Optimizing The Influential Variables for Enhanced Photocatalytic Performance of Synergistic Ag-TiO_2/FLG Heterojunctions Towards Rapid Mineralization of Emerging Polystyrene Microplastics in Water

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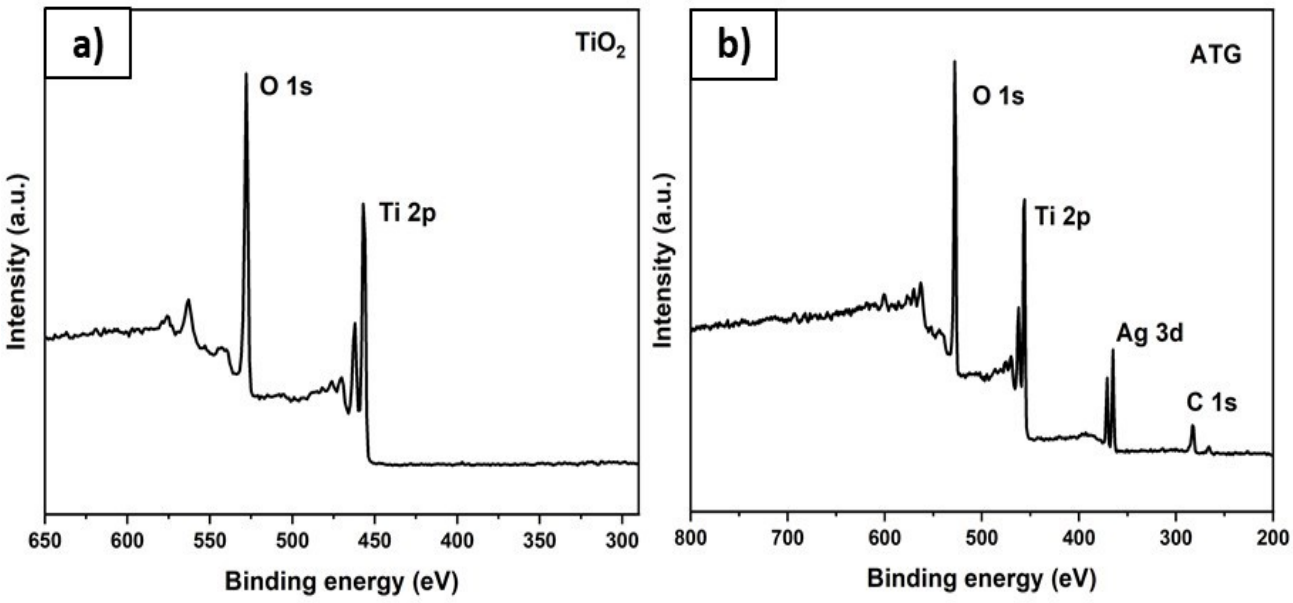


Fig. S1 XPS survey spectra of a) TiO_2; and b) ATG

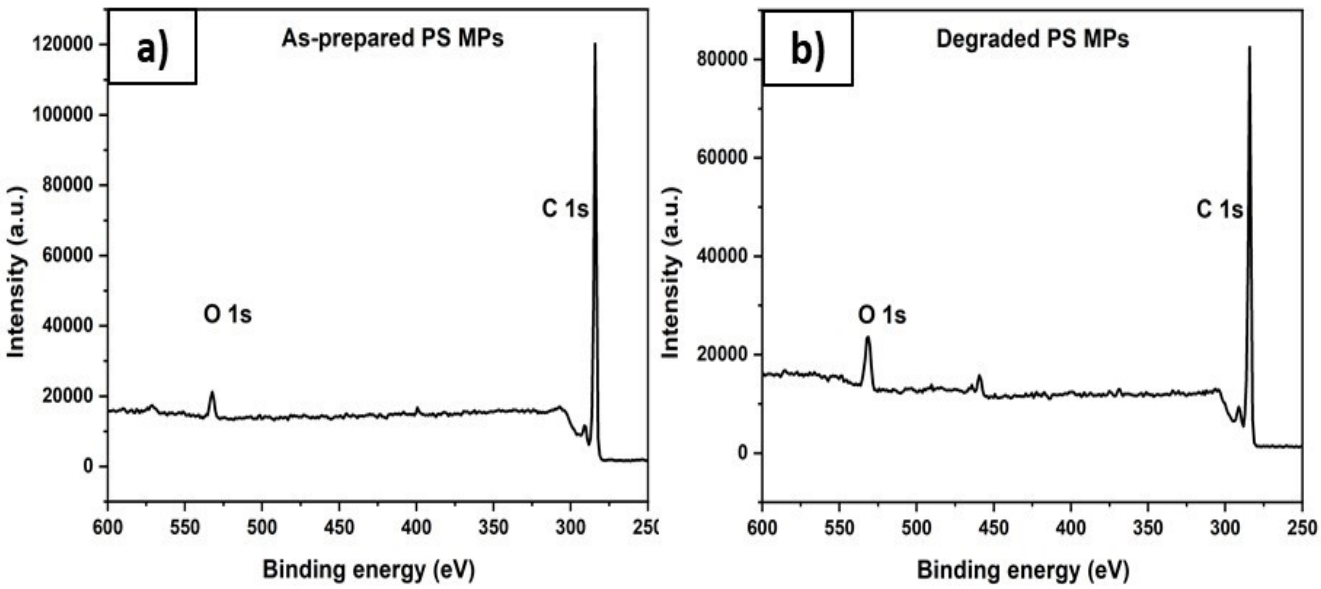
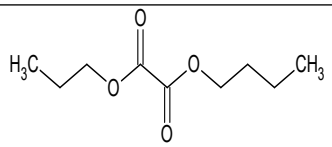
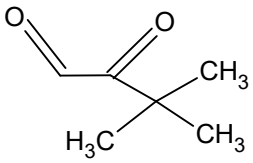
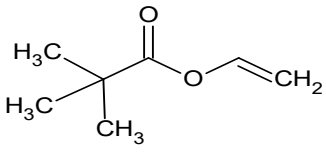
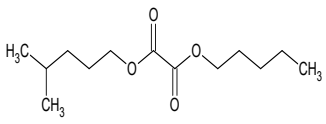
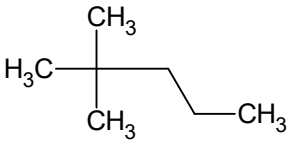
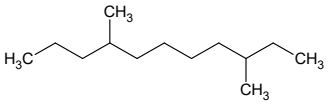
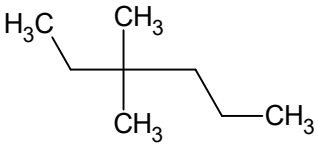
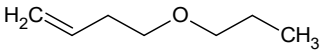
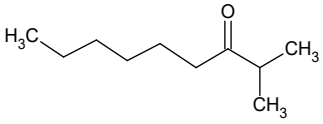
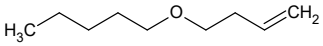
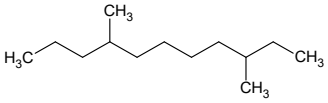
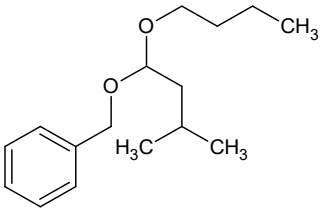
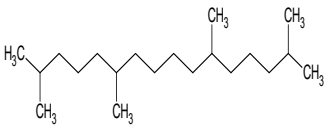
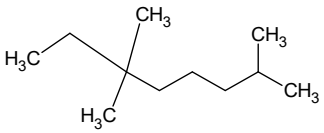
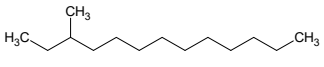
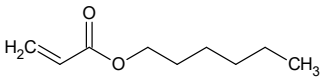
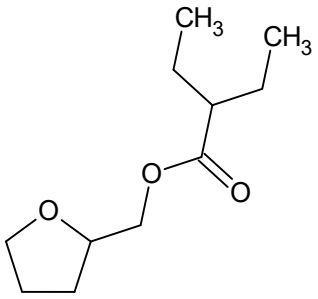
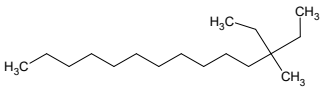
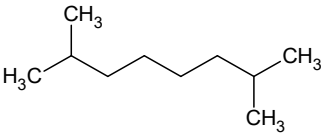


Fig. S2 XPS survey spectra of a) as-prepared; and b) Degraded PS MPs

Table S1 Intermediate compounds of the photocatalytic degradation of PS MPs after 120 h

Potential intermediates	Structure	Acquisition time (min)	Concentration (%)	Toxicity level as per MSDS
Oxalic acid, butyl propyl ester		8.9873	0.1	Mild
Butanal, 3,3-dimethyl-2-oxo-, hemihydrate		10.4439	0.27	Non-toxic
Pivalic acid vinyl ester		11.0047	0.03	Mild
Oxalic acid, iso-hexyl pentyl ester		13.3971	0.08	Mild

Pentane, 2,2-dimethyl-		13.4736	0.07	Toxic
Undecane, 3,8-dimethyl-		13.8305	1.26	Mild
Hexane, 3,3-dimethyl-		13.9470	0.24	Mild
Ether, 3-butenyl propyl		14.2711	0.09	Mild
3-Nonanone, 2-methyl-		14.3294	0.09	Mild
Ether, 3-butenyl pentyl		14.5988	0.09	Mild
Undecane, 3,8-dimethyl-		15.7932	1.23	Mild
Iso-valeraldehyde benzyl 3-methyl butyl acetal		16.0445	0.07	Mild
Hexadecane, 2,6,11,15-tetramethyl-		16.2593	1.98	Non-toxic

Octane, 2,6,6-trimethyl-		16.5179	0.1	Non-toxic
Tridecane, 3-methyl-		16.7728	0.64	Non-toxic
n-Hexyl acrylate		16.9767	0.05	Mild
2-Ethylbutyric acid, tetrahydro furfuryl ester		16.7072	0.04	Mild
Tridecanol, 2-ethyl-2-methyl-		18.0473	0.96	Non-toxic
Octane, 2,7-dimethyl-		18.8266	0.56	Mild

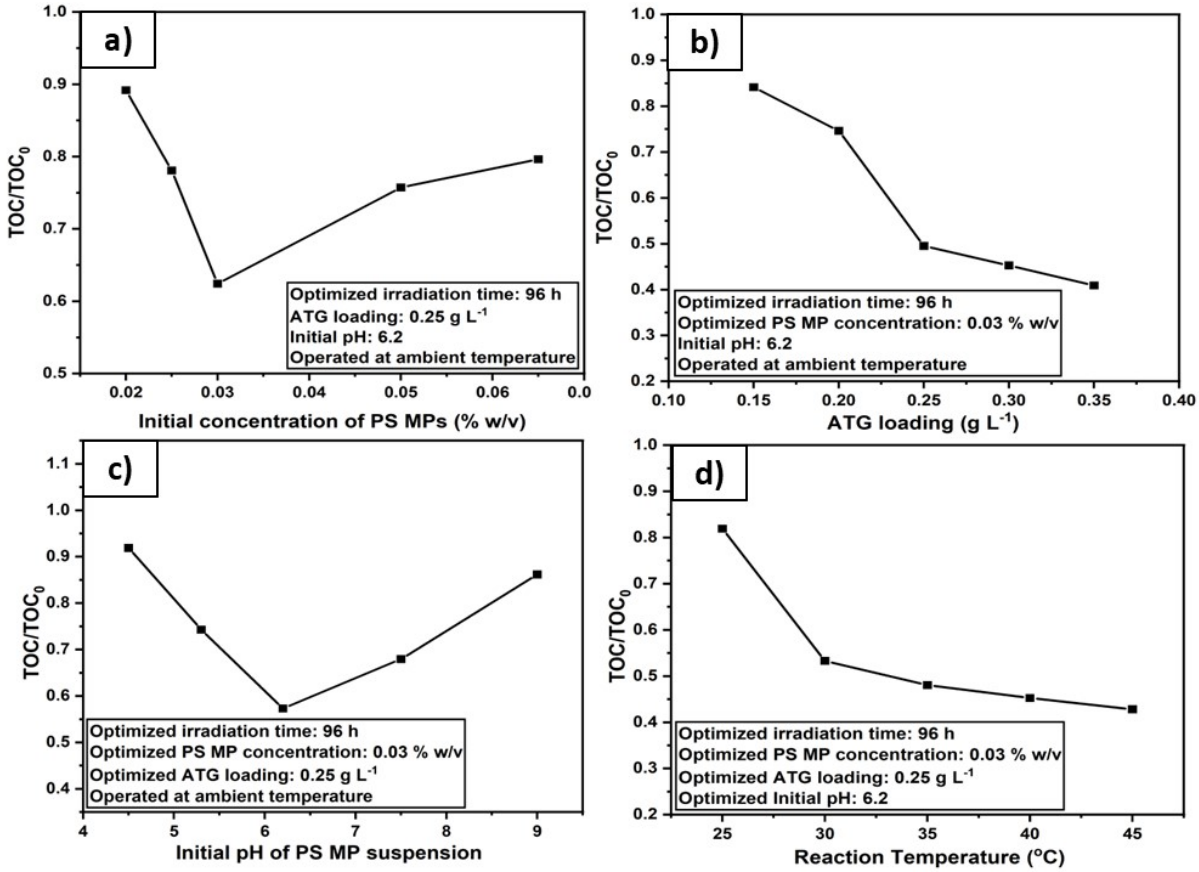


Fig. S3 Partial mineralization of the PS MPs at different process conditions: a) Initial PS MP concentration; b) ATG loading; c) Initial pH; and d) Reaction temperature