Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Construction of stable bio-Pd catalysts for environmental pollutant remediation

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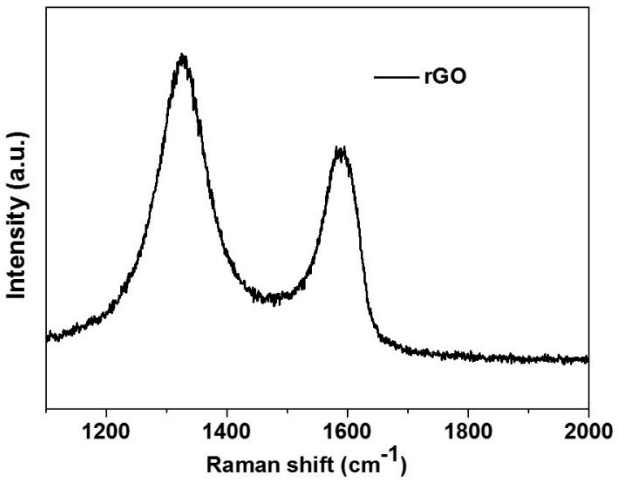

Fig. S1 Raman spectra of rGO

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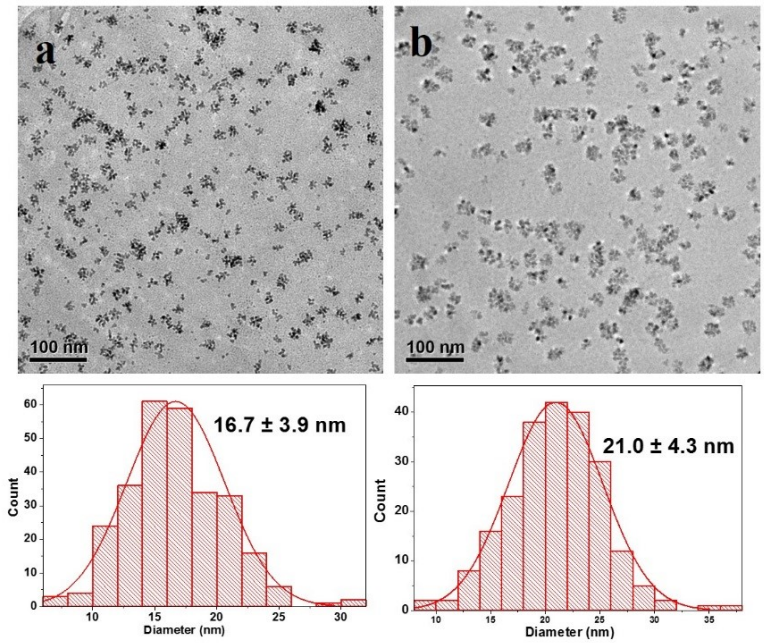

Fig. S2 TEM images of Pd/yeast/rGO catalysts with Pd particle mean size of (a) 16.7 nm and (b) 21.0 nm

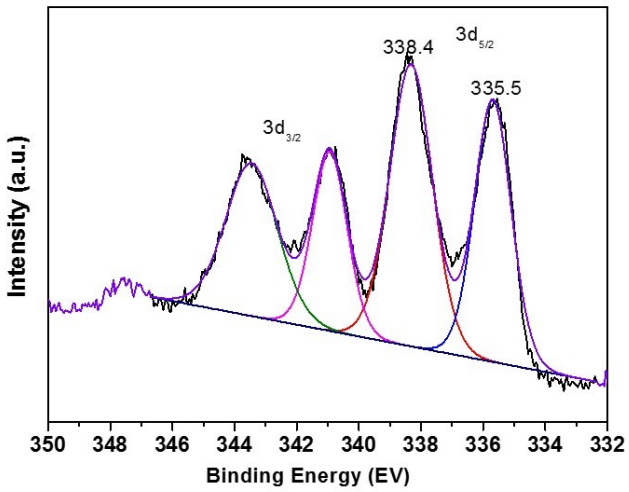

Fig. S3 XPS of the Pd 3d peaks of the Pd/yeast catalysts

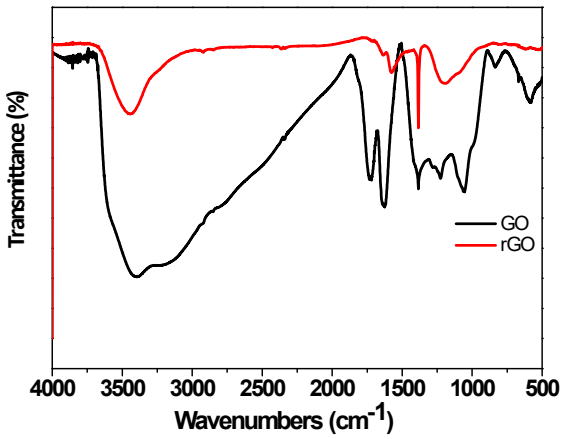

Fig. S4 FTIR spectra of GO and rGO

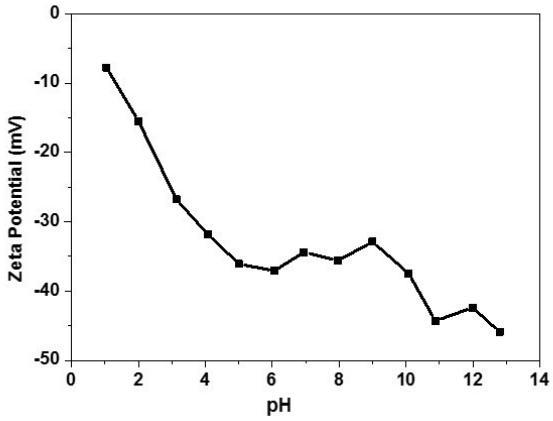

Fig. S5 Zeta potential of the Pd/yeast/rGO catalysts at different pH solution.

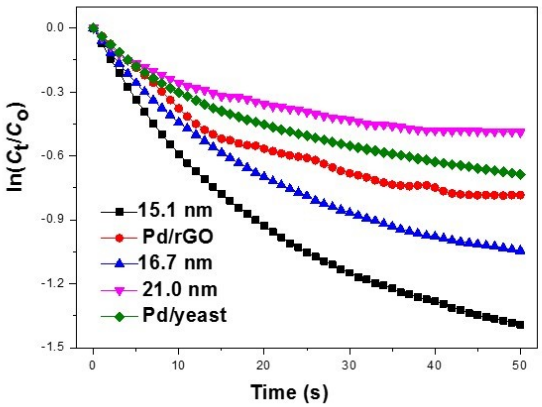

Fig. S6 Plot of ln(C_t/C_0) versus time for the reduction of different particle mean size of Pd/yeast/rGO catalysts (15.1, 16.7 and 21 nm) and Pd/yeast catalyst, Pd/rGO.

Tab. S1 The kinetic constants of Pd/yeast/rGO catalyst after 7 cycles

cycles	kinetic constant ($\times 10^{-2}$ s^{-1})
1	3.6
2	2.9
3	2.9
4	2.6
5	2.5
6	2.4
7	2.3

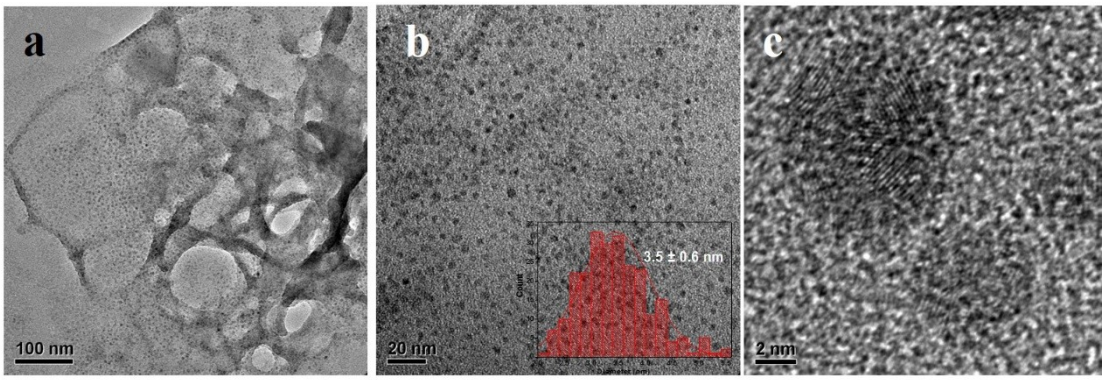

Fig. S7 TEM image of Pd/yeast/rGO catalysts after 7 cycles

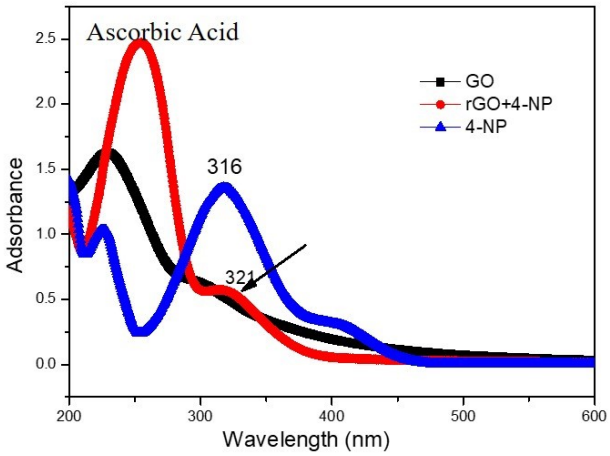

Fig. S8 UV-vis spectrogram of GO, 4-NP and rGO + 4-NP solutions

Tab. S2 Comparative characteristics of catalysts and catalytic performance to 4-NP

Catalysts	Catalysts dosage	4-NP dosage	Kinetic constant (min^{-1})	Ref.
Ag_3PO_4/Ni-Ti LDH/GO	1 mg	4-NP (5 mL, 1 mM) solution	0.178	[1]
Pd/RGO/Fe_3O_4	5 mg	4-NP (25 mL, 2.5 mM) solution	3.06	[2]
MXene@PdNPs20	0.3 mg	4-NP (2 mL, 5 mM) solution	10.8	[3]
Pd/walnut shell	5 mg	4-NP (25 mL, 2.5 mM) solution	(1 min)	[4]
3D Pd/TiO_2-scaffolds	--	4-NP (2 mL,14.38 mM) solution	2.69	[5]
Hg/Pd Alloy Nanoparticles	5 mg	4-NP (0.5 mL, 1 mM) solution	3.5	[6]
Pd/Graphene Catalyst	4 mg	4-NP (40 mL, 0.3 mM) solution	0.666	[7]
Pd/yeast/rGO	0.24 mg	4-NP (0.7 mL, 1 mM) solution	2.16	This work

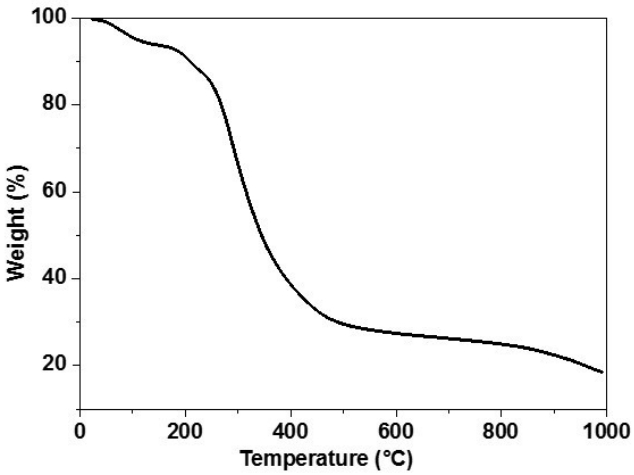

Fig. S9 TGA result of *Pichia pastoris* GS115

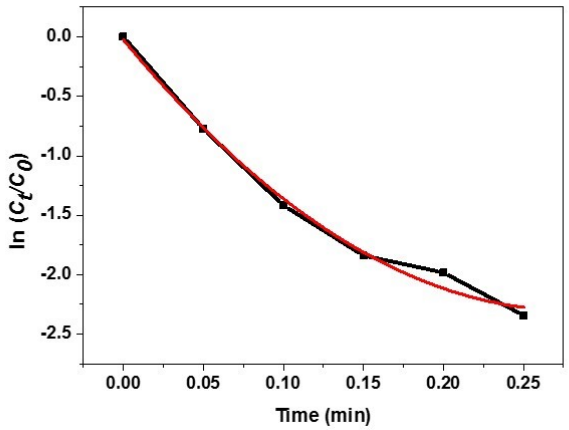

Fig. S10 plot of ln(C_t/C_0) versus time of Pd/yeast/rGO catalysts in the decolorization of MB

References

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