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


# Honeycomb-like ZnO/$SnO_2$ nanocomposite at nickel foam for high-performance asymmetric supercapacitors

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## Supplementary Information

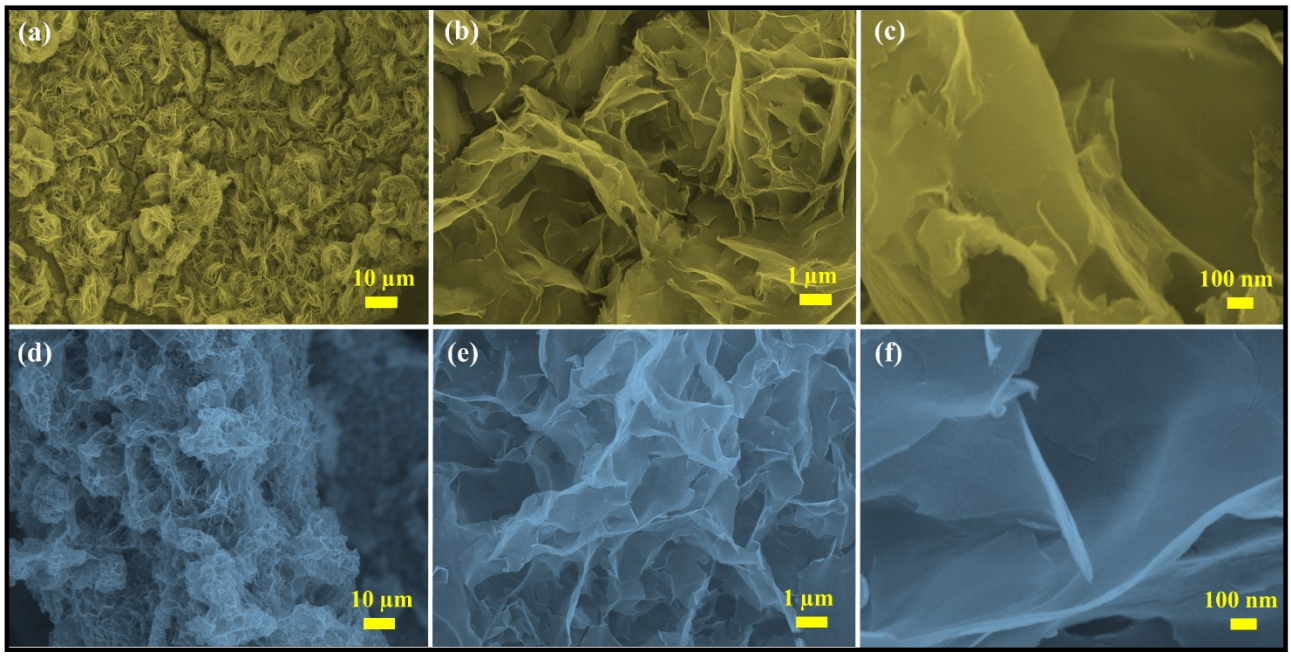


Fig. S1 SEM Images at different magnification: (a-c) ZnO (d-f) $SnO_2$.

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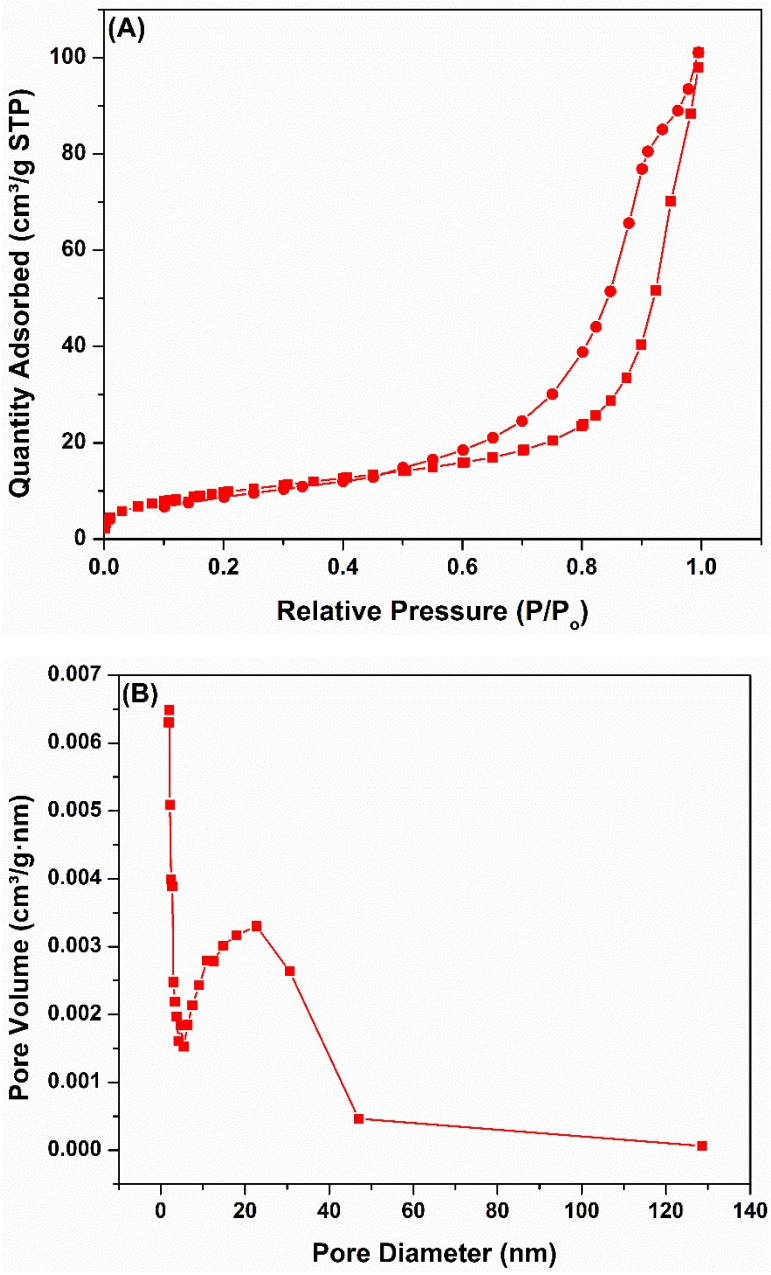


Fig. S2 $N_2$ adsorption-desorption isotherm of $ZnO/SnO_2$ nanocomposite (A), BJH pore size distribution of $ZnO/SnO_2$ nanocomposite (B).

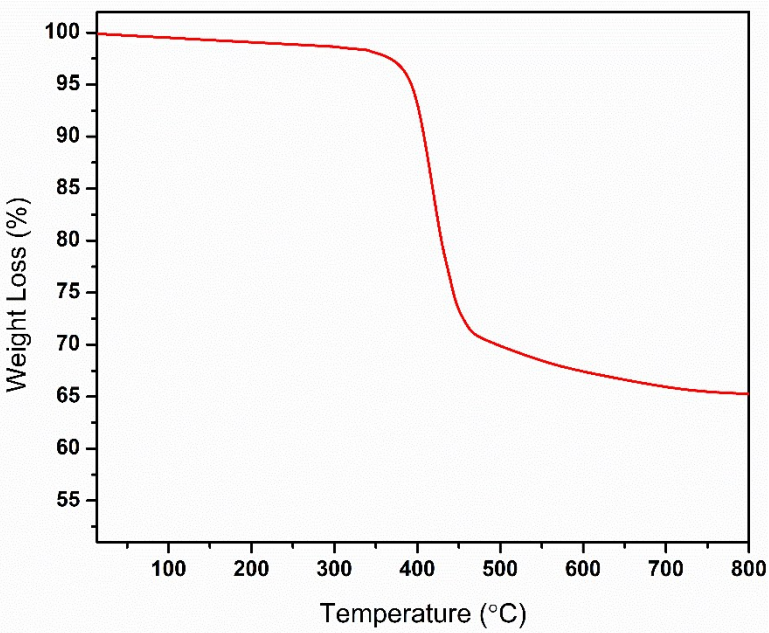


Fig. S3 TGA of $ZnO/SnO_2$ nanocomposite.

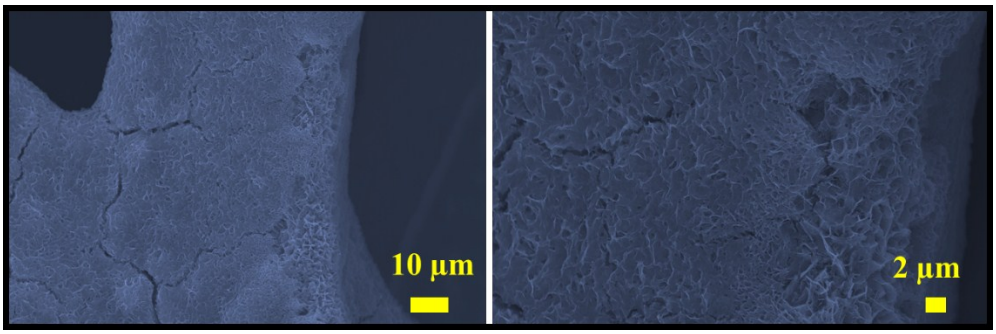


Fig. S4 SEM Images at different magnification after 7000 GCD.

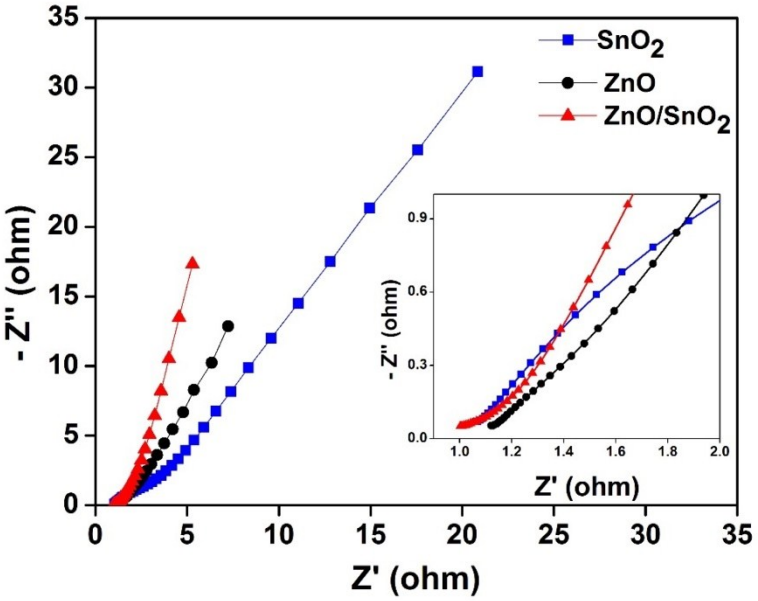


Fig. S5 Nyquist plot of ZnO, $SnO_2$ and ZnO/$SnO_2$ in 3M KOH.

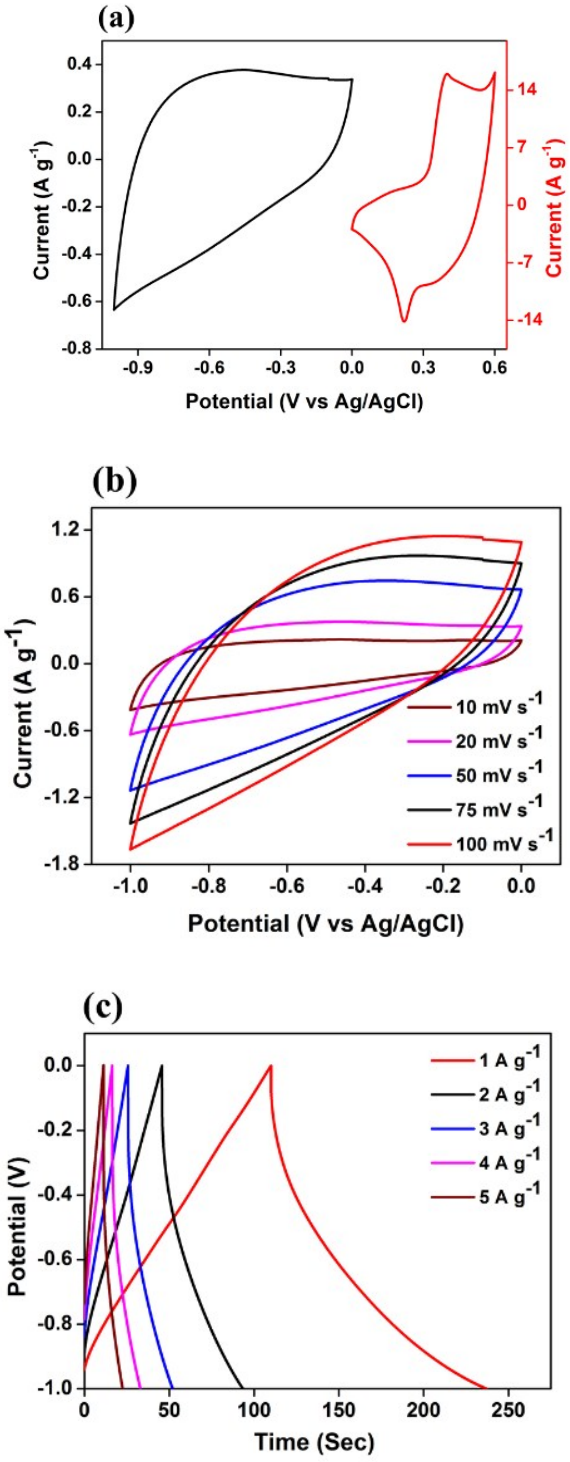


Fig. S6 Electrochemical performance of AC@NF in a 3M KOH electrolyte: (a) CV curves of ZNCO and AC@NF at 20 mV $s^{-1}$ (b) GCD of AC@NF at current density of 1 to 5 A $g^{-1}$ and (c) CV curves of AC@NF at different scan rate from 10 to 100 mV $s^{-1}$.

**Table S1. Comparison of several Zinc and Tin oxide based electrode materials in the literature and this study.**

| Electrode | Electrolyte | Current density | Scan rate ($mV\ s^{-1}$) | Specific capacitance/ Capacity | Ref. |
|---|---|---|---|---|---|
| NiO/ZnO | 3 M KOH | 1 A $g^{-1}$ | | 976 F $g^{-1}$ | 1 |
| ZnO/rGO | 1M $Na_2SO_4$ | - | 10 | 95 F $g^{-1}$ | 2 |
| ZnO-$MnO_2$ | 1M $Na_2SO_4$ | 0.5 A $g^{-1}$ | - | 423 F $g^{-1}$ | 3 |
| $MnO_2$-ZnO | 0.1M $Na_2SO_4$ | - | 2 | 571 µF $cm^{-2}$ | 4 |
| Core-shell ZnO-NiO | 1 M KOH | 5 mA $cm^{-2}$ | - | 4.1 F $cm^{-2}$ | 5 |
| ZnO-NiO | 1 M KOH | 5 mA $cm^{-2}$ | - | 0.5 F $cm^{-2}$ | 5 |
| ZnO-NiO | 3 M KOH | - | 5.8 | 649 F $g^{-1}$ | 6 |
| Sn2O/G | 6M KOH | - | 5 | 818.6 F $g^{-1}$ | 7 |
| $SnO_2$/SWCNT | 1 M $Na_2SO_4$ | | 6 | 320 | 8 |
| $SnO_2$/Graphene | 1 M $Na_2SO_4$ | | 5 | 363.3 | 9 |
| ZnO/$SnO_2$ | 3 M KOH | 1 | - | 2,307 F $g^{-1}$ | This work |

**References**


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