"Supplementary Information"

Upcycling of Plastic Waste into Polymeric Membrane for Photocatalytic Degradation of Diclofenac Sodium: Mechanistic and DFT insights

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Tables

Table S1. Zeta potential of MnO_2 nanoparticles

Name	Mean zeta potential (mV)	Distribution peak (mV)	Conductivity (mS/cm)	Electrophoretic mobility (µm*cm/Vs)
Mean value	-16.7	-15.6	0.024	-1.3000
Standard deviation	0.6	1.5	0.000	0.0464
Rel. standard deviation	3.57 %	9.66 %	0.33 %	3.57 %

Table S2. Quality parameters of the drug solution

Various parameters	Before photocatalytic degradation	After photocatalytic degradation
COD	72 * 10^4 mg/L	56 * 10^4 mg/L
DO	117 * 10^2 mg/L	206 * 10^2 mg/L
BOD	17 * 10^2 mg/L	12 * 10^2 mg/L
Conductance	41.6 µs	207 µs
TDS	702 * 10^2 mg/L	102 * 10^2 mg/L
pH	6.8	4
TOC	10 mg/L	4 mg/L

Table S3. DPPH free radical scavenging assay

Name of samples	% Free radical scavenging activity at different concentrations (µg/mL)					
	20	40	60	80	100	IC_{50} value (mg/mL)
PU membran	5.57±0.28	9.10±0.29	13.28±0.26	16.97±0.18	18.74±0.18	277.78±0.59

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Figures

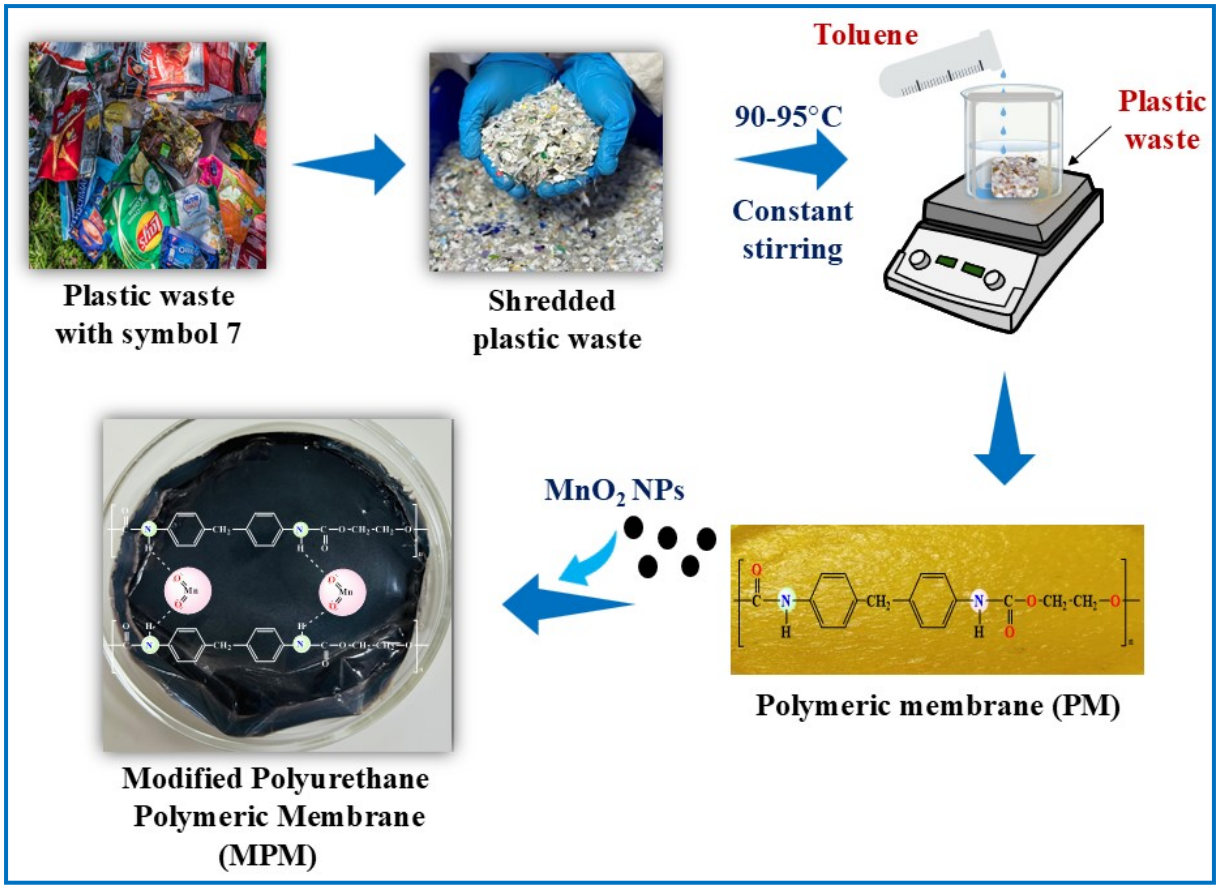

Figure S1. Schematic representation of Modified Polyurethane Polymeric Membrane

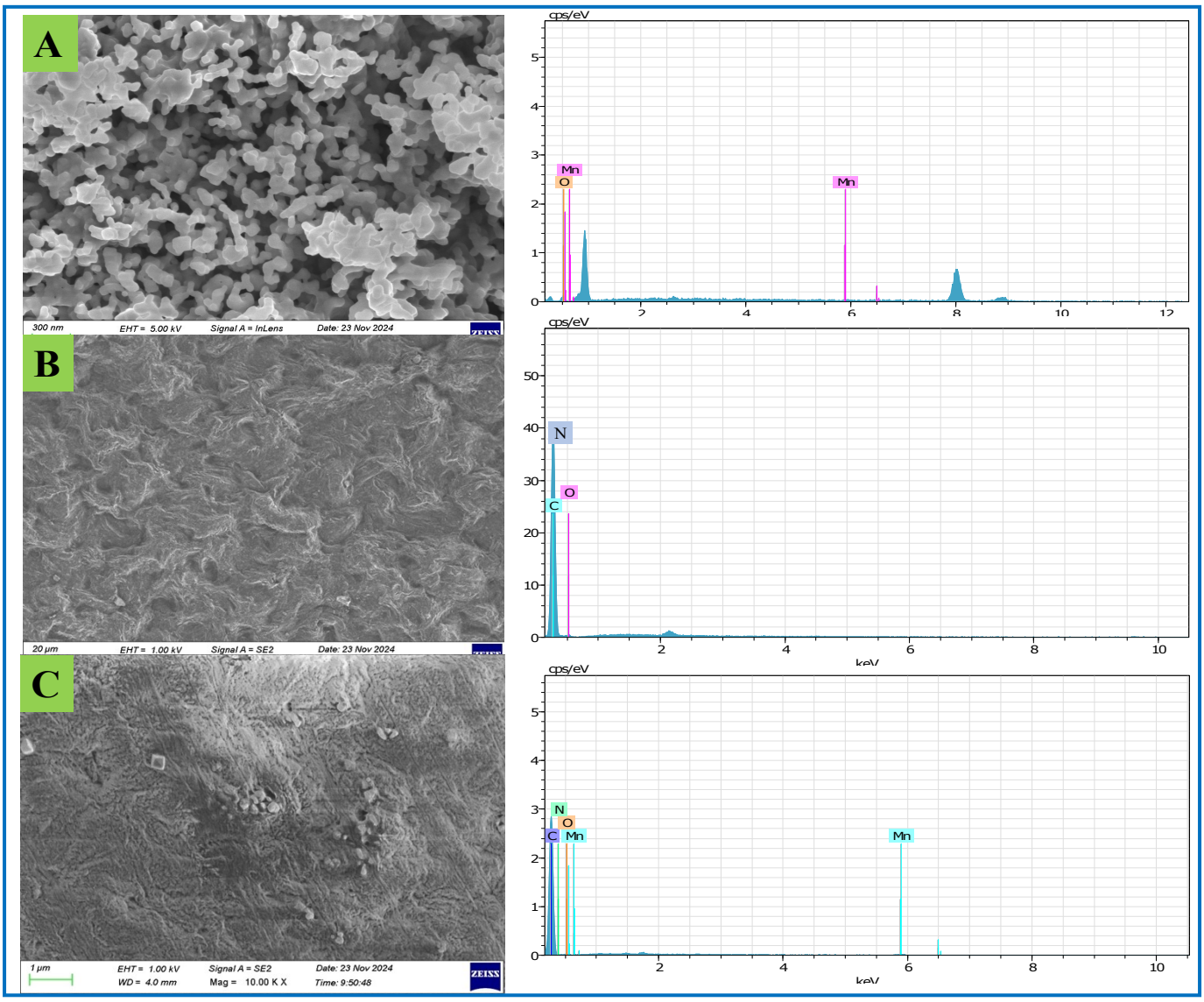

Figure S2. (A) SEM-EDX of MnO_2 NPs; (B) SEM-EDX of PM; (C) SEM-EDX of MPM

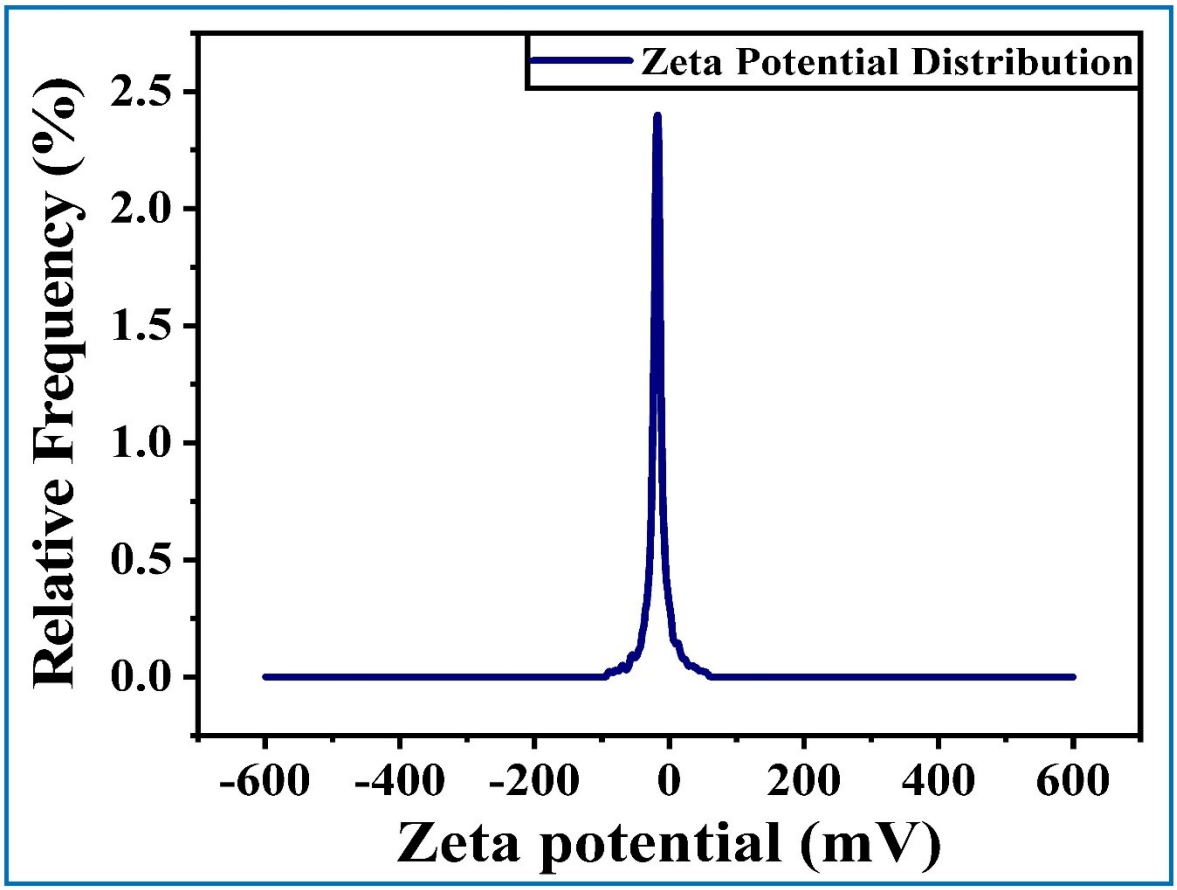

Figure S3. Zeta Potential Distribution of MnO_2 NPs

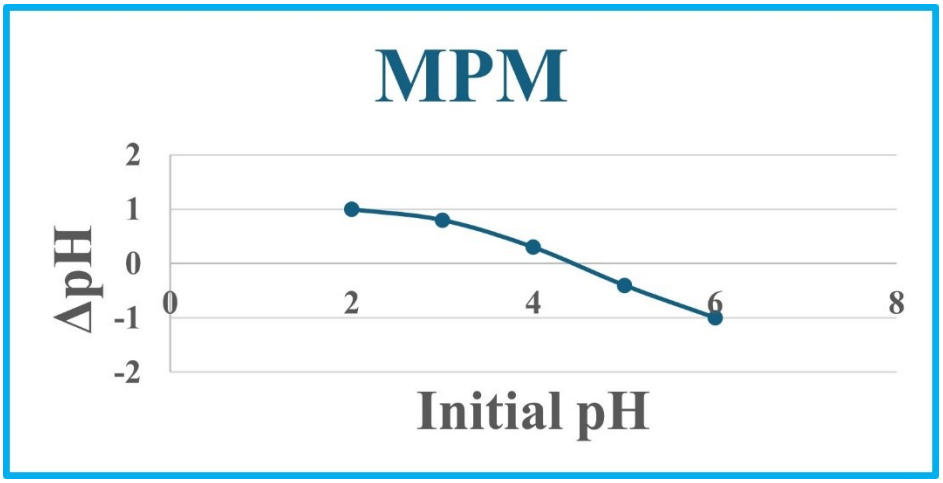

Figure S4. Point zero charge of MPM

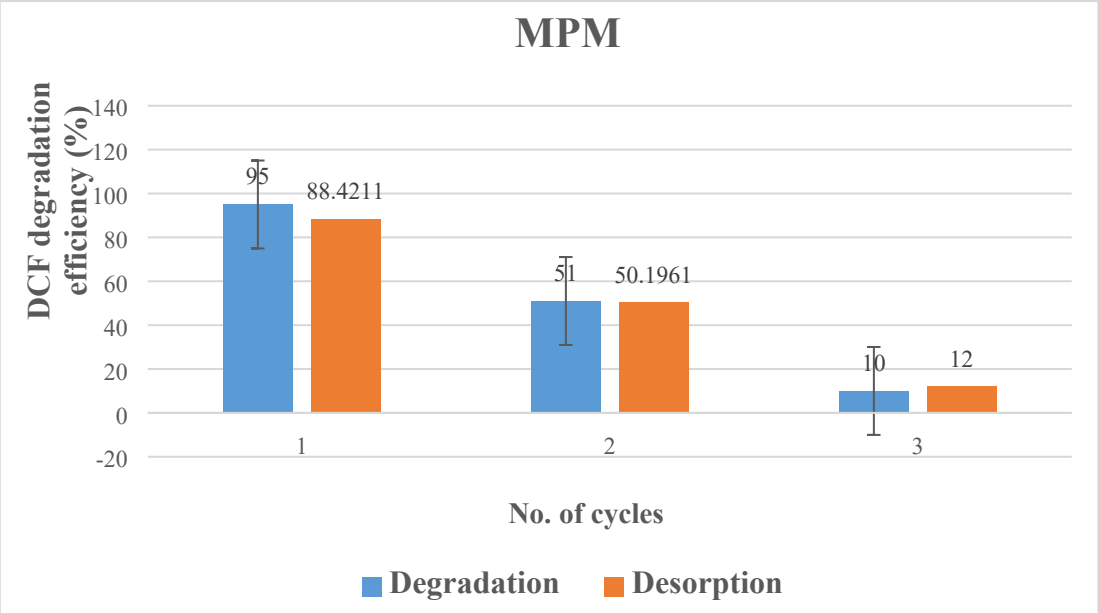

Figure S5: Recyclability of modified polymeric membrane

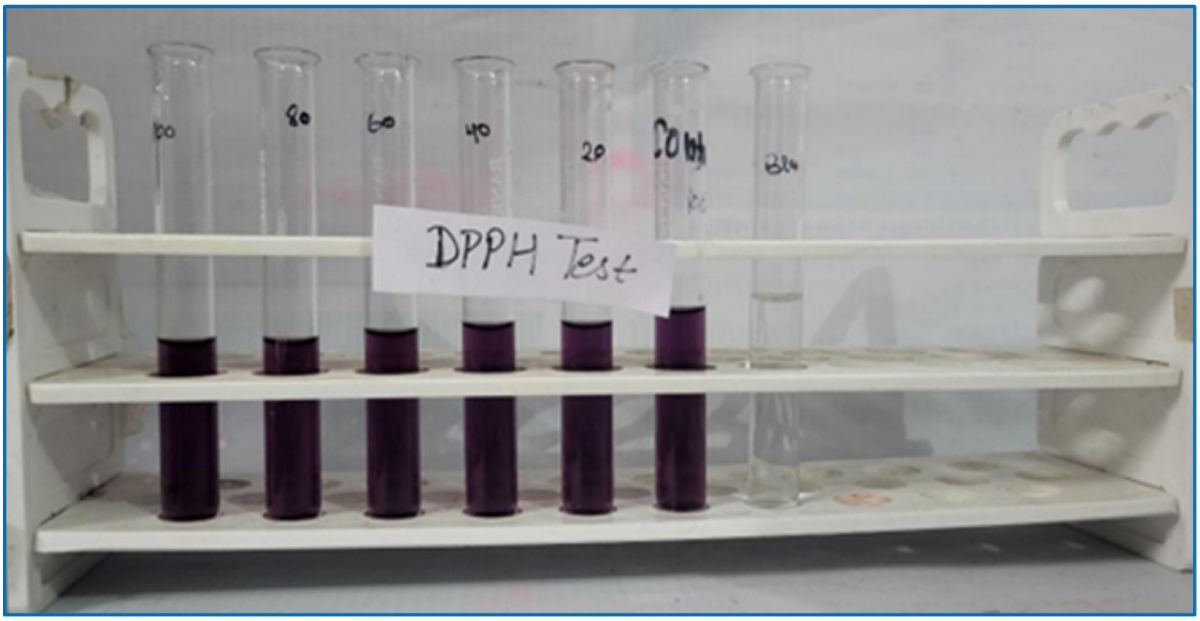

Figure S6. Concentration-dependent increase in radical scavenging activity

Figure S7. Seed germination of *Vigna Radiata* using tap water, drug water, and degraded water