Supporting Information

One Step Synthesis of Bifunctional Iron doped Manganese oxide Nanorods for Rechargeable Zinc Air Battery

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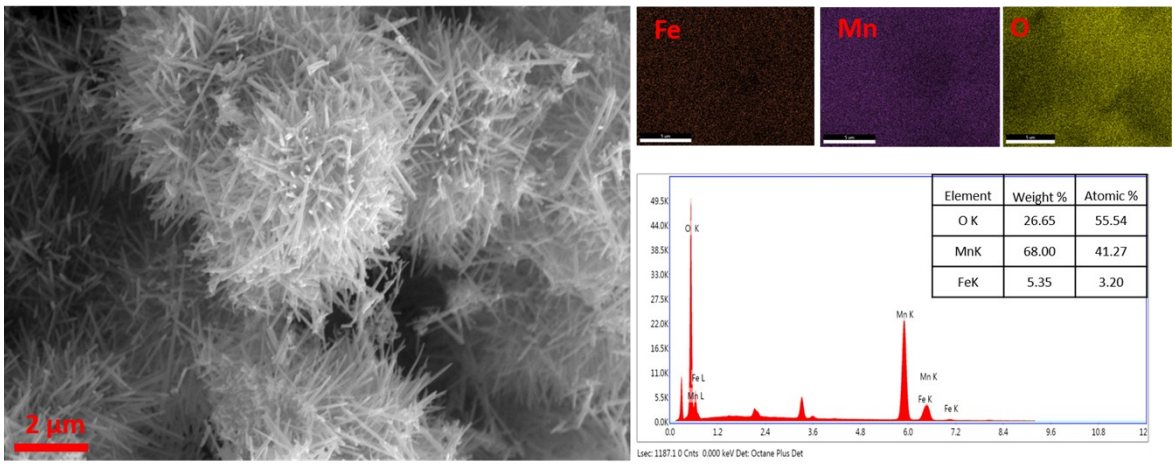

Element	Weight %	Atomic %
O K	26.65	55.54
MnK	68.00	41.27
FeK	5.35	3.20

Figure S1. Elemental mapping of 0.022FeMn showing presence of Fe, Mn and O as uniformly distributed all over the sample; EDS with atomic and weight percentage of constituent elements.

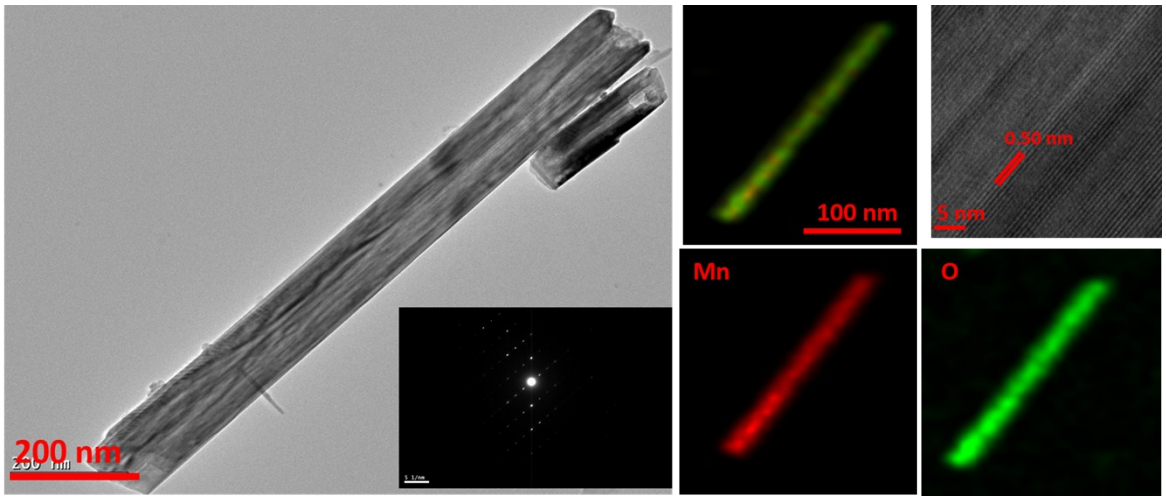

Figure S2. TEM Image of MnO_2; STEM mapping indicating Mn and O atoms; HR image showing lattice spacing = 0.50 nm. Inset shows SAED pattern.

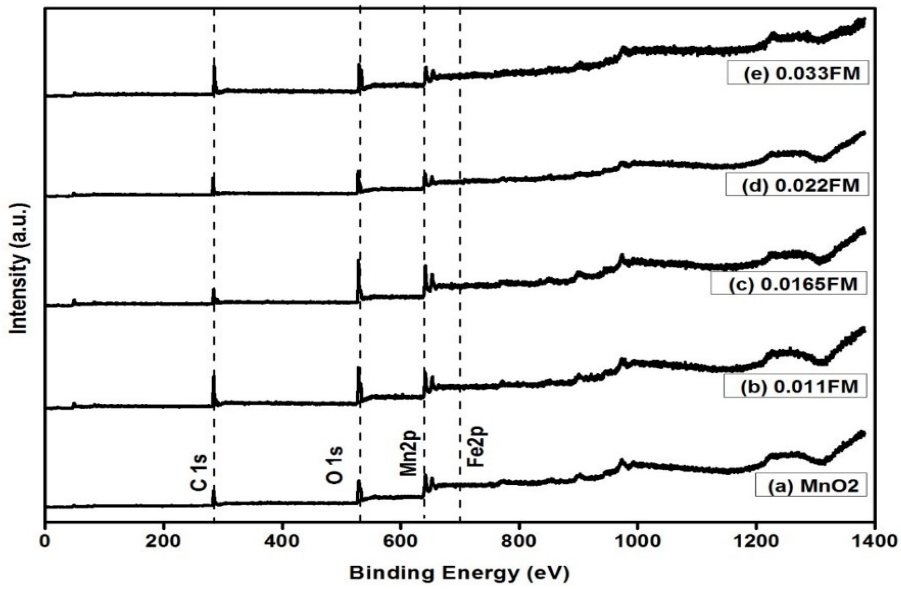

Figure S3. XPS Analysis: Survey scan spectrum of doped and undoped MnO_2.

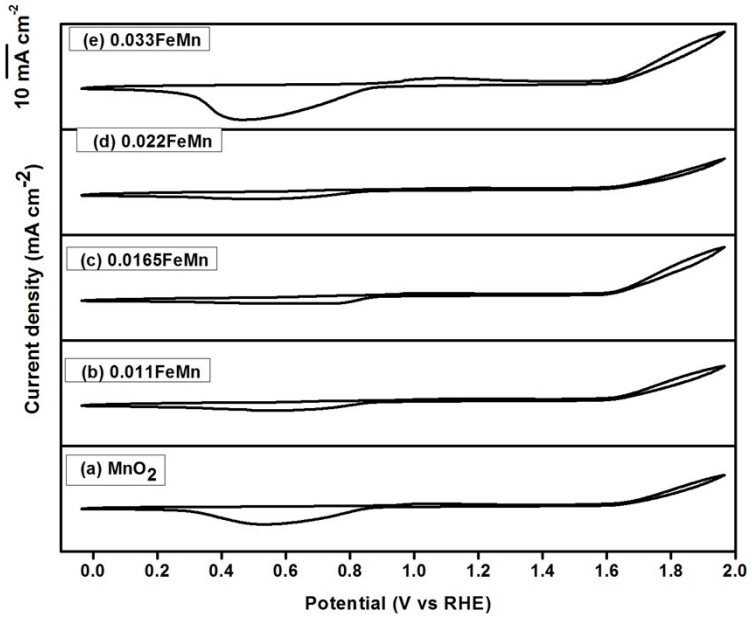

Figure S4. Cyclic voltammograms of doped and undoped MnO_2 in O_2 saturated 0.1 M KOH electrolyte.

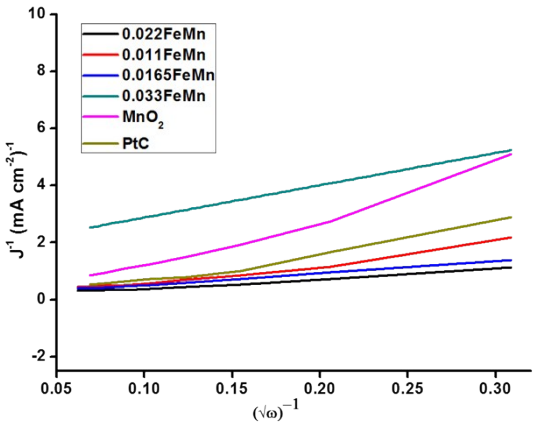

Figure S5. K-L plot drawn at 0.45 V (vs RHE) in O_2 saturated 0.1 M KOH electrolyte.

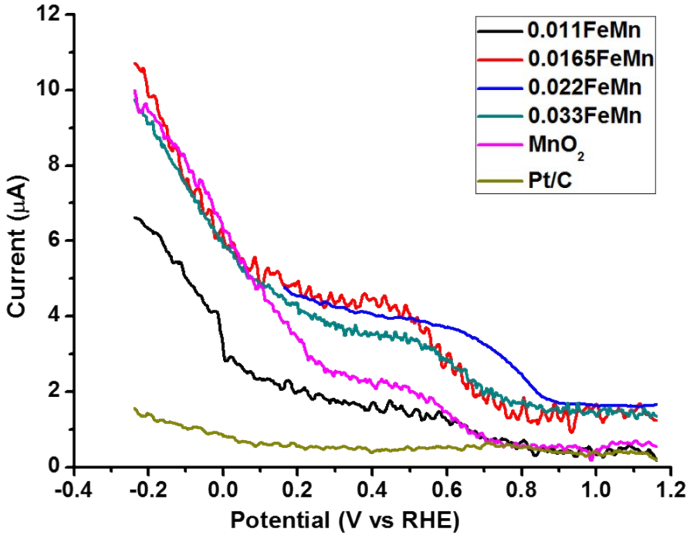

Figure S6. RRDE plots at 1600 rpm in O_2 saturated 0.1 M KOH electrolyte indicating formation of negligible amount of intermediate.

Table 1. BET surface area and BJH pore diameter

	D_{pore} (nm)	S_{BET} ($m^2.g^{-1}$)
0.011FeMn	<1 nm	136.661
0.0165FeMn	<1 nm	198.566
0.022FeMn	<1 nm	198.689
0.033FeMn	<1 nm	135.733
MnO_2	1-5 nm	95.835

Table 2 Comparison of at.% from XPS and EDS

Sample Name		At. % O	At.% Mn	At. % Fe
0.011FeMn	EDAX	43.46	54.74	1.81
	XPS	82.86	16.93	0.21
0.0165FeMn	EDAX	45.36	52.00	2.64
	XPS	72.10	24.46	3.44
0.022FeMn	EDAX	55.54	41.27	3.20
	XPS	76.77	15.78	7.45
0.033FeMn	EDAX	57.83	38.74	3.42
	XPS	81.73	15.38	2.89

Table 3. RRDE calculation

	n (@0.45 V vs RHE)	**% HO_2^- (@0.45 V vs RHE)**
Pt/C	3.97	1.70
MnO_2	3.91	4.68
0.011FeMn	3.90	4.80
0.0165FeMn	3.84	7.84
0.022FeMn	3.91	4.35
0.033FeMn	3.82	8.93