Supplementary Information

Enhancing Supercapacitive Performance: Integration of Bio-mass Derived Carbon into $CaMn_3O_6$ Nanocomposite

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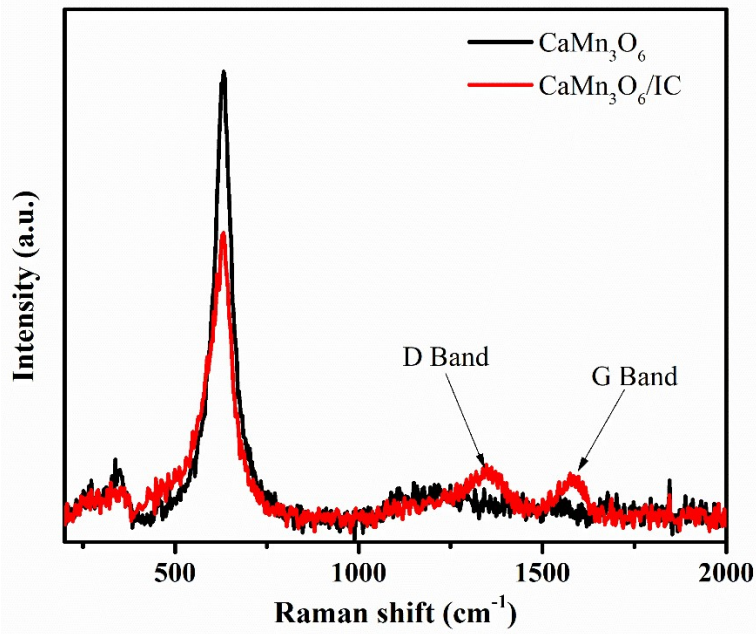

Figure S1: Raman spectra of $CaMn_3O_6$ and $CaMn_3O_6$/IC composite.

Figure S1 shows the Raman spectra of $CaMn_3O_6$ and $CaMn_3O_6$/IC with multiple peaks. The sharp and intense Raman peaks shows the crystalline nature of $CaMn_3O_6$ material. The intense peak at 631 cm^{-1} shows the symmetric stretching of Mn – O bond [S16]. The Raman spectra of $CaMn_3O_6$/IC shows the obvious D and G bands at 1350 and 1580 cm^{-1} apart from the stretching vibration observed for Mn – O bond. The Raman spectra confirms the formation of composite and crystallinity of the material.

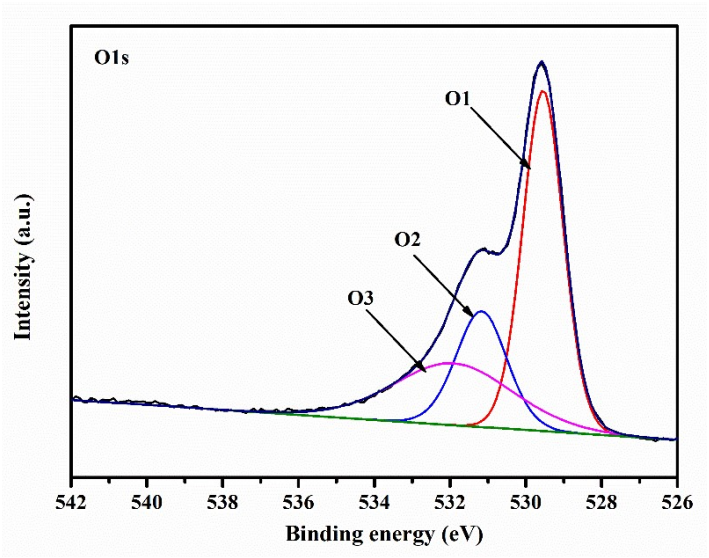

Figure S2: Deconvoluted spectra of O1s.

Figure S2 shows the deconvoluted spectra of O1s peak found in the survey spectra of $CaMn_3O_6$/IC. We can see peaks at 529, 532 and 532 eV which is labelled as O1, O2 and O3 respectively.

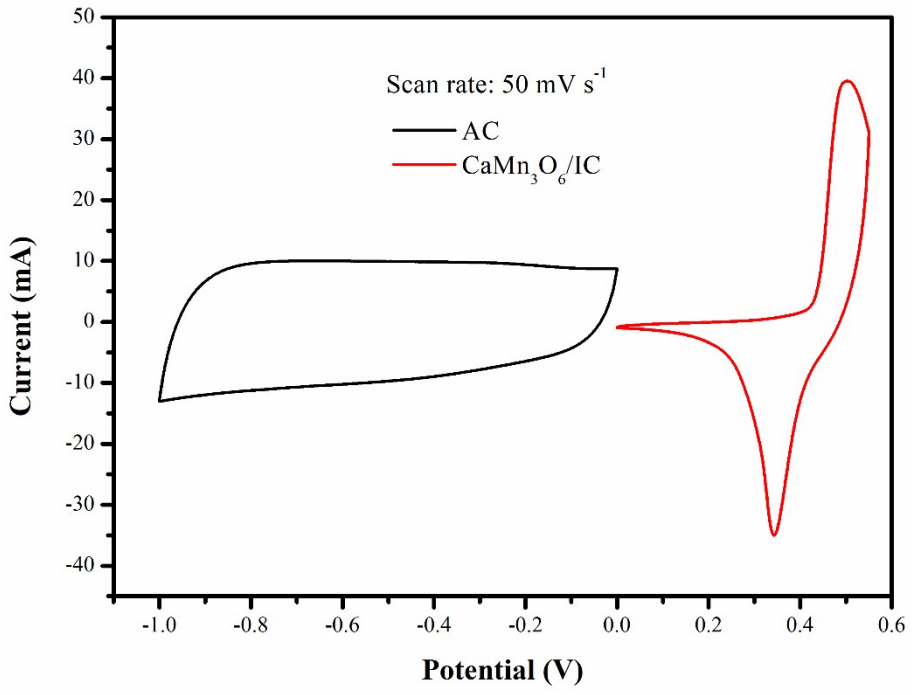

Figure S3: Comparison CV curve of Activated carbon and $CaMn_3O_6$/IC in the three-electrode system

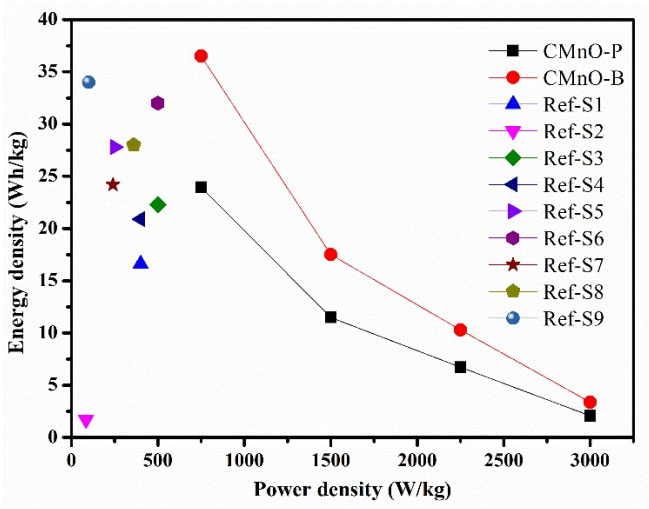

Figure S4: Ragone plot depicting Energy density Vs Power density.

The $CaMn_3O_6$ ‖ AC device delivers energy density of 23.94 Wh kg^{-1} at power density 750 W kg^{-1}. Whereas, $CaMn_3O_6$/IC ‖ AC delivered energy density of 36.52 Wh kg^{-1} at 750 W kg^{-1}.

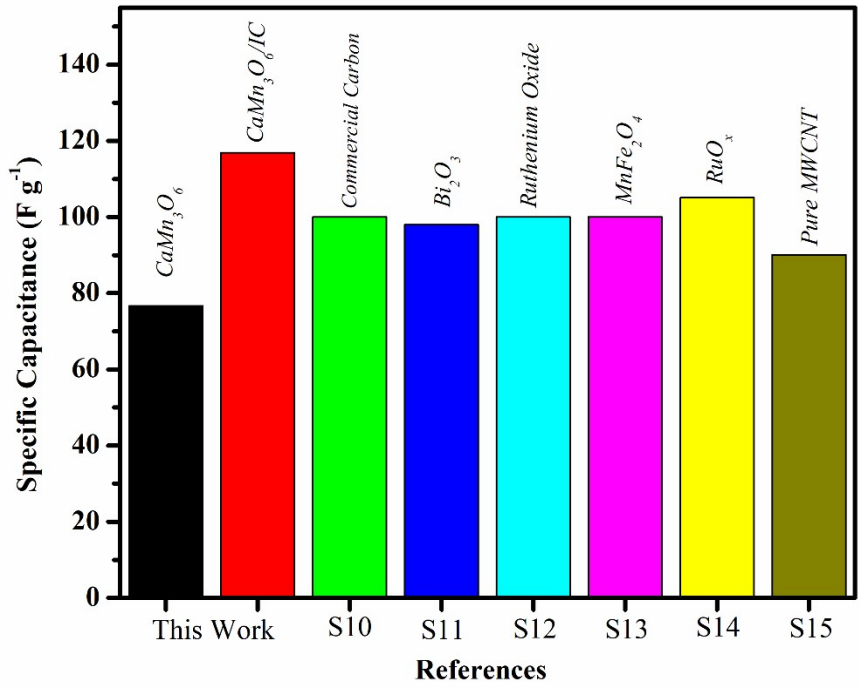

Figure S5: Bar diagram comparing C_{sp} of $CaMn_3O_6$ based device with the literature.

References:

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