

Electronic Supplementary Information

Oxygen vacancies and intense luminescence in manganese assisted ZnO microflowers for visible light water splitting

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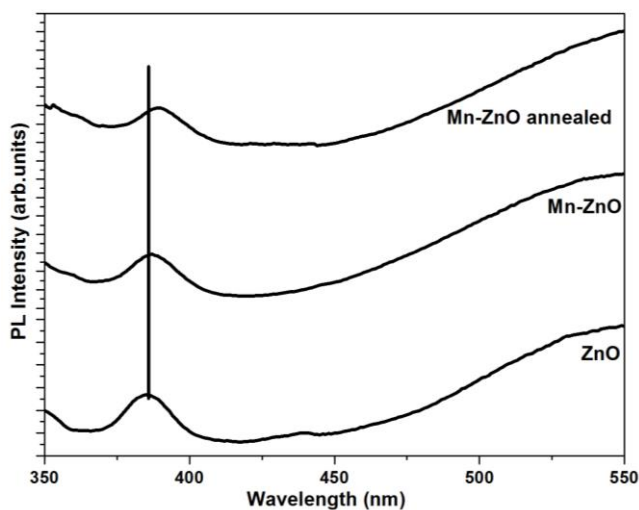
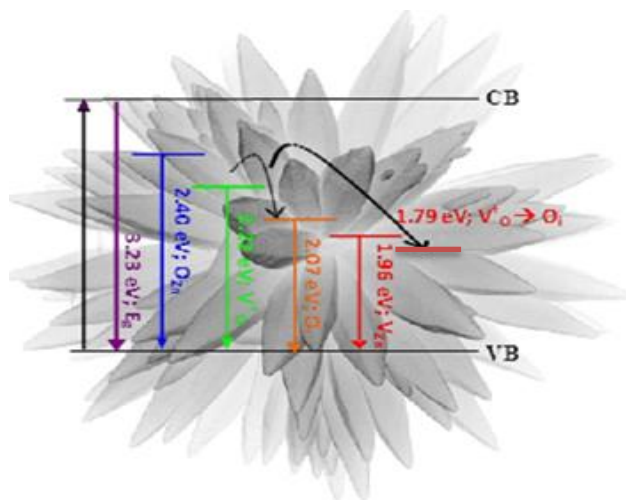


Fig. S1 PL-NBE for ZnO and manganese doped ZnO pre and post annealed samples.



Scheme I. Various energy levels in the forbidden region in nano-petals of ZnO microflower morphology.

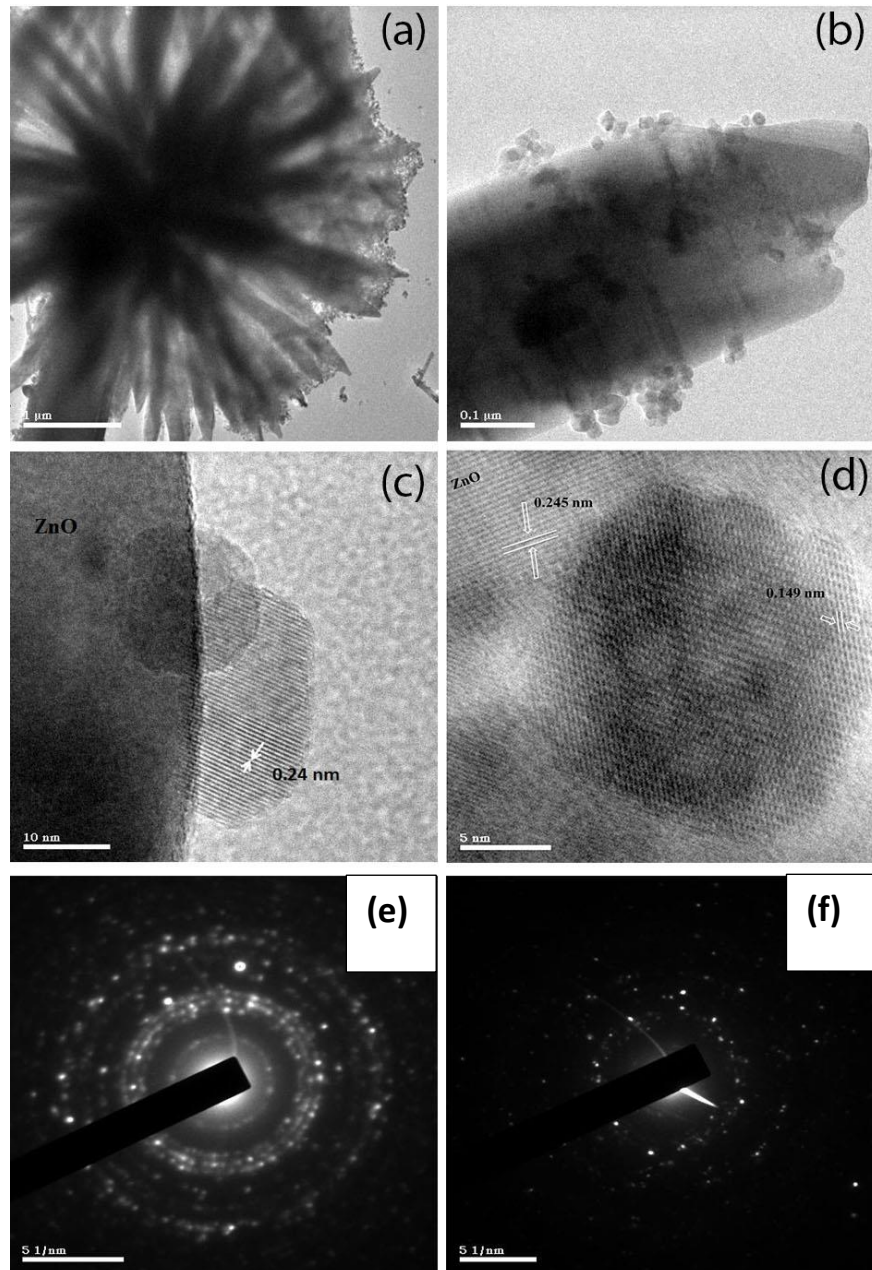


Fig. S2 HRTEM images of Mn/ZnO microflowers (a) Low magnification of microflower (b) Secondary phases decorated flower-petal (c) and (d) clear lattice fringes of ZnO and secondary phases and (e) and (f) are SAED patterns from (d) in two different places respectively.

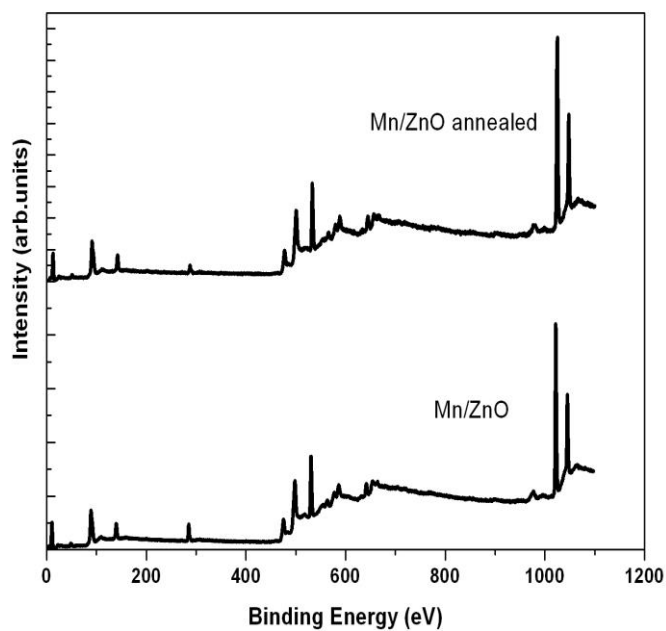


Fig. S3 XPS Survey spectrum of Mn/ZnO pre and post-annealed materials.

Table S1. V_o^+ relative intensity calculation for ZnO, Mn/ZnO and annealed Mn/ZnO materials.

Sample	Position eV	V_o^+	
		Width cm^{-1}	Area a.u
ZnO	2.24	1953	9179
Mn/ZnO	2.22	3028	15140
Mn/ZnO annealed	2.22	1821	4916

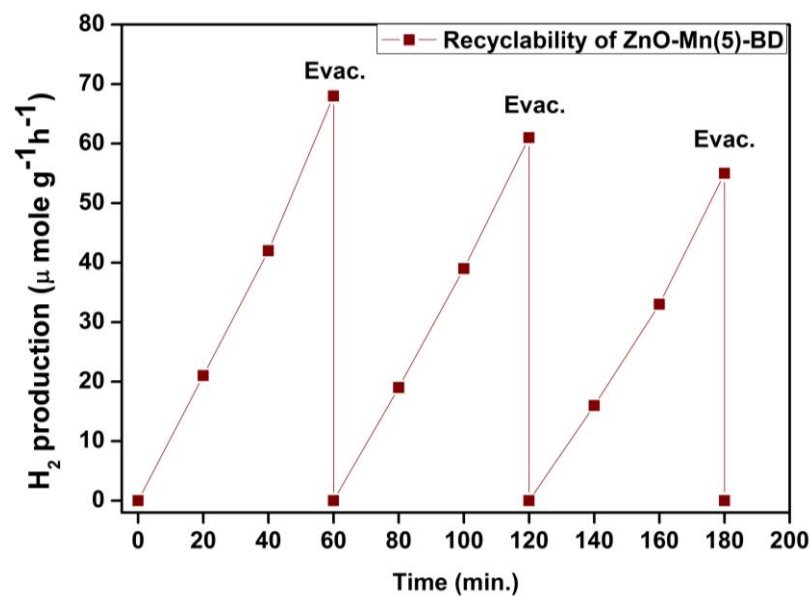


Fig. S4 Photocatalytic visible light water splitting recyclability test for Mn/ZnO microflowers.