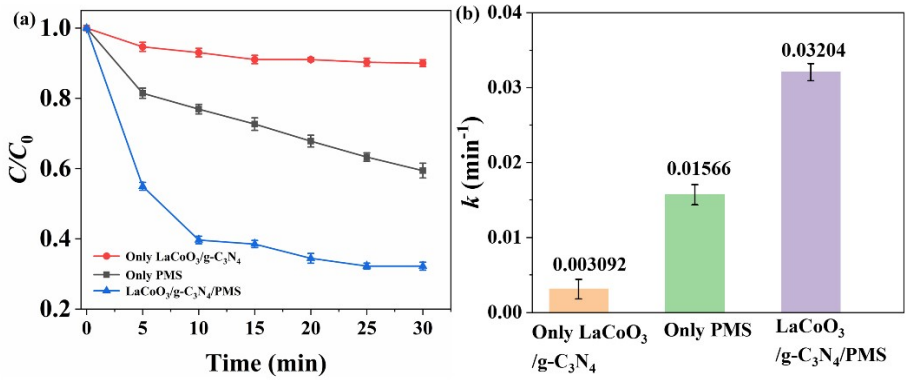

Fig. S2. (a) TC degradation by different catalyst (b) and their reaction rate constants (*k*). Reaction condition: $[TC]_0$ = 0.02 g/L, $[PMS]_0$ = 0.1g/L, $[catalyst]_0$ = 0.2 g/L, initial solution pH = 7, T= 25 °C.

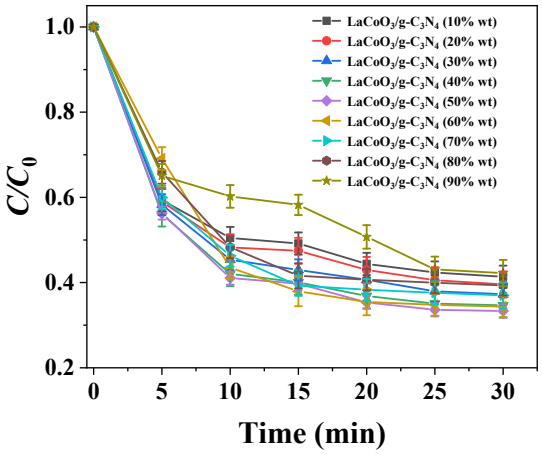

Fig. S3. Effect of different account of g-C_3N_4 on the removal of TC in $LaCoO_3$/g-C_3N_4/PMS system. Reaction condition: $[TC]_0$ = 0.02 g/L, $[PMS]_0$ = 0.1g/L, $[catalyst]_0$ = 0.2 g/L, initial solution pH = 7, T= 25 °C.

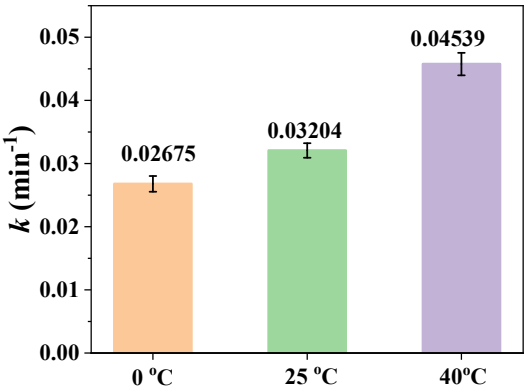

Fig. S4. The reaction rate constants of different temperature in $LaCoO_3$/g-C_3N_4/PMS system. Reaction condition: $[TC]_0$ = 0.02 g/L, $[PMS]_0$ = 0.1g/L, $[catalyst]_0$ = 0.2 g/L, initial solution pH = 7, T= 25 °C.

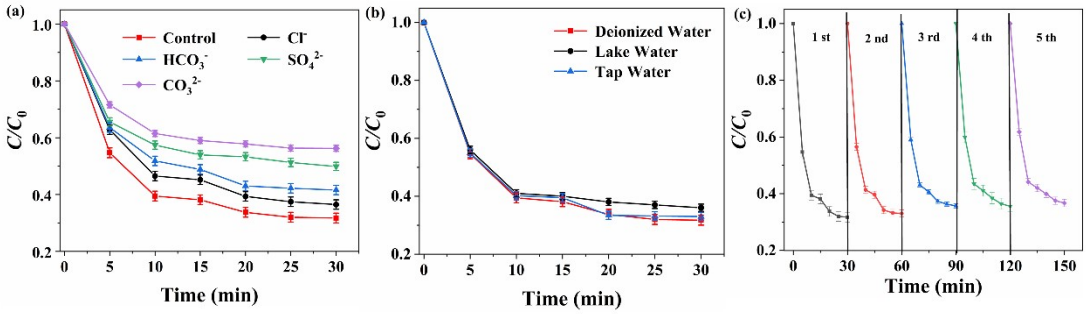

Fig. S5. (a) Effect of inorganic anions (10 mM), (b) different water matrices on TC degradation, (c) Recycling test of $LaCoO_3$/g-C_3N_4 catalyst in $LaCoO_3$/g-C_3N_4/PMS system. Reaction condition: $[TC]_0$ = 0.02 g/L, $[PMS]_0$ = 0.1g/L, $[catalyst]_0$ = 0.2 g/L, initial solution pH = 7, T= 25 °C.

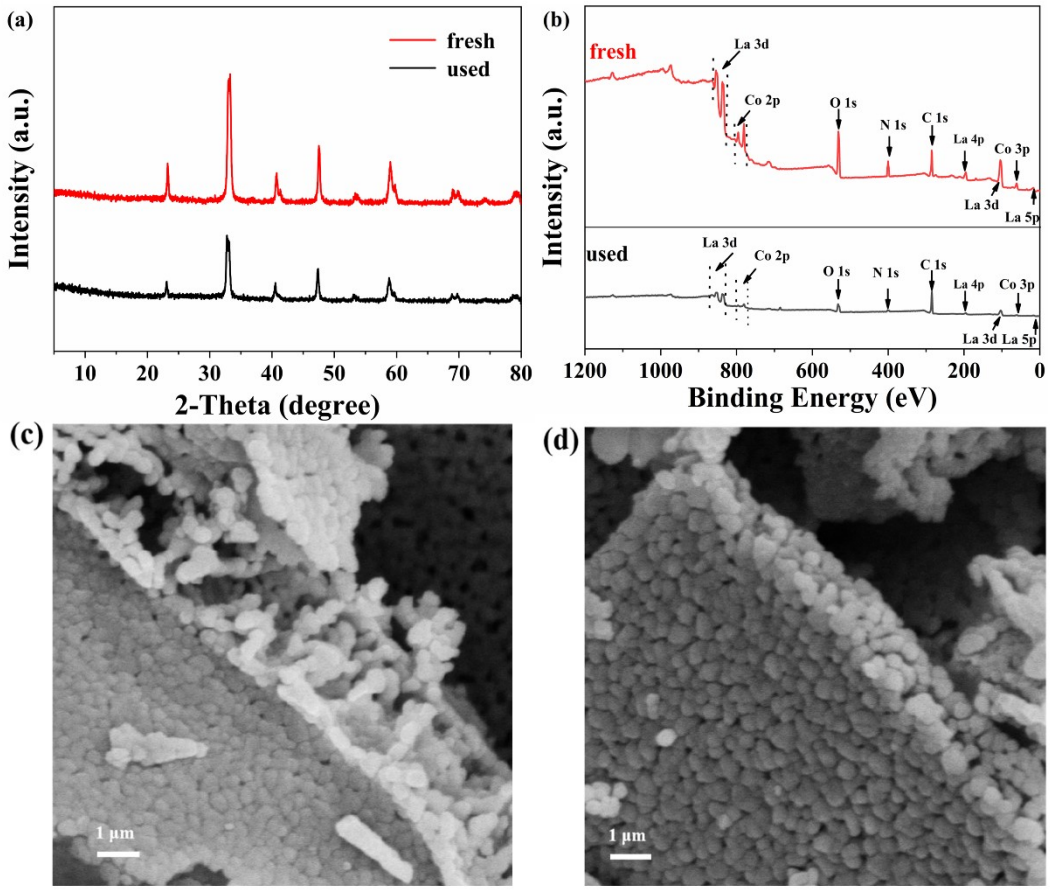

Fig. S6. (a)XRD patterns, (b) XPS spectrum and (c-d) SEM of fresh and used $LaCoO_3$/g-C_3N_4 composite.

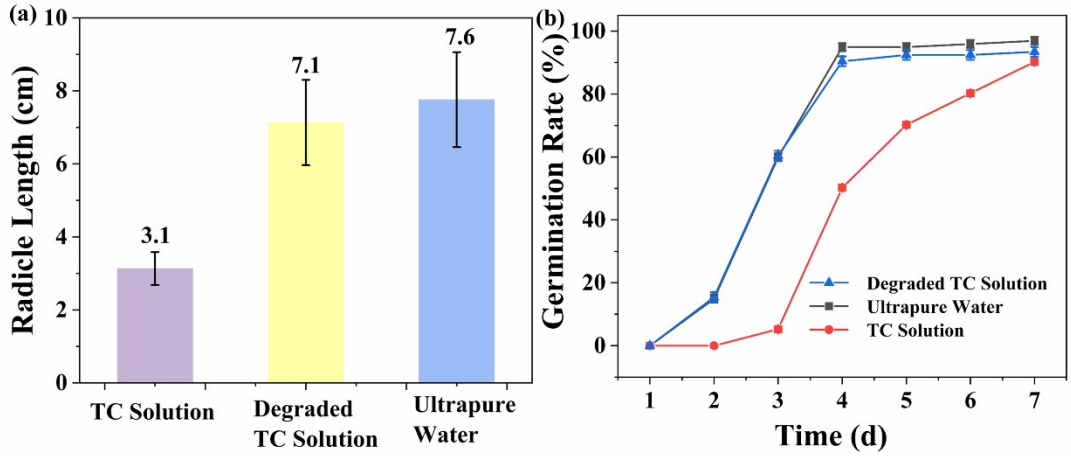

Fig. S7. (a) The average radicle length of mung bean cultivated in TC solution, degraded TC solution and ultrapure water solutions, (b) and the germination rate in TC solution, degraded TC solution and ultrapure water solutions.

Table. S1 The *k* of $LaCoO_3$/g-C_3N_4/PMS system compared with other *k*.

System	Organic pollutants	Concentration	*k* (min $^{-1}$)	References
BiOBr microsphere-S4/Vis	TC (tetracycline hydrochloride)	10 mg/L	0.039	[1]
35%-LFO/BOI/Vis+H_2O_2	TC (tetracycline hydrochloride)	50 ppm	0.04423	[2]
g-C_3N_4/PS	CIP (ciprofloxacin)	10 mg/L	0.0649	[3]
Co-impregnated biochar/PMS	ACE (acetaminophen)	10 mg/L	0.032	[4]
$LaCoO_3$/g-C_3N_4/PMS	TC (tetracycline hydrochloride)	30 mg/L	0.03204	our work

references

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