Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting information for:

Synthesis, Characterization of $Mo_xFe_{1-x}O$ Nanocomposites for Ultra-fast Degradation of Methylene Blue via Fenton-like Process: A Green Approach

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Table S1: Different amount of Ferrous sulphate heptahydrate ($FeSO_4.7H_2O$) & Ammonium Molybdate ($(NH_4)_6Mo_7O_{24}.4H_2O$) salts for the synthesis of $Mo_xFe_{1-x}O$ Nanocomposites

Samples	% of Mo in composites	Amount of $(NH_4)_6Mo_7O_{24}.4H_2O$ in g	Amount of $FeSO_4.7H_2O$ in g
MoI1	5	1.1695	5.0003
MoI2	10	2.4682	5.0009
MoI3	15	3.9223	5.0007

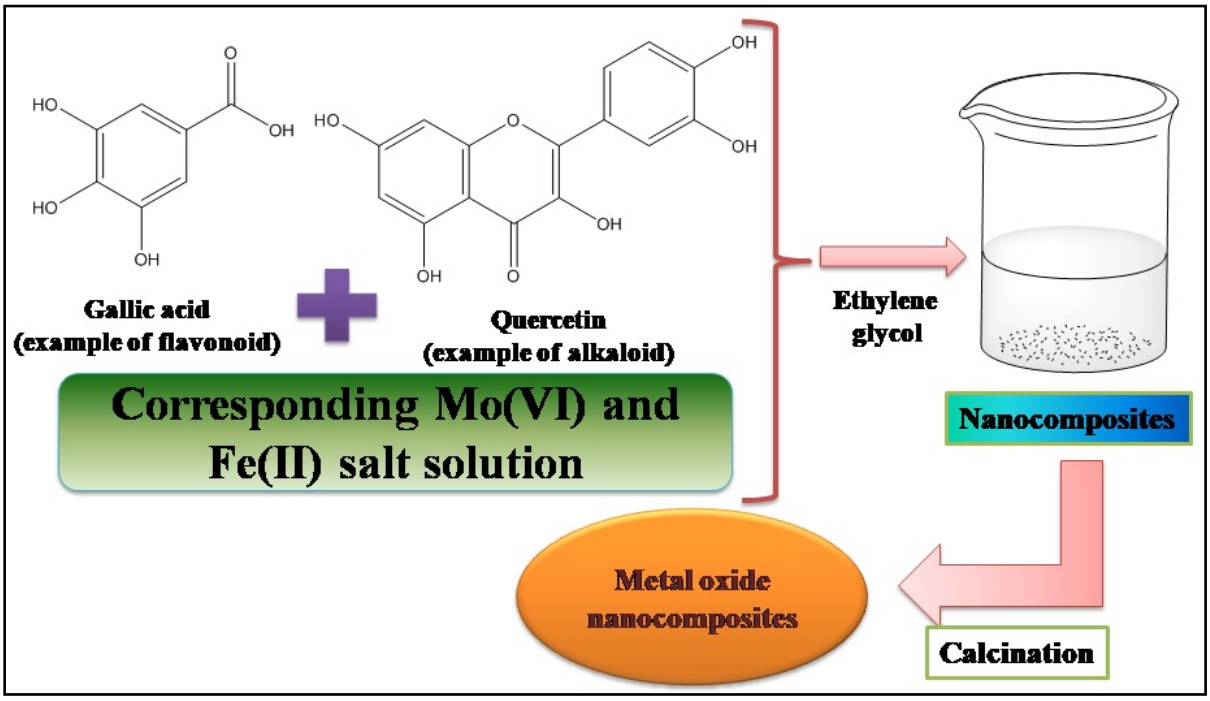
Table S2: Average hydrodynamic particle sizes of the nanocomposites from dynamic light scattering

Samples	Average hydrodynamic size of nanocomposites (nm)
MoI1	5
MoI2	10
MoI3	15

Table S3: Kinetic parameters obtained from the zero order kinetic model at different reaction conditions

Parameter	Samples	Concentration	Zero order	
			k_1	R^2
Dosage of Catalysts	**MOI1**	10 mM	0.03977	0.73562
		20 mM	0.05598	0.94188
		30 mM	0.03425	0.56305
	MOI2	10 mM	0.04349	0.97832
		20 mM	0.03472	0.5398
		30 mM	0.03333	0.90918
	MOI3	10 mM	0.02959	0.75654
		20 mM	0.01349	0.76704
		30 mM	0.02733	0.71596
H_2O_2 concentration	**MOI1**	10 mM	0.04011	0.91953
		20 mM	0.03977	0.73562
		30 mM	0.00916	0.64027
	MOI2	10 mM	0.03228	0.94843
		20 mM	0.04349	0.90918
		30 mM	0.04282	0.75965
	MOI3	10 mM	0.00916	0.64027
		20 mM	0.02959	0.75654
		30 mM	0.01337	0.73016
Dye concentration	**MOI1**	15mg/L	0.03977	0.73562
		10 mg/L	0.03955	0.80048
		5 mg/L	0.03225	0.87351
	MOI2	15 mg/L	0.08478	0.97301
		10 mg/L	0.16524	0.96883
		5 mg/L	0.03452	0.95096
	MOI3	15 mg/L	0.02959	0.75654
		10 mg/L	0.01298	0.88785
		5 mg/L	0.00954	0.79893
pH variation	**MOI1**	pH 2	0.04176	0.88954
		pH 7	0.03955	0.80048
		pH 10	0.03273	0.94933
	MOI2	pH 2	0.02935	0.48856
		pH 7	0.04126	0.80593
		pH 10	0.04159	0.83938
	MOI3	pH 2	0.02067	0.92089
		pH 7	0.01298	0.88785
		pH 10	0.03013	0.62956
Temperature variation	**MOI1**	283.15 K	0.04234	0.8597
		303.15 K	0.03955	0.80048
		323.15 K	0.03288	0.557
	MOI2	283.15 K	0.04304	0.94645
		303.15 K	0.04126	0.80593
		323.15 K	0.0295	0.5901
	MOI3	283.15 K	0.01119	0.9821
		303.15 K	0.01298	0.88785

		323.15 K	0.00617	0.8912



Scheme S1 Formation mechanism of nanomaterials by PGP extract (alkaloids and flavonoids compounds).

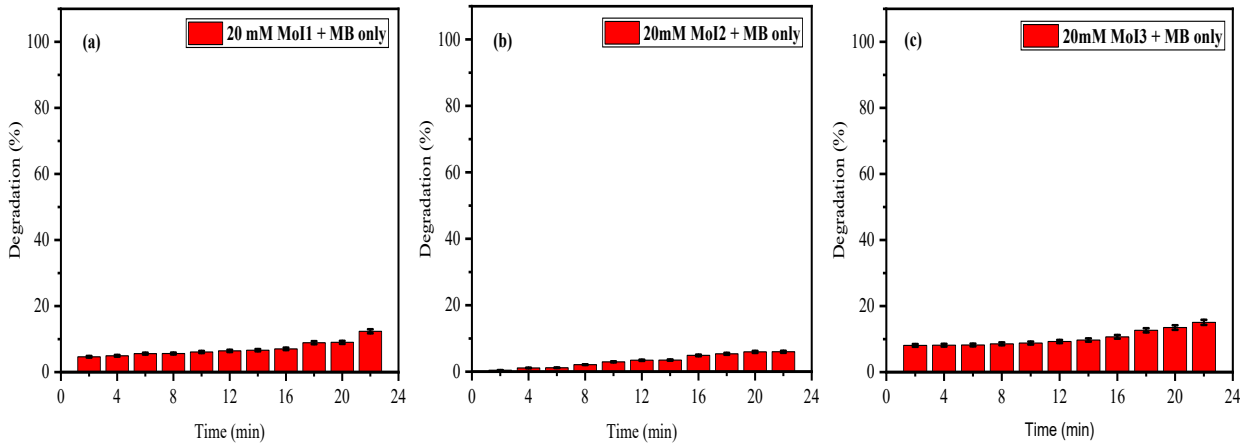


Figure S1: Degradation of MB only in presence of 20 mM **(a)** MoI1, **(b)** MoI2, **(c)** MoI3

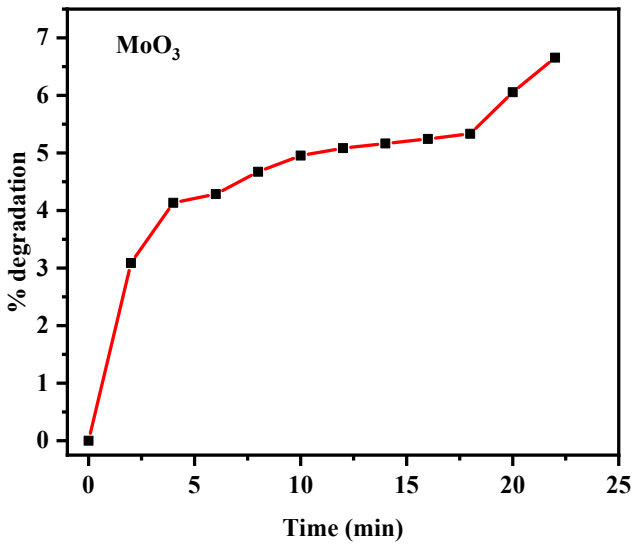


Figure S2: Degradation of MB only in presence of MoO_3 catalyst only.

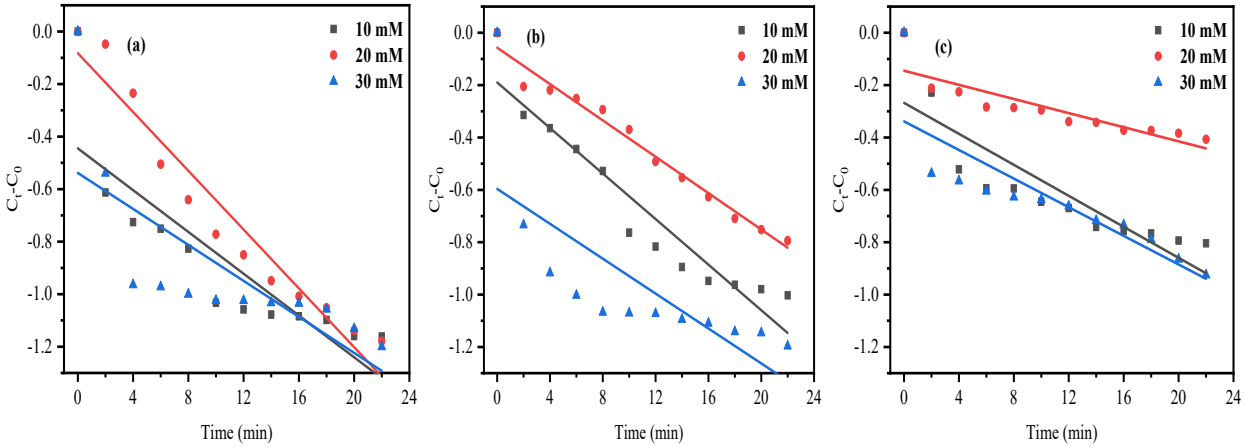


Figure S3: Zero order kinetics of catalyst concentration variation for (a) MoI1, (b) MoI2, (c) MoI3.

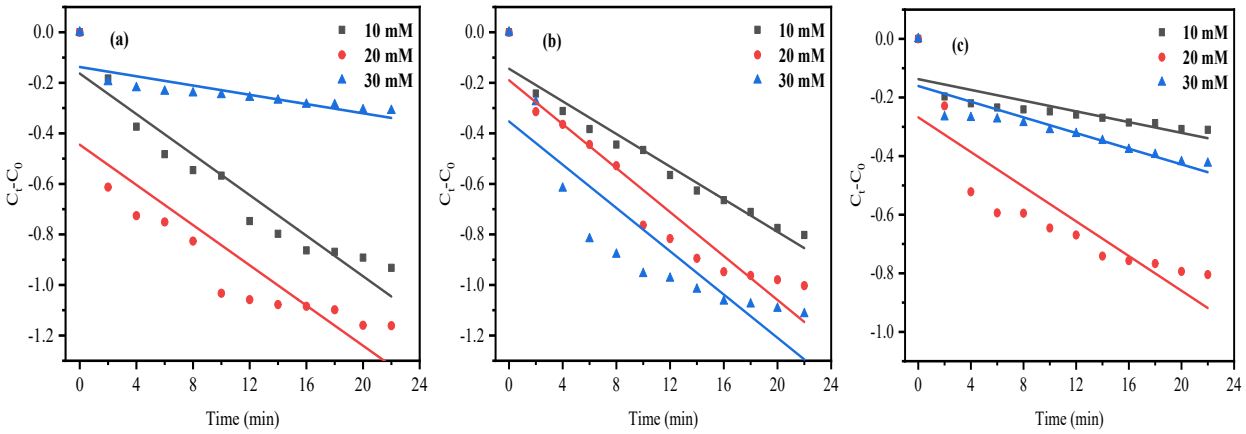


Figure S4: Zero order kinetics of H_2O_2 concentration variation for (a) MoI1, (b) MoI2, (c) MoI3.

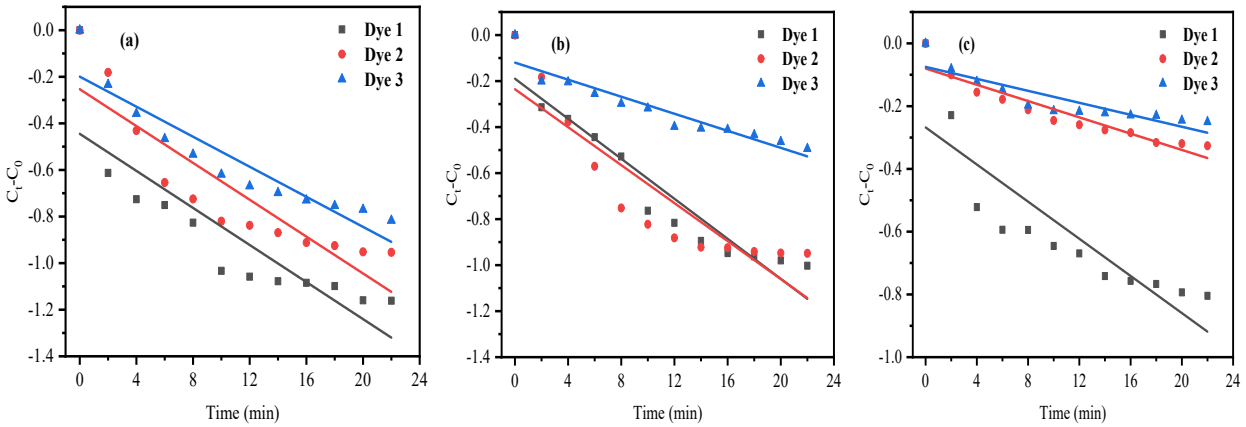


Figure S5: Zero order kinetics of dye concentration variation for (a) MoI1, (b) MoI2, (c) MoI3.

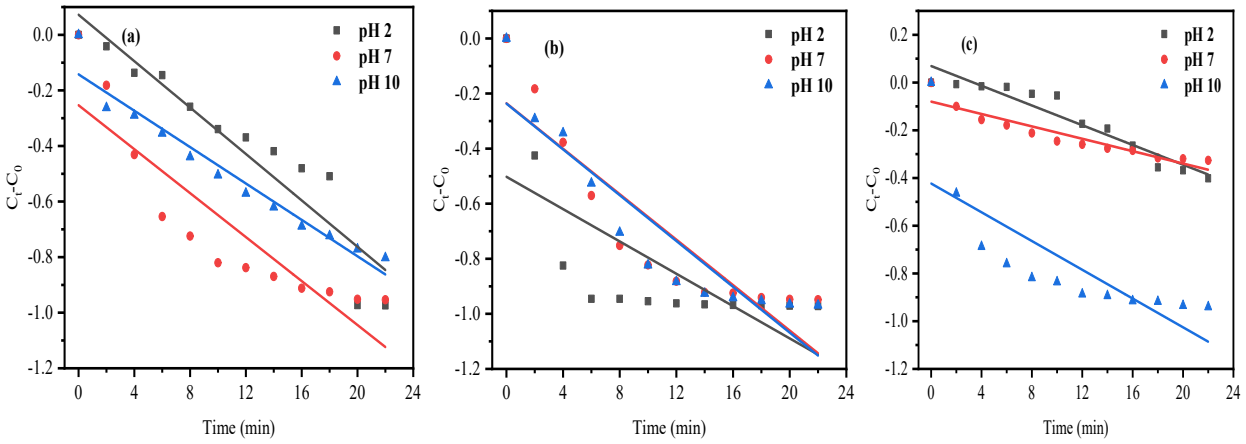


Figure S6: Zero order kinetics of pH variation for (a) MoI1, (b) MoI2, (c) MoI3.

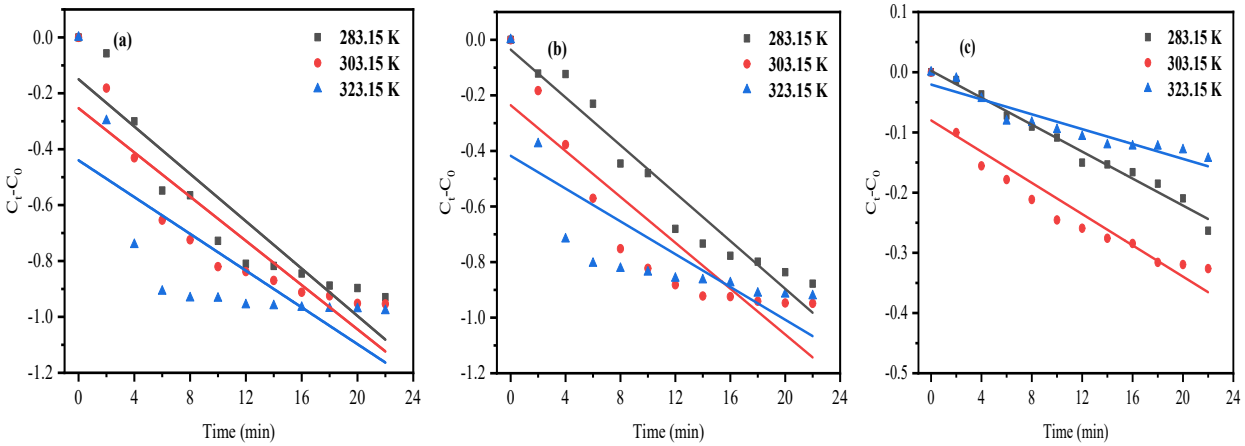


Figure S7: Zero order kinetics of temperature variation for (a) MoI1, (b) MoI2, (c) MoI3.

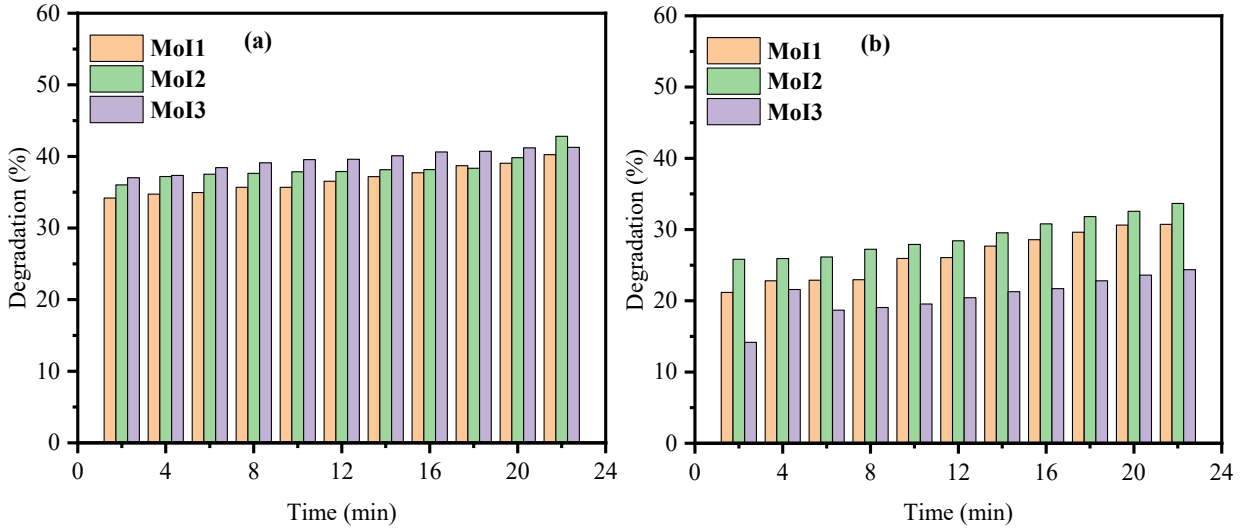


Figure S8: % of degradation of MB in presence of $Mo_xFe_{1-x}O$ ([$Mo_xFe_{1-x}O$]=10 mM, [MB] =15 mg/L, [H_2O_2]=20 mM, T= 303.15 K) by using **(a)** 6.7 µg/mL NaN_3 & **(b)** 67 µL/mL MeOH as scavenger.

Figure S9: SEM images of MoI1, MoI2 & MoI3 catalysts after catalytic experiment.