Antimicrobial Activity Enhancement of Polyethersulfone Membranes by In-Situ Growth of ZnO Nanorods

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Supporting Information

Table S 1 Viscosity calculated from slope of Shear stress-shear rate linear fitting of the curves

	NMP	PES	PES-2% ZnO	PES-4% ZnO
Slope (Pa.s)	0.0021	0.2713	0.5718	0.7281
R^2	0.895	1	1	1
Viscosity (cP)	2.1	271.3	571.8	728.1

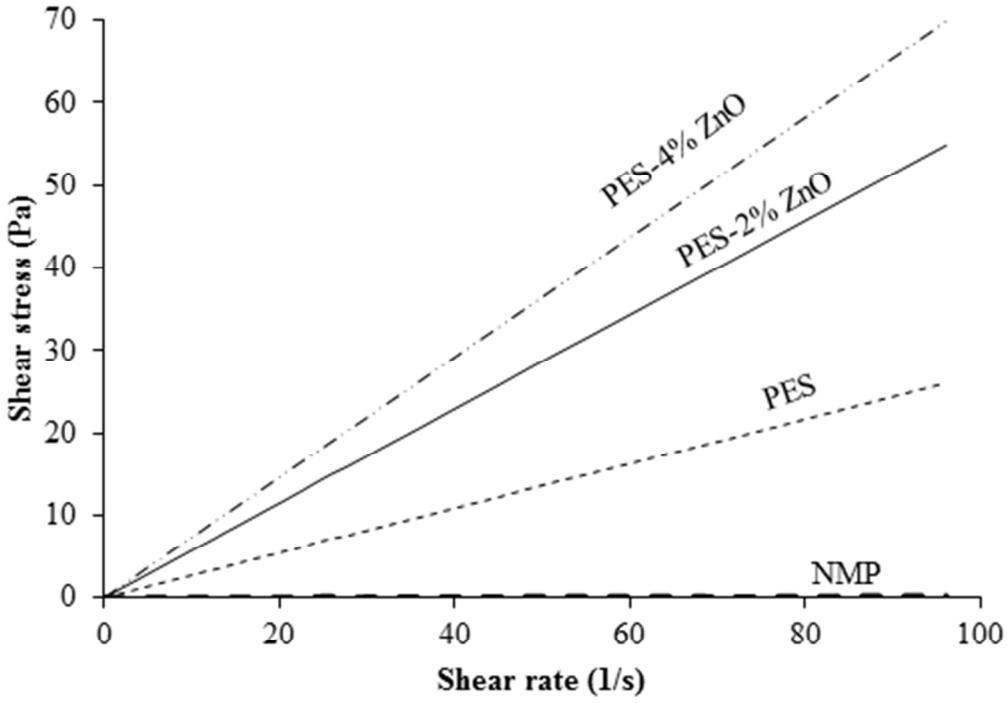

Figure S 1 Shear stress behavior with shear rate of the doped Zn-PES polymer solution and the solvent (NMP)

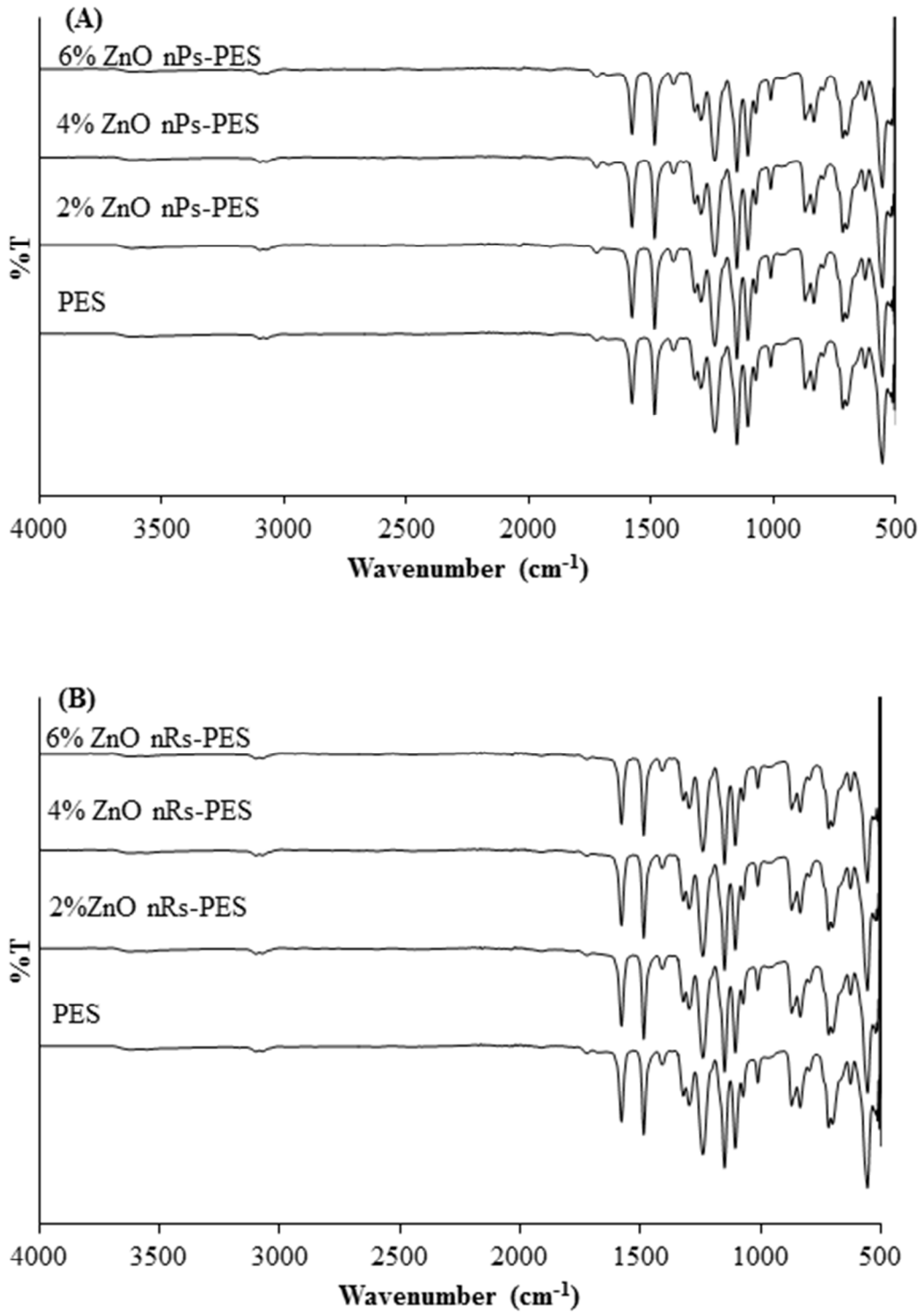

Figure S 2 ATR-FTIR spectra of (A) ZnO nanoparticles modified polyethersulfone membranes polyethrsulfone and (B) ZnO nanorods modified polyethersulfone membranes

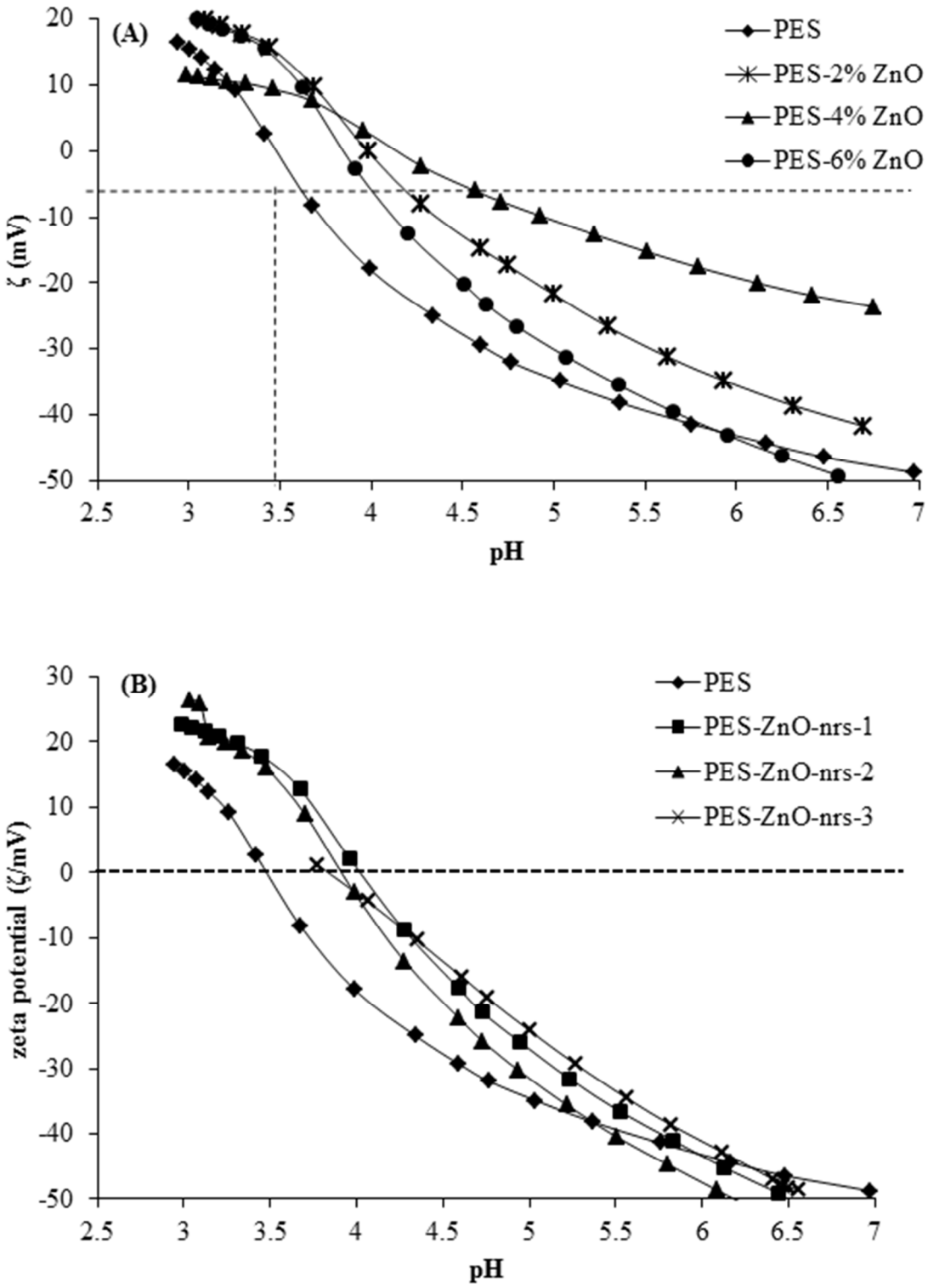

Figure S 3 Zeta potential of (A) polyethersulfone mebranes blended with ZnO nanoparticles and (B) membranes modified with ZnO nanorods measured by titration with 0.05 M HCl(aq) for pH range 7-3

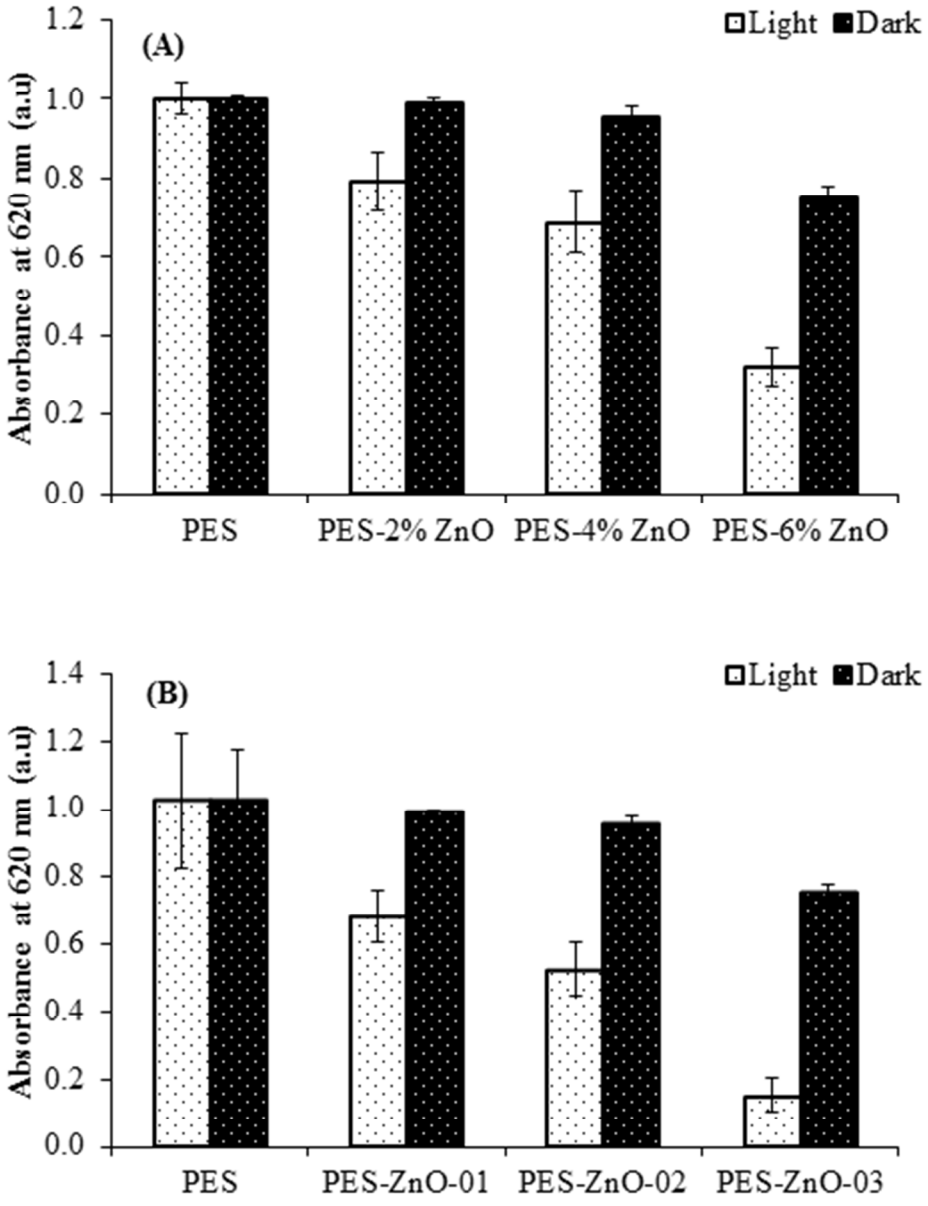

Figure S 4 The effect of ZnO NPs embedded in PES membranes (A) and ZnO NRs (B) in different concentrations in light (1,060Wm^{-2}) or dark conditions (no irradiation) on E.coli bacterium after 5 h of photocatalysis