Supporting Information

Three-dimensional Mn-doped Zn_2GeO_4 nanosheet array hierarchical nanostructures anchored on porous Ni foam as binder-free and carbon-free lithium-ion battery anodes with enhanced electrochemical performance

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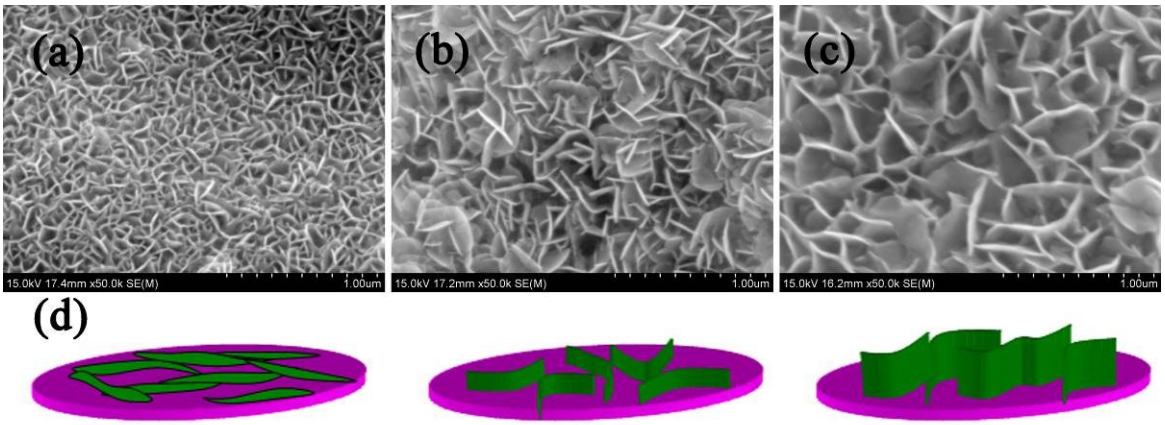

Fig. S1. SEM images of the 7%Mn-Zn_2GeO_4 sample at different action time, (a) 12h, (b) 24h, and (c) 48h.

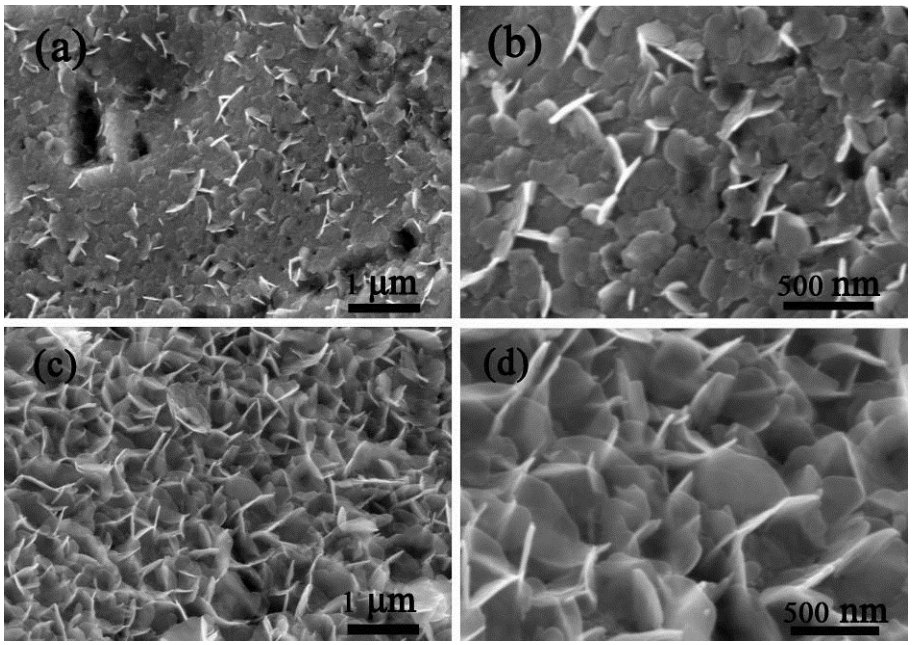

Fig. S2. SEM images of (a), (b) 1%Mn-$Zn_2GeO_4$and (c), (d) 9%Mn-Zn_2GeO_4 sample.

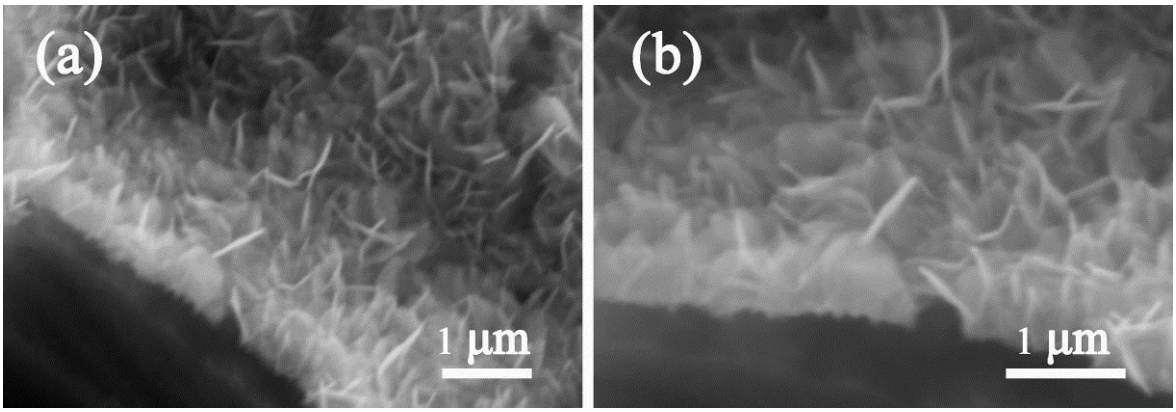

Fig. S3. Cross-section SEM image of 7%Mn-Zn_2GeO_4 sample.

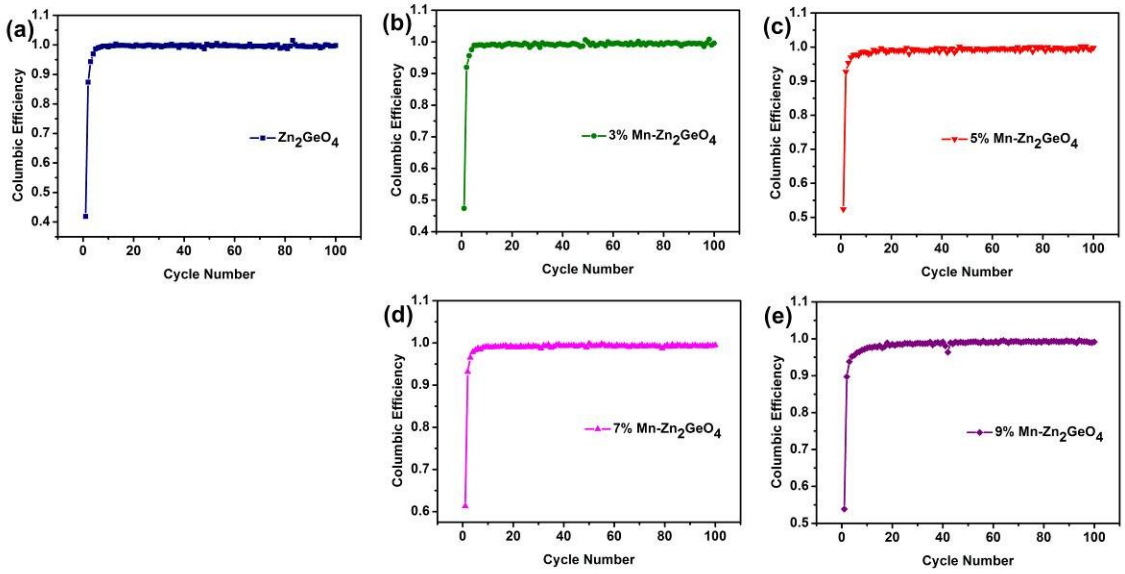

Fig. S4. Coulomb efficiency of the synthesized samples within the 100 discharge/charge cycles.

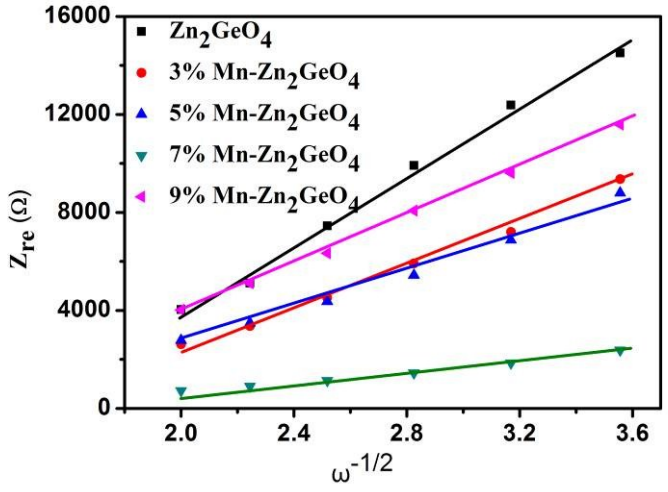

Fig. S5. Relationship between Zre and $\omega^{-1/2}$ in the low-frequency region

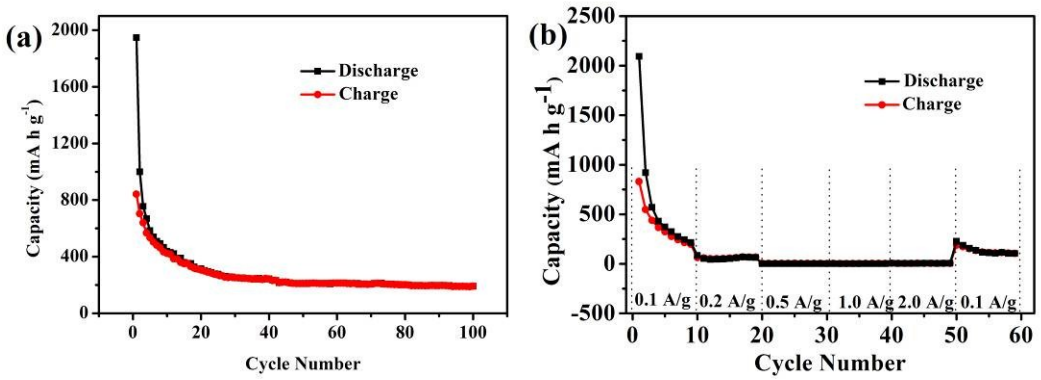

Fig. S6. Cycling and rate performance of the pristine Zn_2GeO_4 nanowire sample not on the Ni foam.

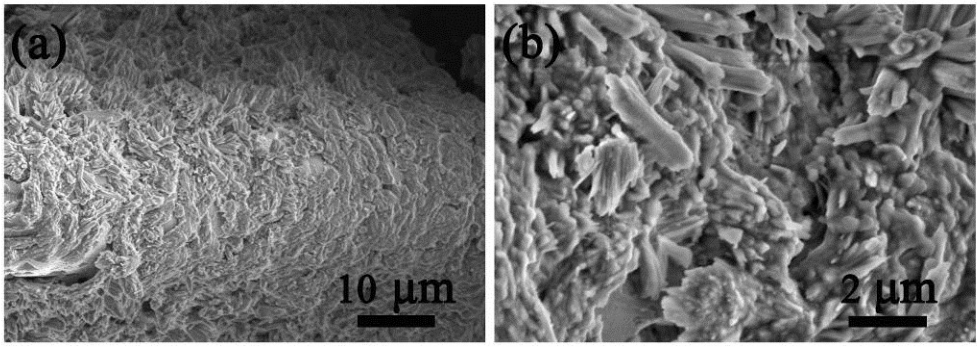

Fig. S7. SEM images of Zn_2GeO_4 sample grown on Ni foam after 10 cycles at the current density of 100 mA g^{-1}.

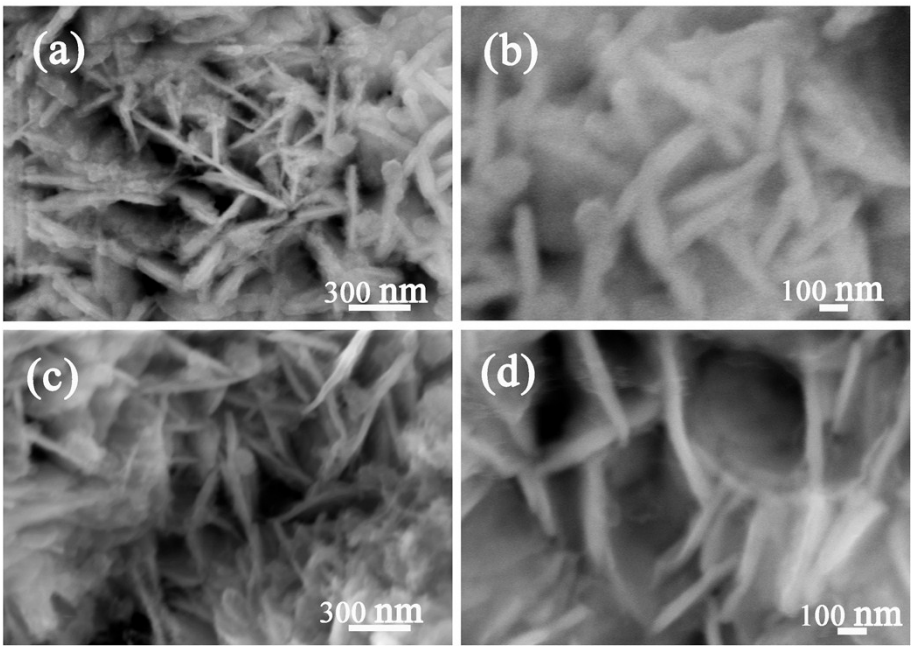

Fig. S8. SEM images of the Mn doped Zn_2GeO_4 nansheet sample at lithiated state (a), (b) and delithiated state (c), (d) after 100 cycles at the current density of 100 mA g^{-1}. The thickness of nanosheet at these two states was all larger than that of state before cycling because of the pulverization effect. The electrodes can still maintain its network as well as porous structures after charging, suggesting that the nanosheet structure has a high stability.