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Ultrasound-Assisted Synthesis of $CuMnO_2$/CN with Cation–π Interactions for Enhanced Ozone Decomposition

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Figures and Tables

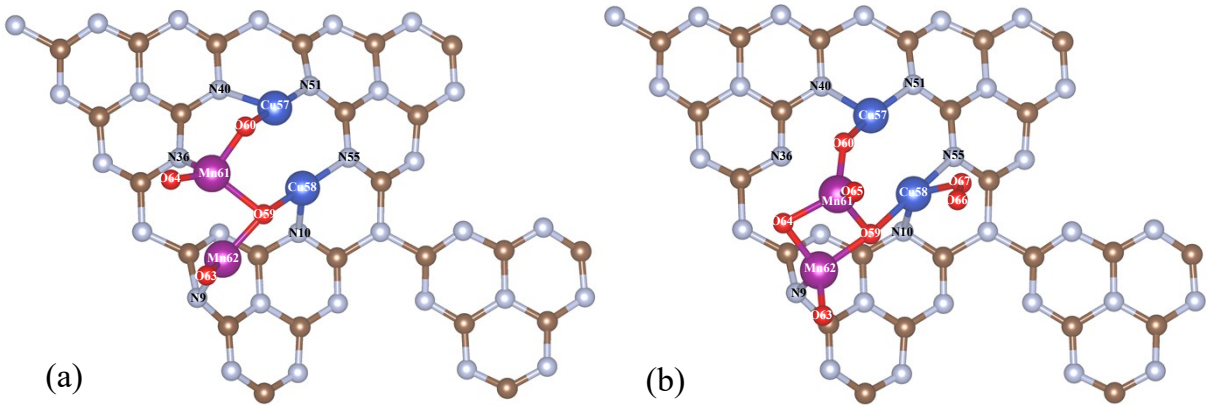

Fig. S1 Top view of the $CuMnO_2$/CN configuration (a) and the surface adsorption configuration of ozone on it (b)

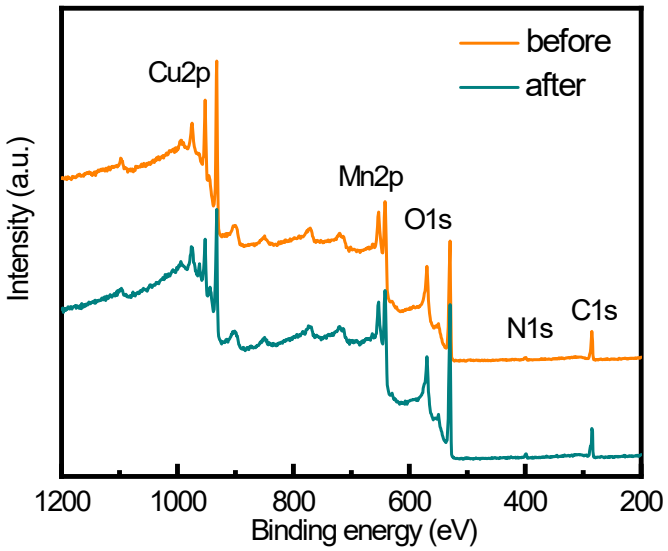

Fig. S2 XPS survey spectra of $CuMnO_2$/CN before and after ozonation.

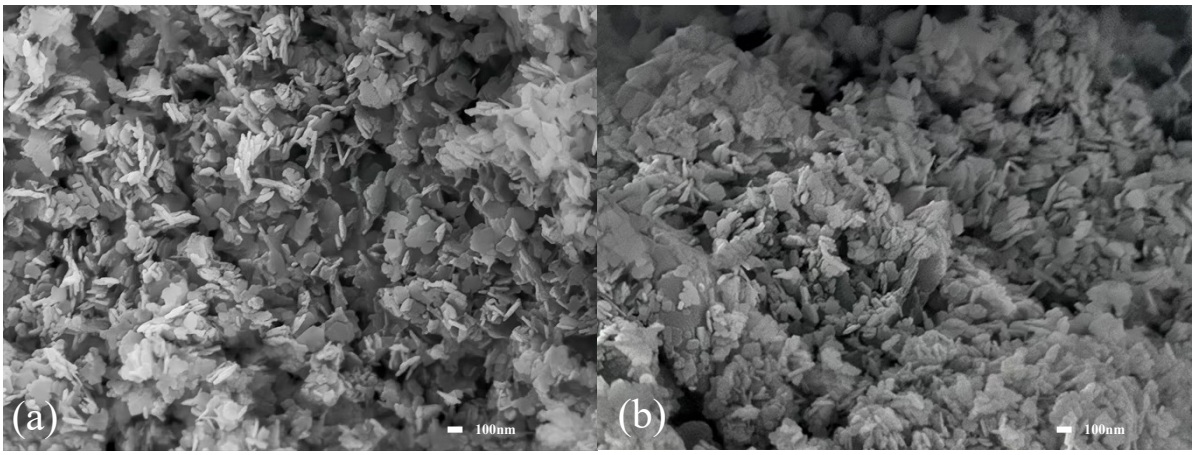

Fig. S3 SEM images of $CuMnO_2$/CN catalysts prepared by the ultrasonic-assisted method (a) and the hydrothermal method (b).

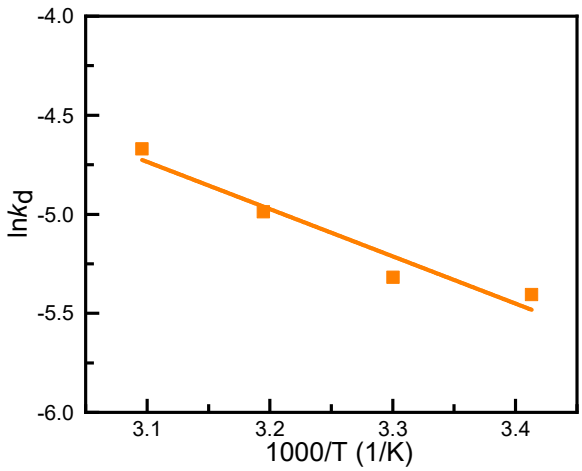

Fig. S4 Arrhenius plot for ozone decomposition catalyzed by $CuMnO_2$/CN at pH = 7

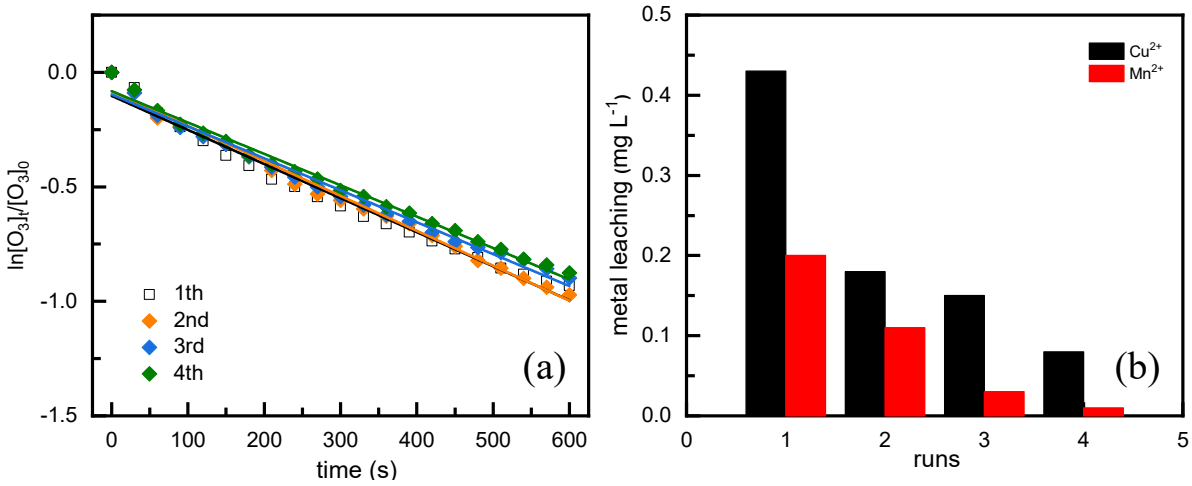

Fig. S5 (a) The decomposition rate of ozone catalyzed by $CuMnO_2$/CN under recycling; (b) metal leaching in ozone decomposition catalyzed by $CuMnO_2$/CN

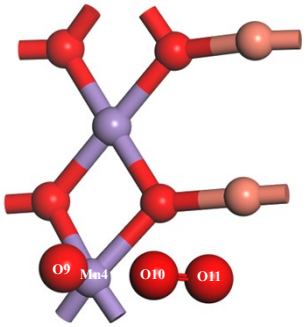

Fig. S6 O_3 adsorption configurations at the Lewis aicd sites of $CuMnO_2$

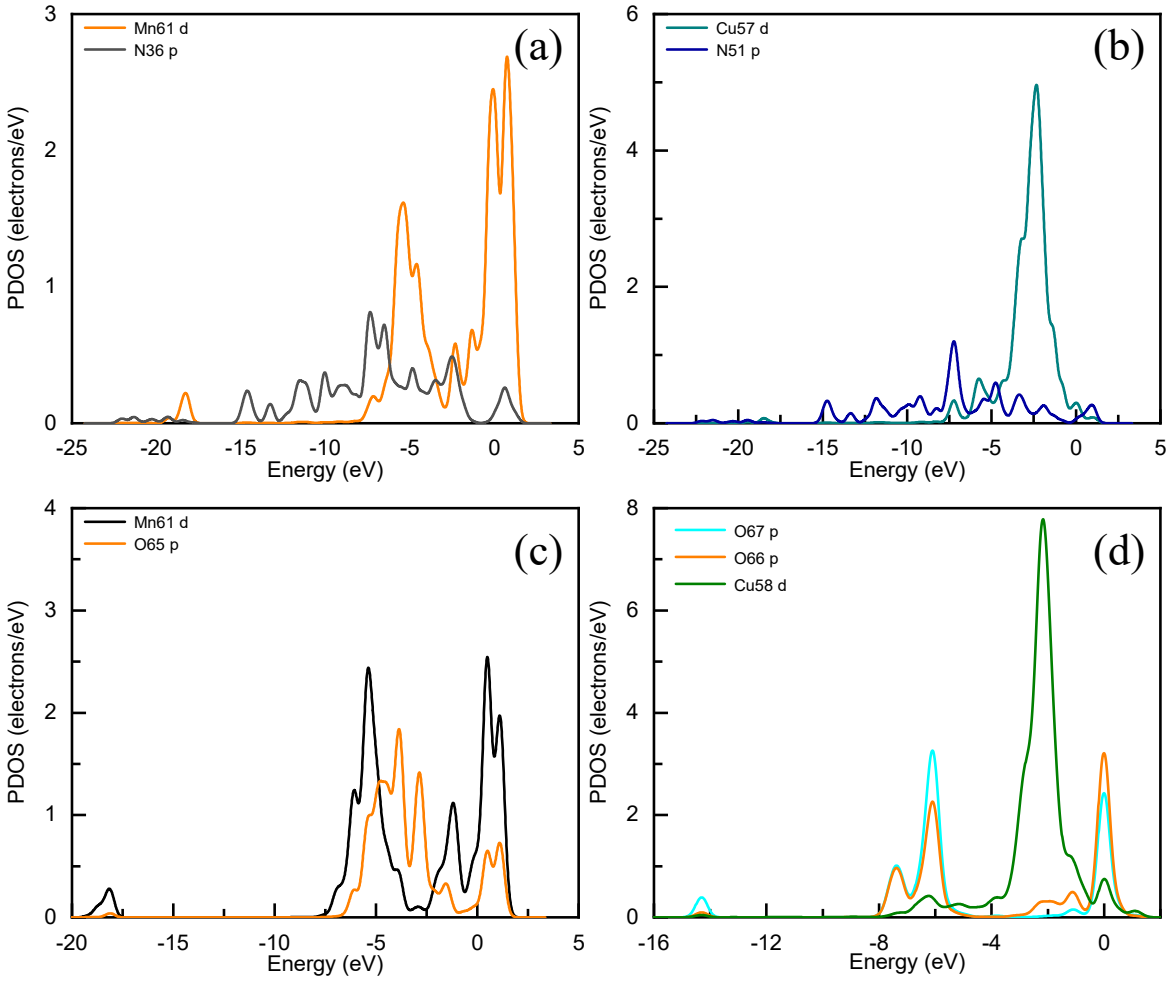

Fig. S7 PDOS analysis of partial atoms in $CuMnO_2$/CN before (a, b) and after (c, d) O_3 adsorption

Table S1 Ozone decomposition rate constant k_d for different catalysts.

catalysts	k_d*10^3/s
$CuMnO_2$/0.96NaOH	1.03
$CuMnO_2$/1.28NaOH	1.17
$CuMnO_2$/1.60NaOH	1.36
$CuMnO_2$/1.92NaOH	0.99
$CuMnO_2$/50CN	1.55
$CuMnO_2$/100CN	0.72
$CuMnO_2$/200CN	1.31
$CuMnO_2$/300CN	1.09
$CuMnO_2$/CN/600W	2.45
$CuMnO_2$/CN/800W	1.55
$CuMnO_2$/CN/1000W	1.39

$CuMnO_2$/CN/1200W	1.36

Table S2 BET surface area of different catalysts.

samples	Specific surface area ($m^2 \cdot g^{-1}$)
$CuMnO_2$	63.26
$CuMnO_2$/50CN	56.73
$CuMnO_2$/100CN	47.74
$CuMnO_2$/200CN	61.52
$CuMnO_2$/300CN	50.65

Table S3 Ozone decomposition rate constant k_d at different conditions.

m_s (mg)	T (K)	pH	k_d*10^3/s
20	293	6	1.66
30	293	6	2.37
40	293	6	2.74
50	293	6	3.31
30	303	7	4.90
30	313	7	6.82
30	323	7	9.37
30	293	6	2.45
30	293	7	4.49
30	293	8	16.55