Electronic Supplementary Material (ESI) for New Journal of Chemistry.


**Supporting Information**

# Design and Synthesis of 3D Graphene-Based Electrode for Fast Charge/Ion Transport for Lithium Storage

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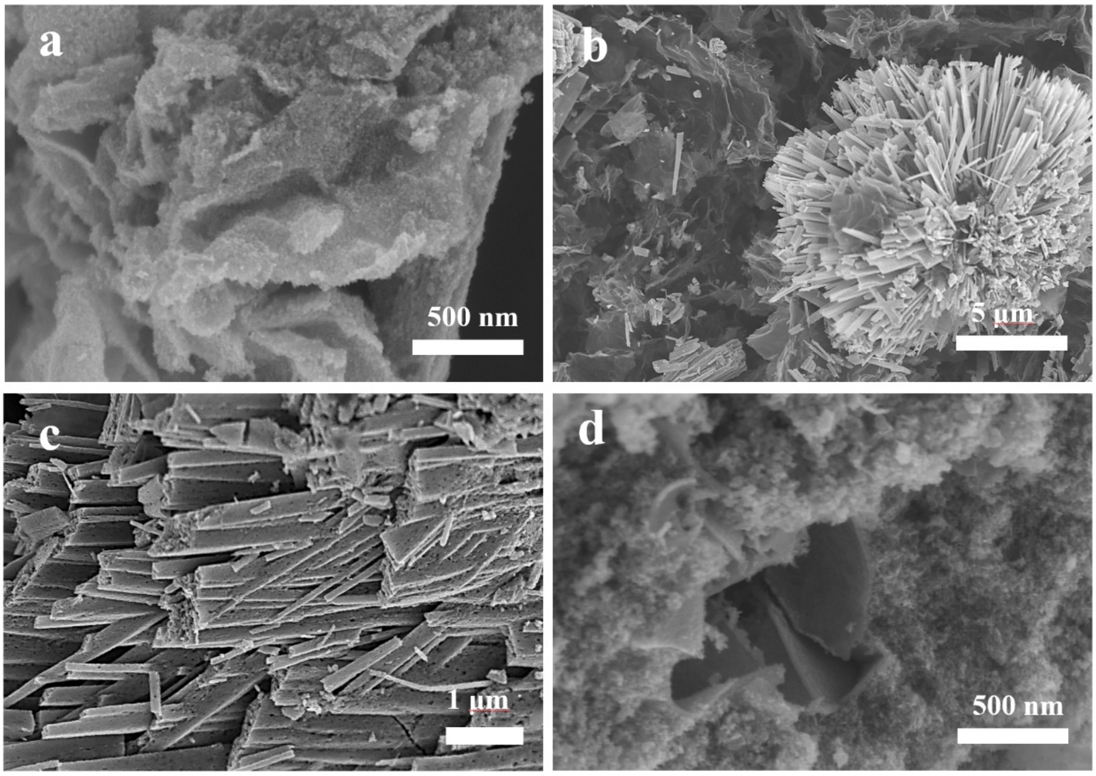


**Figure S1** SEM images of (a) $SnO_2$-NG, (b, c) ZnO-NG, and (d) $SnO_2$/ZnO, respectively.

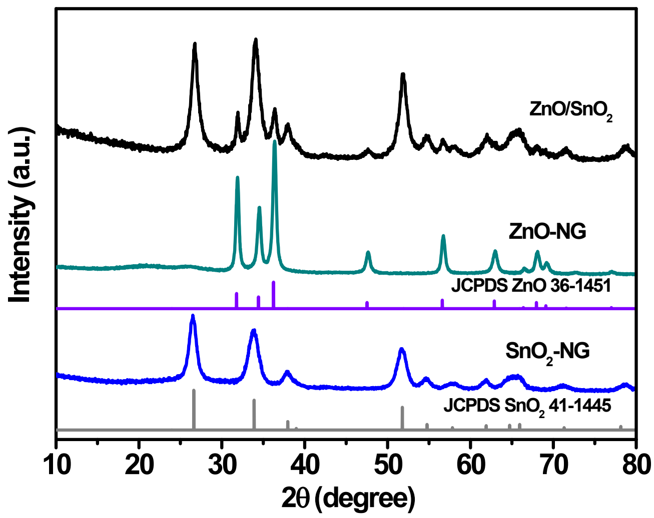


**Figure S2** XRD patterns curves of $SnO_2$-NG, ZnO-NG, and $SnO_2$/ZnO.

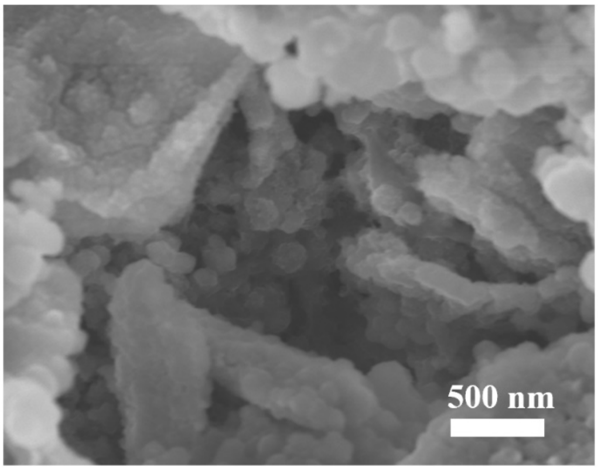


Figure S3 The post-mortem SEM image of the $SnO_2/Zn_2SnO_4$-NG composite after long-term at 1 A $g^{-1}$.

**Table S1** Comparison with other Zn/Sn-oxide anodes of LIBs reported in the literature

| **Anode materials** | **Rate capability (mAh $g^{-1}$)/current density (A $g^{-1}$)** | **Reference** |
|---|---|---|
| $SnO_2/Zn_2SnO_4$-NG | 495/5 | **This work** |
| Sn/$SnO_x$/ZnO-1@N-CNF | 356.8/5 | *J. Alloys. Compd. 2020, 819, 153036* |
| $SnO_2$@$SnS_2$@NG | 343/5 | *Energy Storage Materials 2019, 20,* |
| MOF/$SnO_2$/Graphene | 324/2 | *Nano Energy, 2020, 74, 104868* |
| $SnO_{2-x}$/N-rGO | 371/5 | Nanoscale 2018, 10, 11460–11466 |
| $SnO_2$@$SnS_2$@rGO | 436/2 | *ACS Appl. Mater. Interfaces 2015, 7,* |
| $SnO_2$@C@Co-NC | 29.6/5 | *Chem. Eur. J. 2020, 26, 12882 -12890* |
| $Zn_2SnO_4$@V@PC | 504/2 | *J. Alloys. Compd. 2022,* 910, 164924 |
| $Zn_2SnO_4$/NC | 306.0/2.4 | *J. Alloys. Compd.* 2019, 786, 346-355 |
| $Zn_2SnO_4$/graphene | 372/1 | *J. Power Sources 2015, 281, 341-349* |
| LC@$Zn_2SnO_4$@MnO/C | 400.5/2 | *CrystEngComm, 2021, 23, 2590* |
| Nano-$SnO_2$/G,<br>Nano-Sn/G@C | 94/2,<br>117/2 | *Chem. Eng. J. 2022, 450, 138113* |
| $SnO_2$@$ZnCo_2O_4$@C | 496/1 | *Applied Surface Sci. 2022, 591, 153220* |