SupportingInformation

Laser-Assisted Fabrication of a 3D Cross-linked V_2CT_x/rGO Microelectrodes for High-Rate Aqueous Zinc-Ion Microbatteries

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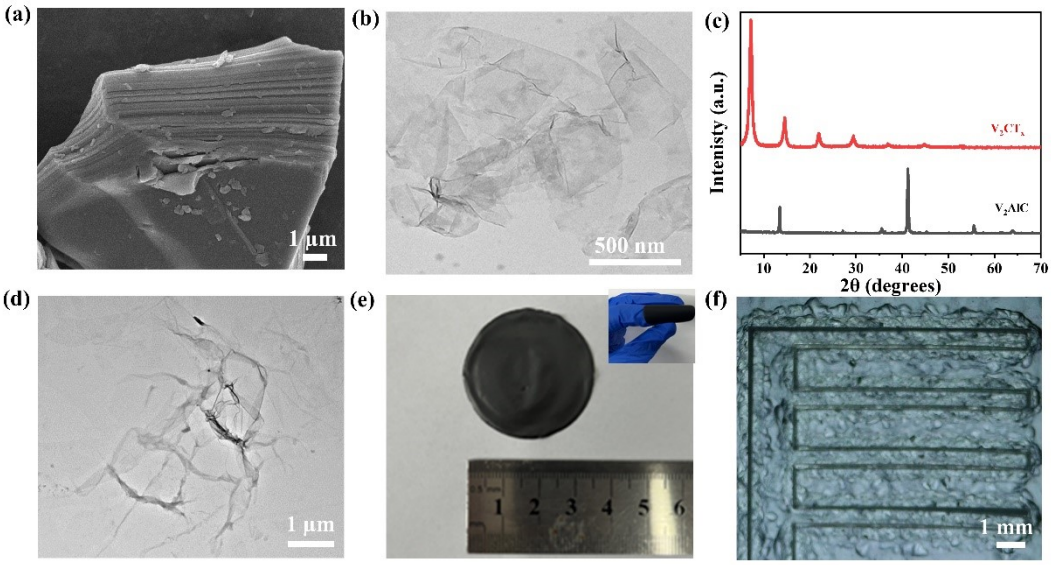

Figure S1. (a) SEM image of the MAX Phase of V_2AlC. (b) TEM image of the V_2CT_x flakes. (c) XRD patterns of the MAX phase of V_2AlC and the V_2CT_x flakes. (d) TEM image of the GO flakes. (e) Digital photographs of the V_2CT_x@GO hybrid film and its flexible display. (f) Digital photograph of the interfinger patterned electrode.

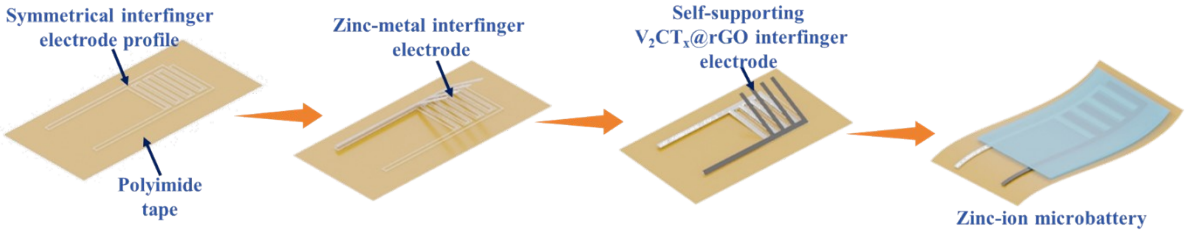

Figure S2. The schematic procedure of electrode transfer process.

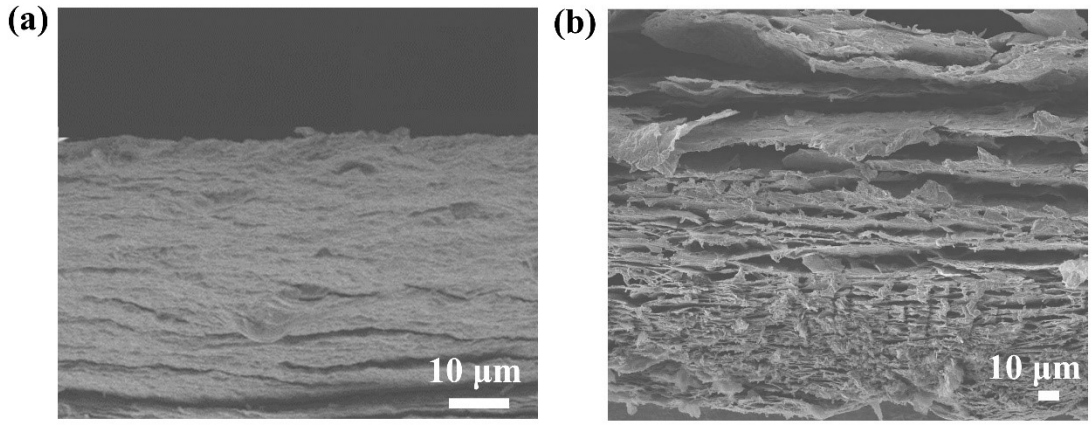

Figure S3. (a) SEM image of the 2D V_2CT_x@GO-60% hybrid film cross section. (b) SEM image of 3D V_2CT_x@rGO-60% hybrid foam cross section.

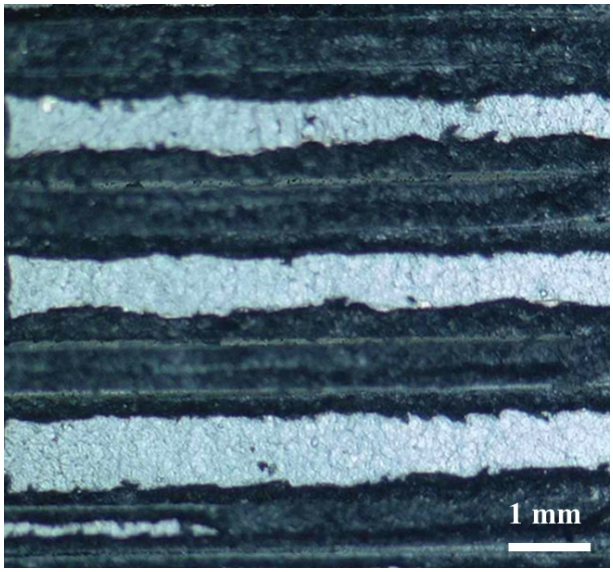

Figure S4. The magnification pattern of V_2CT_x@rGO-70% interfinger microelectrode

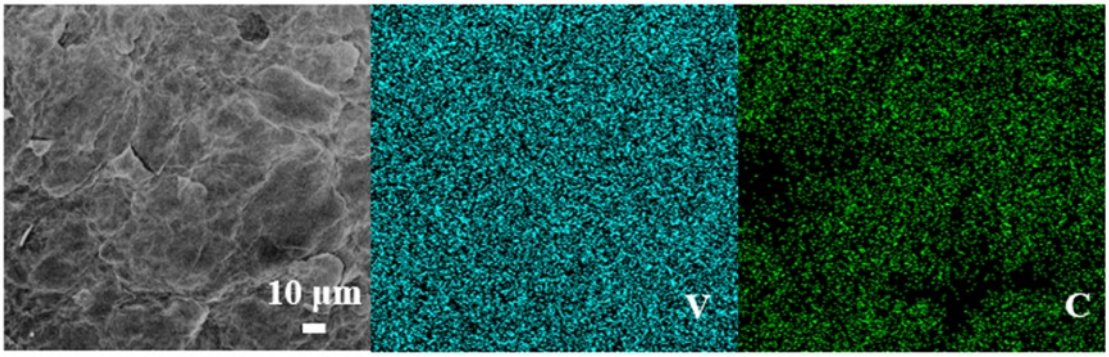

Figure S5. The planar SEM image of the 3D hybrid foam and corresponding EDS elemental mapping

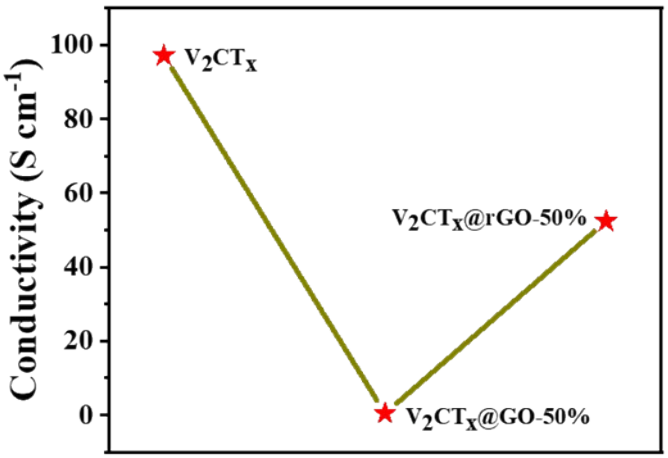

Figure S6. The electronic conductivity of the V_2CT_x@GO-50%, V_2CT_x@rGO-50% and V_2CT_x

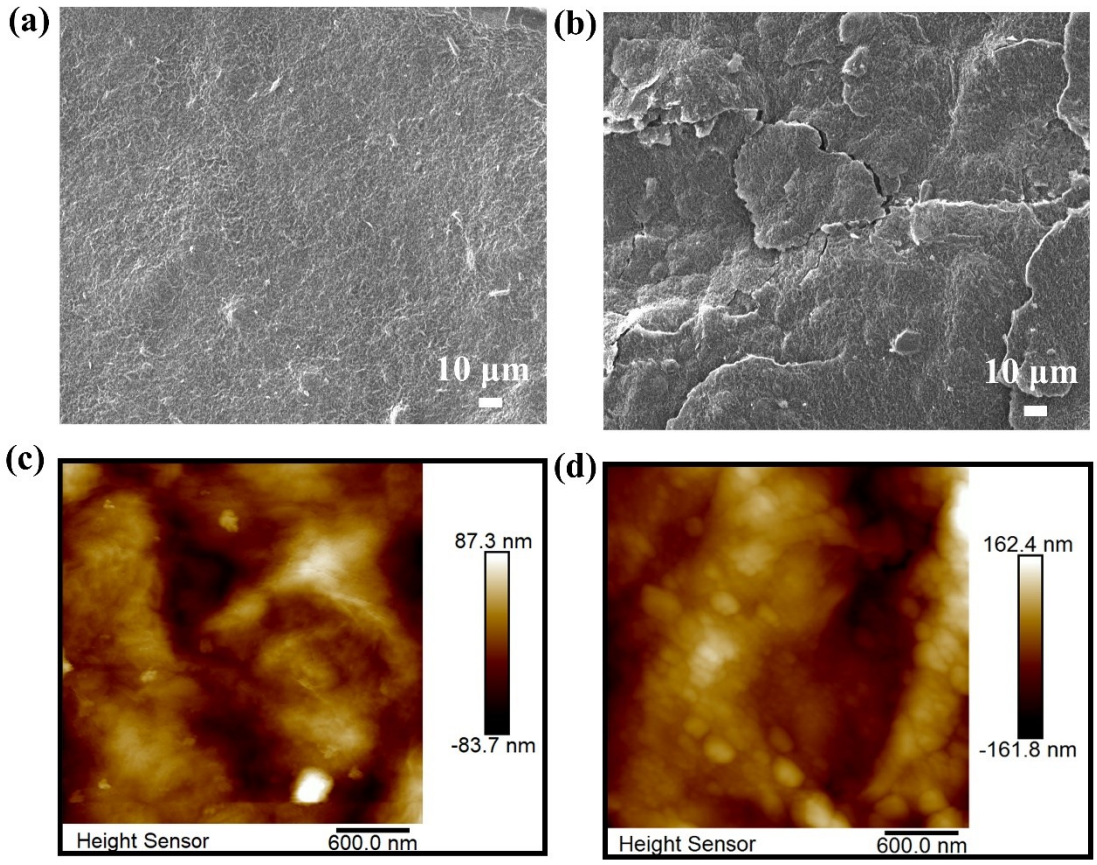

Figure S7. (a-b) Planar SEM images of V_2CT_x@GO-50% film and V_2CT_x@rGO-50% foam. (c-d) Planar AFM images of V_2CT_x@GO-50% film and V_2CT_x@rGO-50% foam.

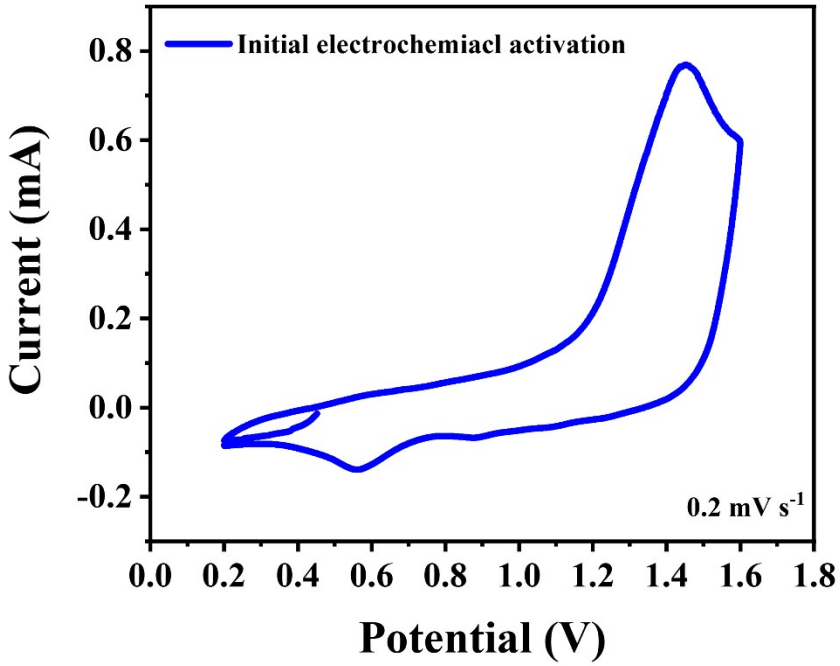

Figure S8. CV profile of the initial electrochemical oxidation about 3D VO_x-V_2CT_x@rGO.

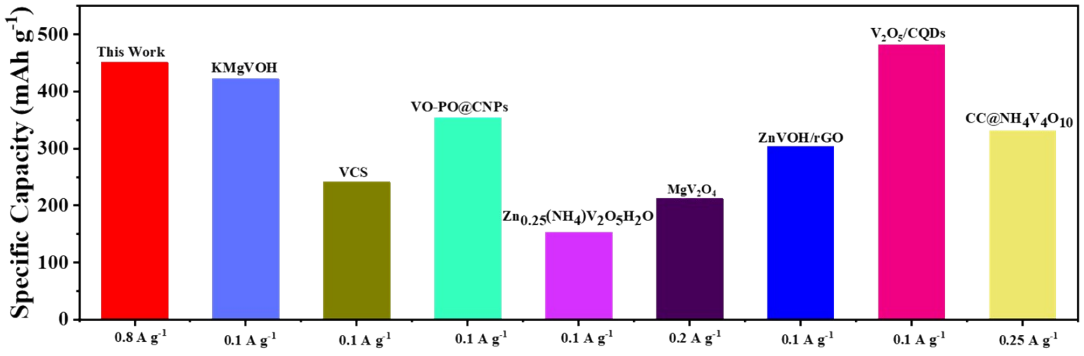

Figure S9. The performance comparison bar charts for specific capacity

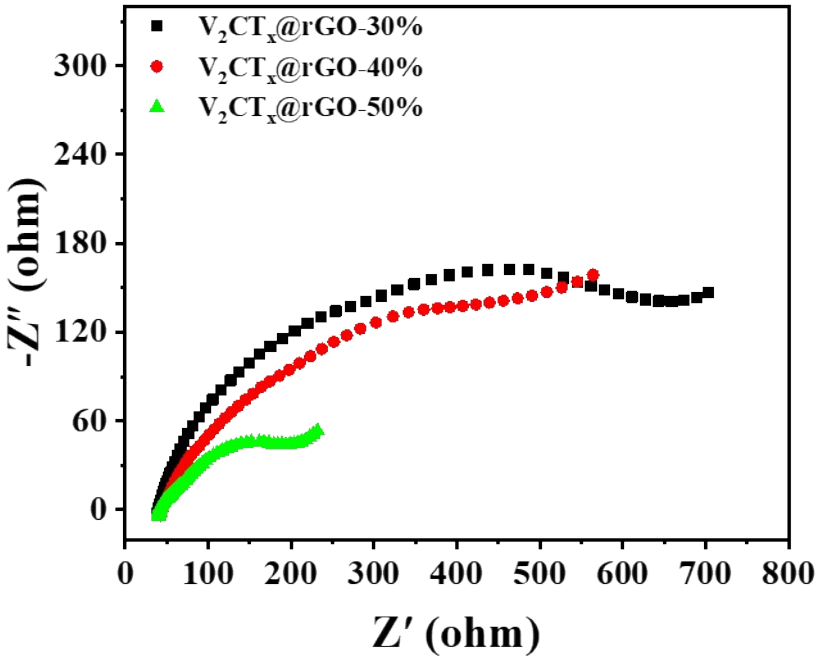

Figure S10. The electrochemical impedance spectroscopy (EIS) measured with 3D V_2CT_x@rGO-50%/40%/30% microelectrodes

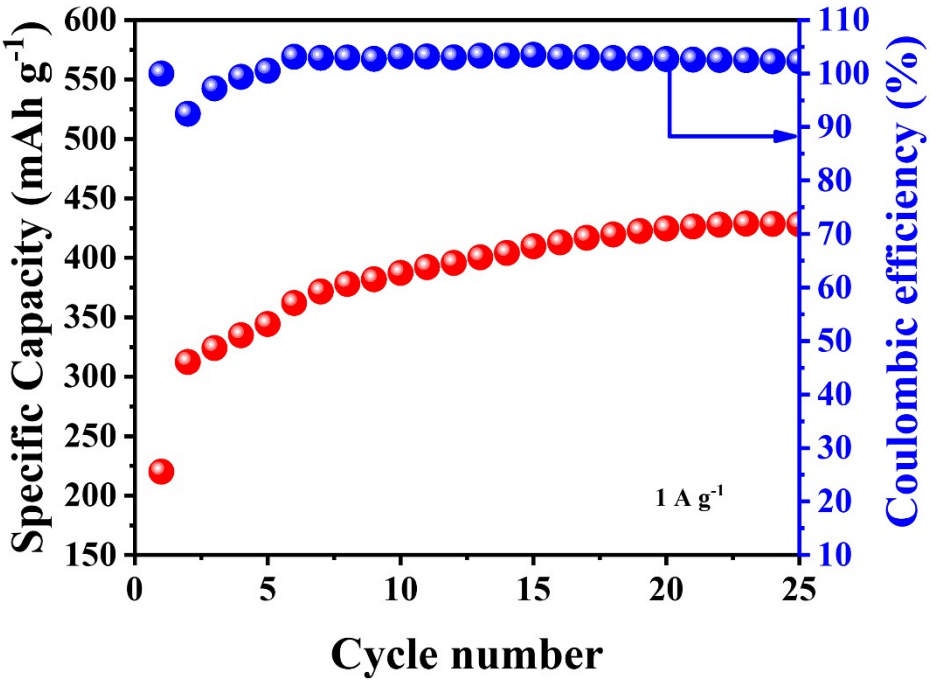

Figure S11. Shorter cycle performance and the corresponding Coulombic efficiency at 1 A g^{-1} for up to 25 cycles.

Table S1. The performance comparision with other microbatteries

Cathode materials	Power density ($\mu W\ cm^{-2}$)	Energy density ($\mu Wh\ cm^{-2}$)	Ref
V_2O_5@CNTs	193	112.5	[39]
PANI	99	31	[42]
PANI	990	250	[44]
MnO_x/polypyrrole	178.8	50	[41]
VO_2(B)-MWCNTs	88.61	124.2	[8]
MnO_2@VG	67.16	201.5	[40]
MnO_2/CNT	-	154.6	[43]
KMO/rGO	-	244	[45]
(This work)	615.8	353.54	

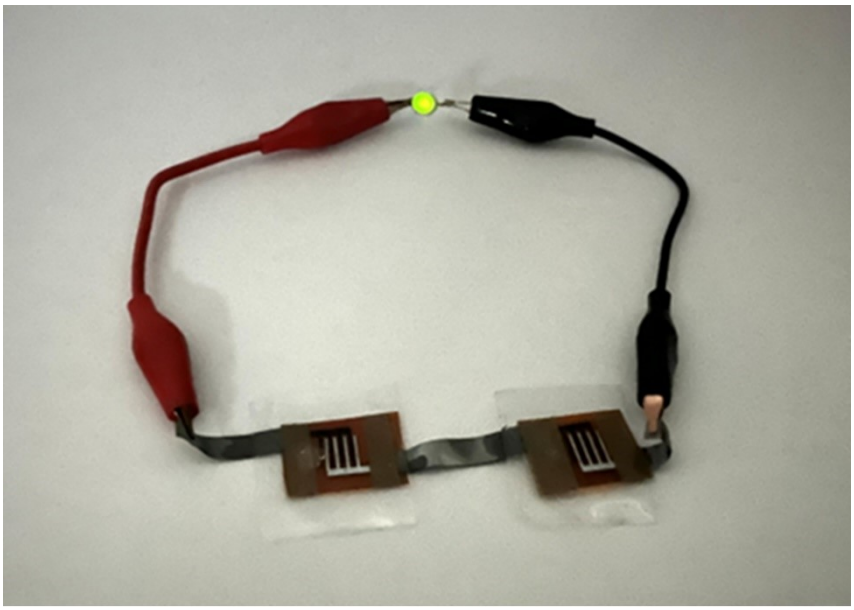

Figure S12. zinc-ion microbattery lights an LED.