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Supplementary Information

Homogeneous Cationic Substitution for Two-Dimensional Layered Metal Oxide Nanosheet via Galvanic Exchange Reaction

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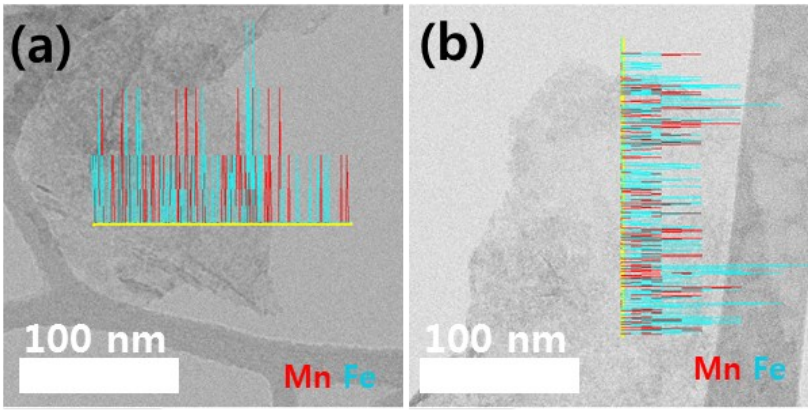

Fig. S1 Scanning tunneling electron microscopy–Energy dispersive spectrometry (STEM–EDS) line profiles of (a) FMO-GE1 and (b) FMO-GE3.

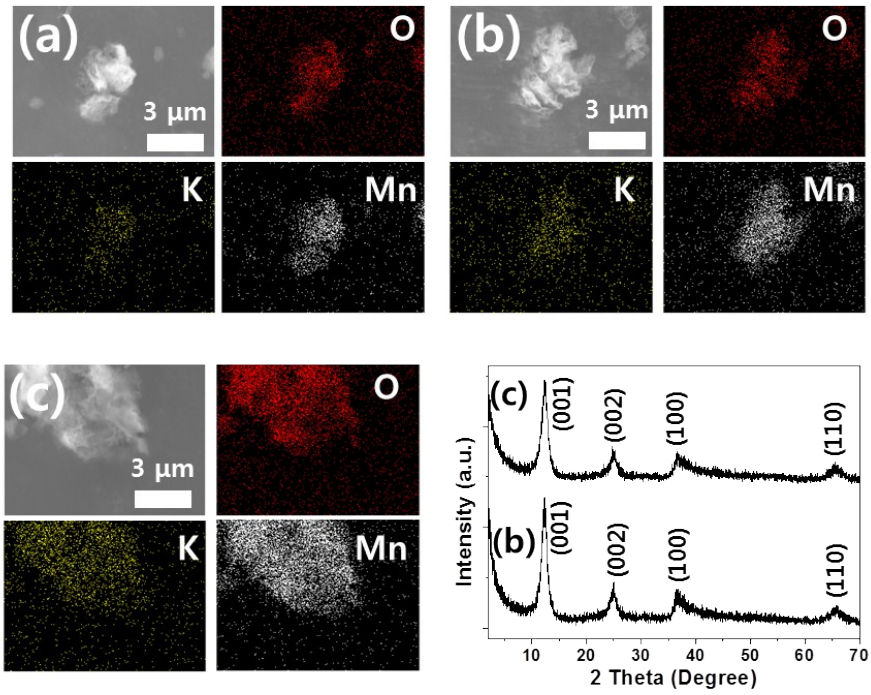

Fig. S2 EDS–elemental maps and powder X-ray diffraction (XRD) patterns of (a) KMO-1, (b) KMO-3, and (c) KMO-RS.

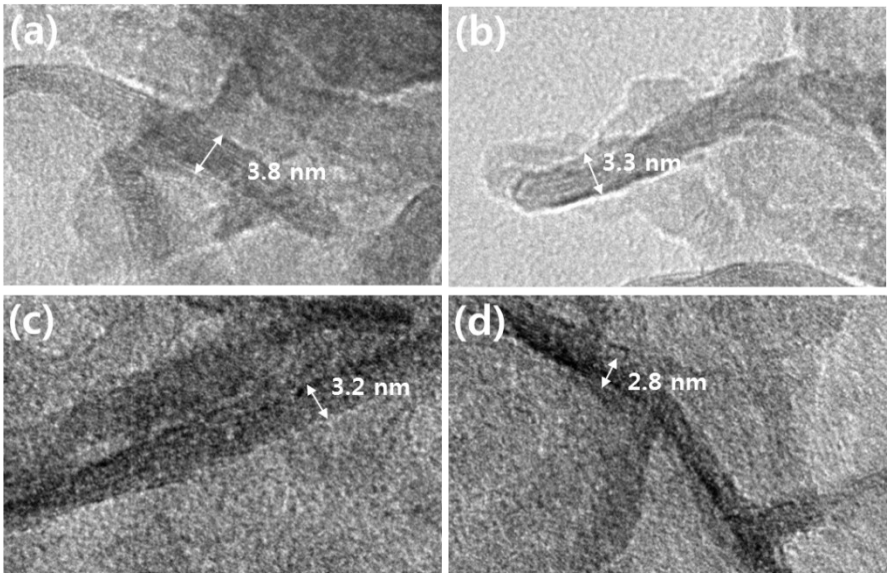

Fig. S3 Transmission electron microscopy (TEM) images of (a), (b) FMO-RS and (c), (d) FMO-GE2.

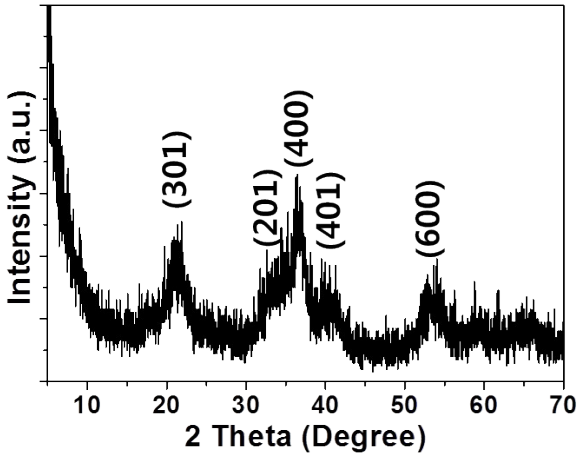

Fig. S4 Powder XRD pattern of FMO-GE material prepared with 0.5 mmol (in 1 mL water) Fe^{2+} solution.

Table. S1 Comparison of the capacity of manganese oxided based materials reported in literatures and this work.

Material	*Current density* *(mA g^{-1})*	*Capacity* *(mAh g^{-1})*	*Reference*
FMO-GE2@C	200	1019	[Our work]
MnO@C nanowire seeded by Si	200	854	1
MnO@reduced graphene oxide	200	~620	2
MnO/nanoporous Au	200	~700	3
MnO_2@CNT microsphere	200	~1000	4
MnO_2@N-doped graphene	200	~900	5
MnO_2-PEI-graphene	200	~870	6
Mn_2O_3/PEDOT:PSS	200	~420	7
Mn_3O_4@graphene membrane	200	~650	8
(011) exposed Mn_3O_4 single crystal	100	~600	9
3D Mn_3O_4	200	1166	10

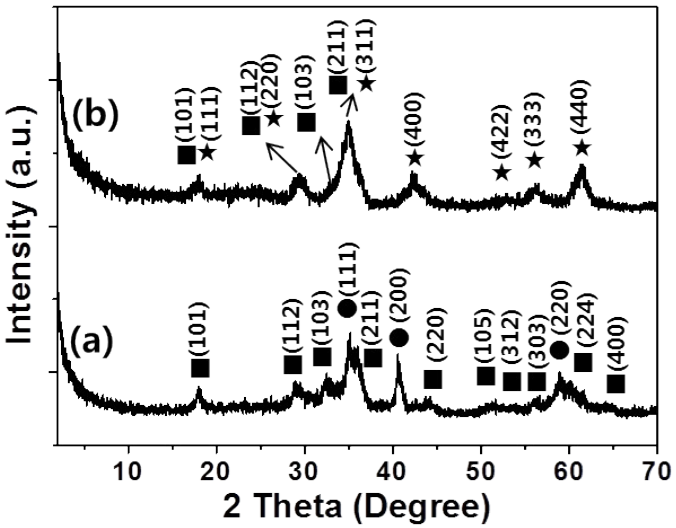

Fig. S5 Powder XRD patterns of the carbon-coated derivatives of (a) FMO-GE1 and (b) FMO-GE3. The Bragg reflections of Mn_3O_4, MnO, and $MnFe_2O_4$ phases are denoted as squares, circles, and stars, respectively.

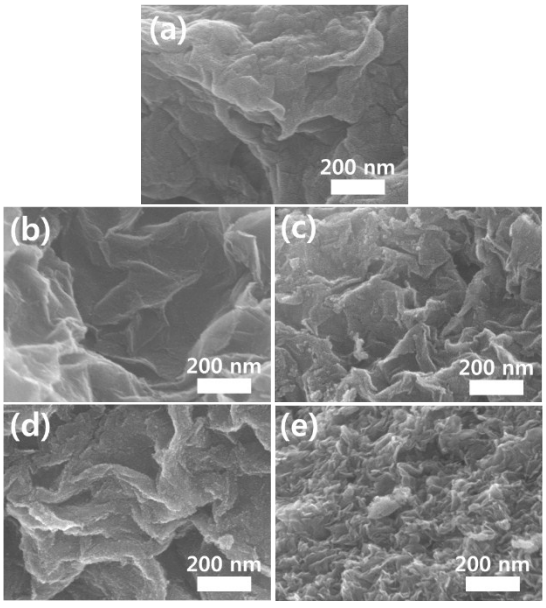

Fig. S6 Field emission-scanning electron microscopy (FE-SEM) images of (a) MnO_2 nanosheet (NS), (b) SMO-GE1, (c) SMO-GE2, (d) SMO-GE3, and (e) SMO-RS.

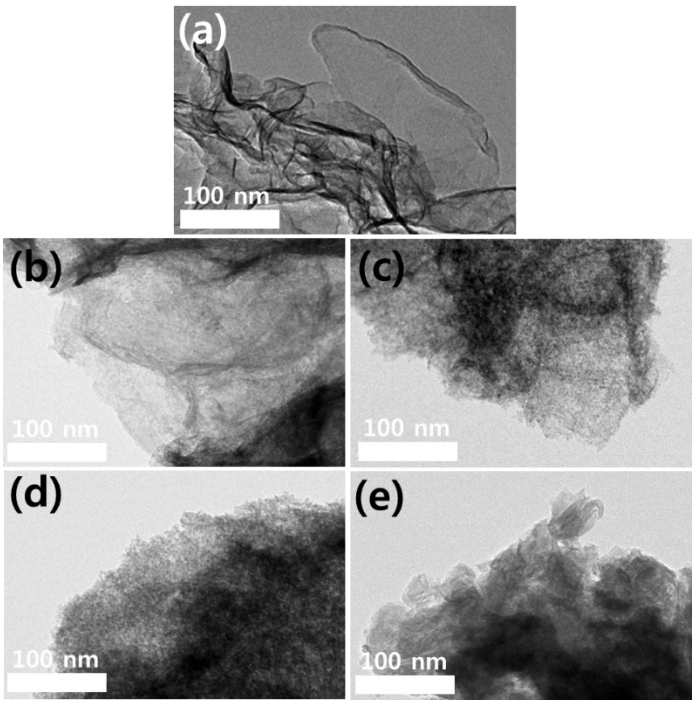

Fig. S7 TEM images of (a) MnO_2 NS, (b) SMO-GE1, (c) SMO-GE2, (d) SMO-GE3, and (e) SMO-RS.

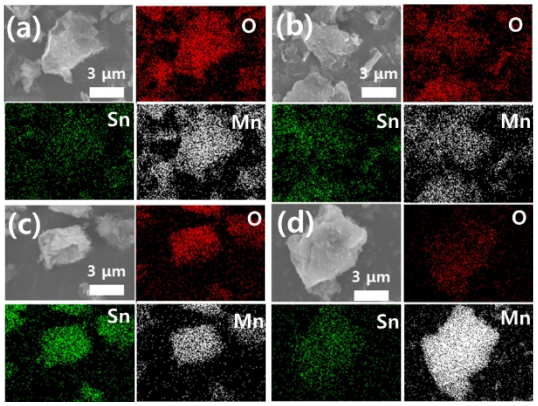

Fig. S8 SEM images and SEM–EDS maps of (a) SMO-GE1, (b) SMO-GE2, (c) SMO-GE3, and (d) SMO-RS.

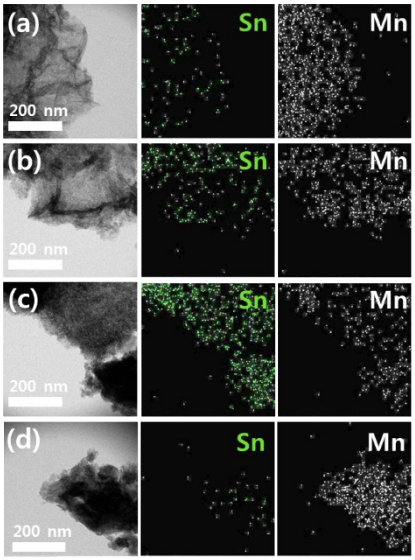

Fig. S9 TEM images and TEM–EDS maps of (a) SMO-GE1, (b) SMO-GE2, (c) SMO-GE3, and (d) SMO-RS.

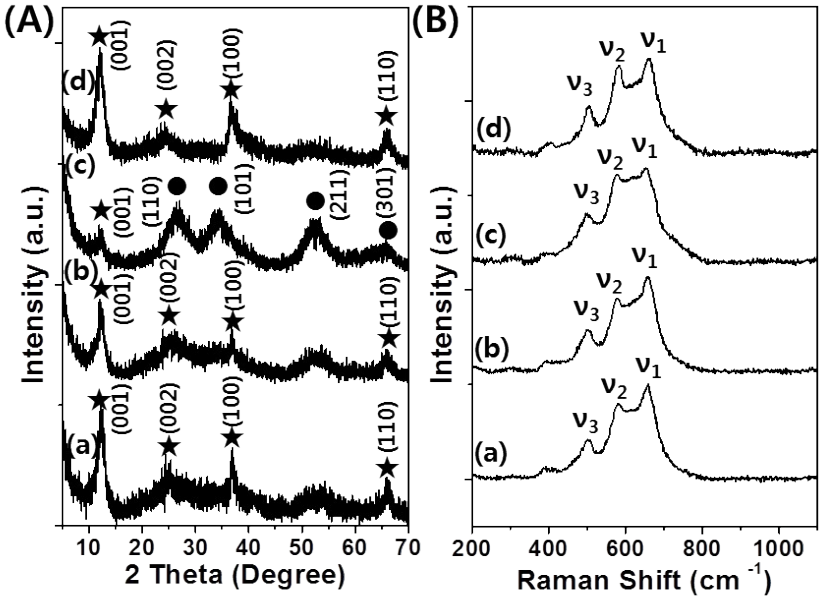

Fig. S10 (A) Powder XRD patterns and (B) micro-Raman spectra of (a) SMO-GE1, (b) SMO-GE2, (c) SMO-GE3, and (d) SMO-RS. The Bragg reflections of MnO_2 NS and SnO_2 phases are denoted as stars and circles, respectively.

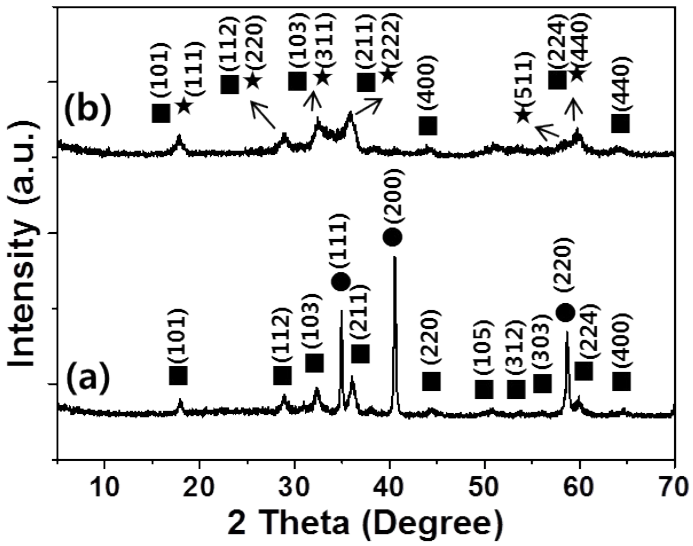

Fig. S11 Powder XRD patterns of the carbon-coated derivatives of (a) MnO_2 NS and (b) SMO-GE1. The Bragg reflections of Mn_3O_4, MnO, and $SnMn_2O_4$ phases are denoted as squares, circles, and stars, respectively.

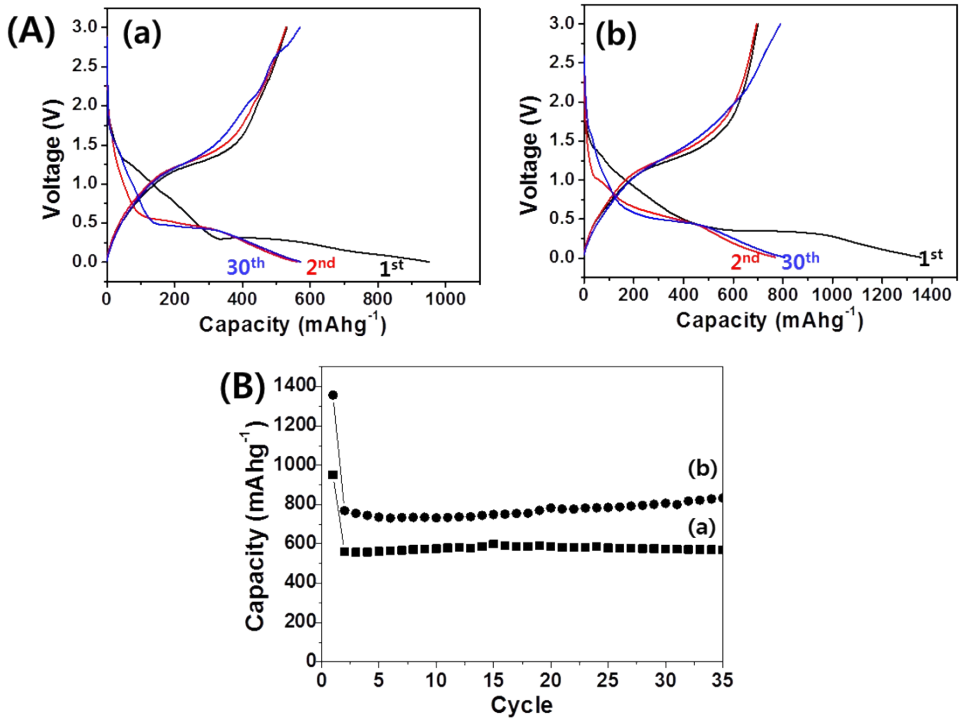

Fig. S12 (A) Galvanostatic charge–discharge potential profiles and (B) capacity retention plots of carbon-coated derivatives of (a) MnO_2 NS and (b) SMO-GE1.

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