

Supporting Information

A simple and effective host for sodium metal anode: 3D printed high pyrrolic-N doped graphene microlattice aerogel

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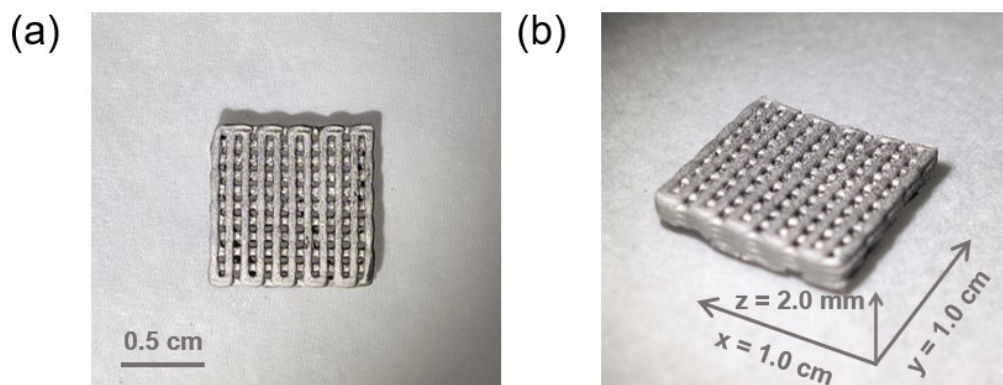


Fig. S1. Digital pictures of a 3DP-NGA microlattice with (a) top view, and (b) side view.

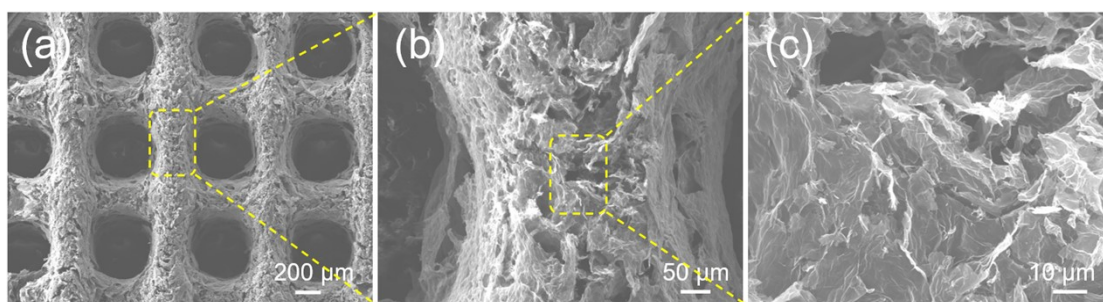


Fig. S2. (a-c) SEM images of the 3DP-rGA microlattice with different magnifications.

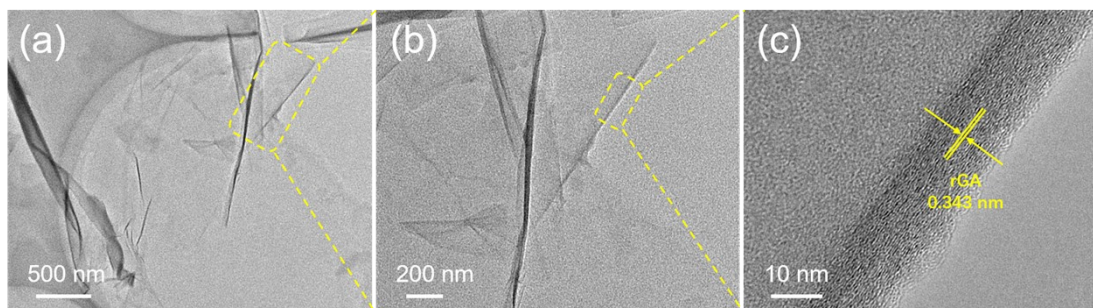


Fig. S3. (a-c) TEM images of the 3DP-rGA with different magnifications.

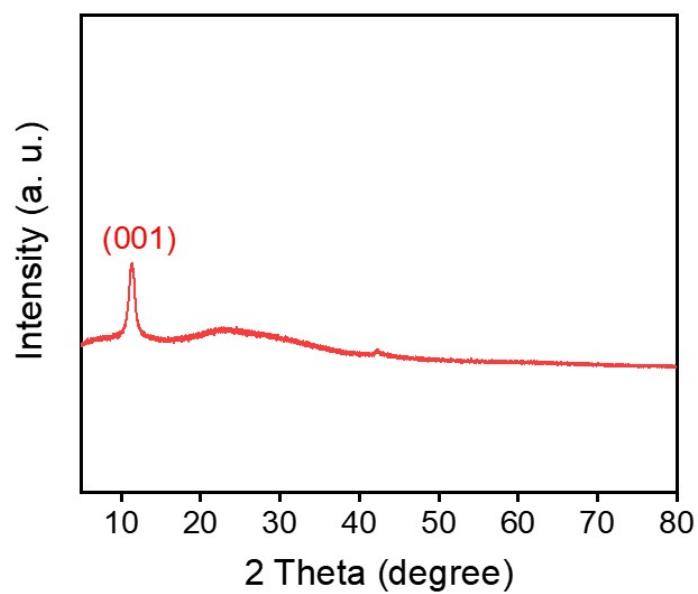


Fig. S4. XRD pattern of the 3DP-GO microlattice.

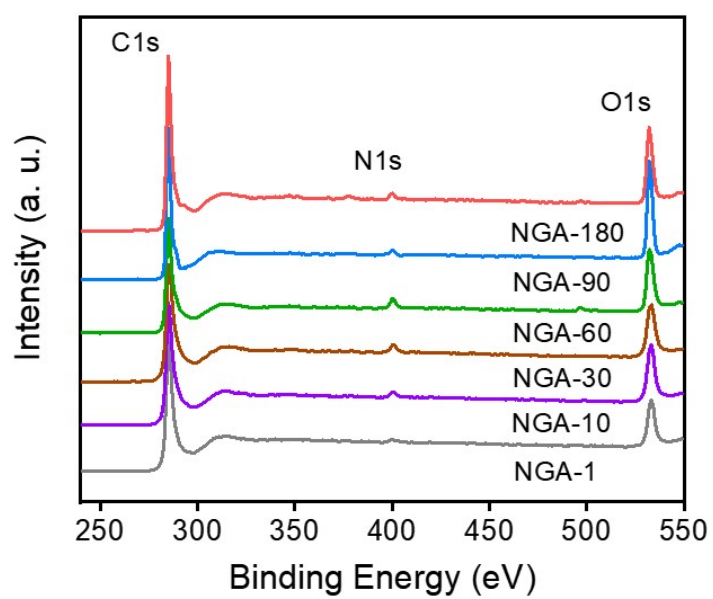


Fig. S5. XPS full spectrum of the 3DP-NGA with various N₂ plasma treatment durations.

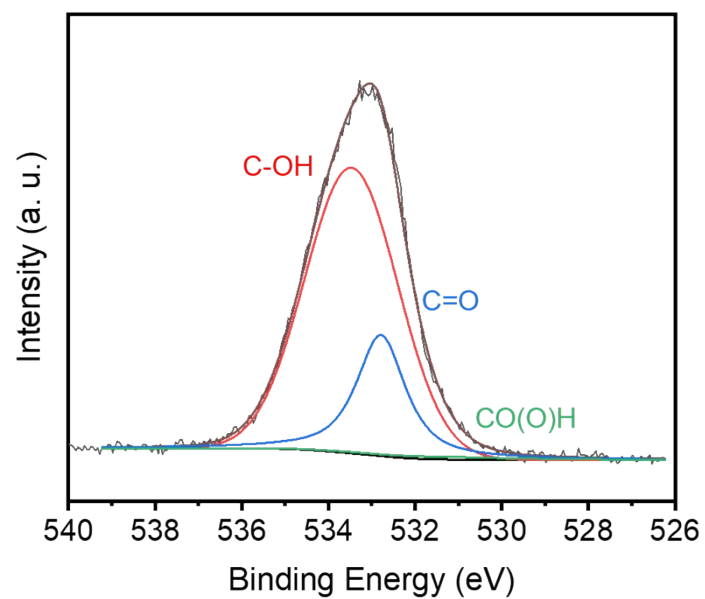


Fig. S6. The high-resolution spectrum of O1s of the NGA-90 microlattice aerogel.

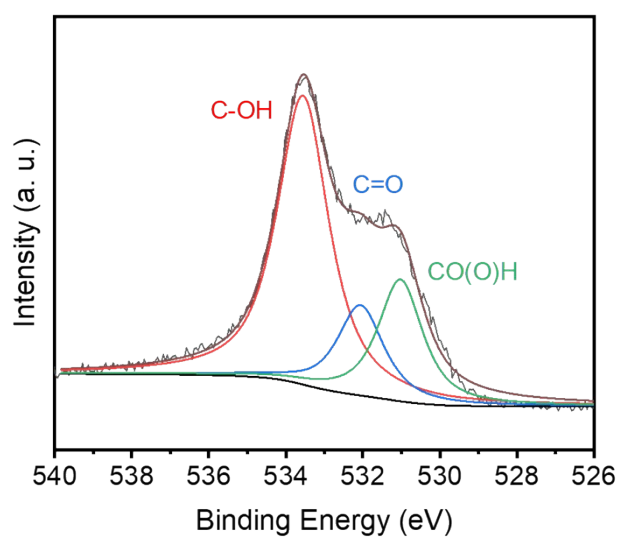


Fig. S7. The high-resolution spectrum of O1s of the 3DP-rGA microlattice aerogel.

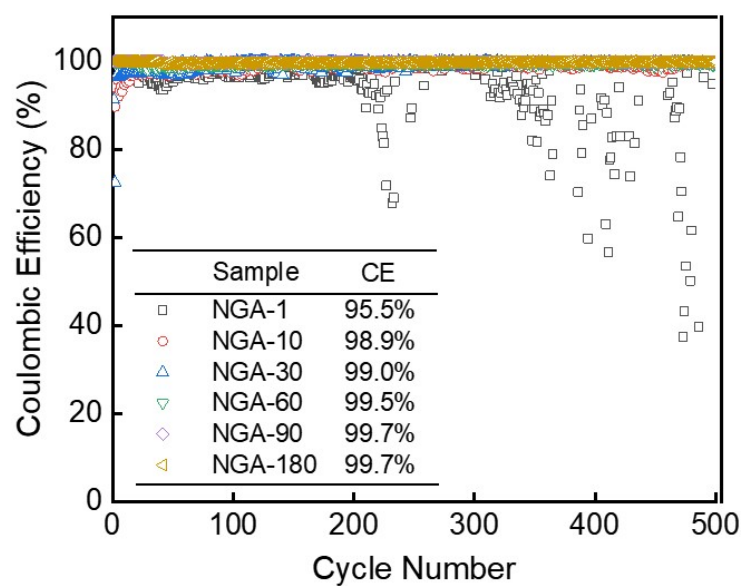


Fig. S8. CEs of the 3DP-NGA electrodes with different plasma durations.

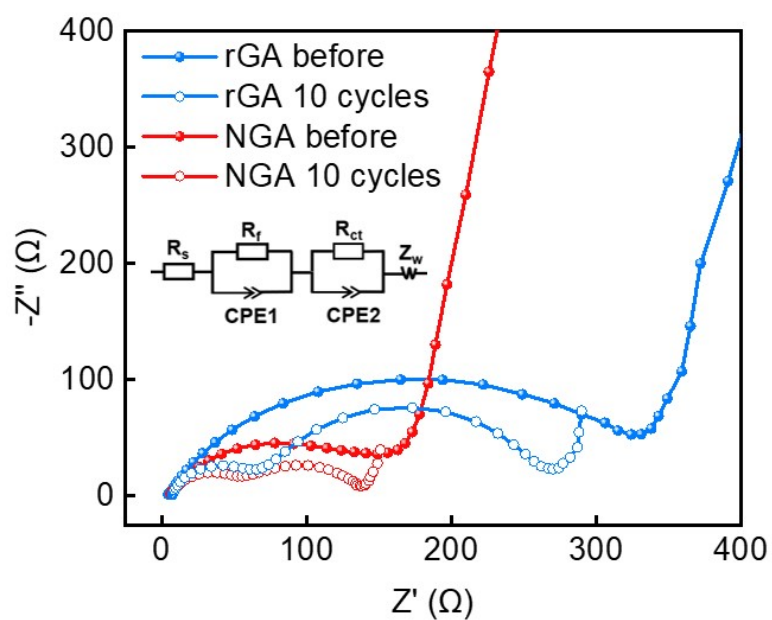


Fig. S9. EIS of the 3DP-rGA and 3DP-NGA electrodes before and after 10 cycles.

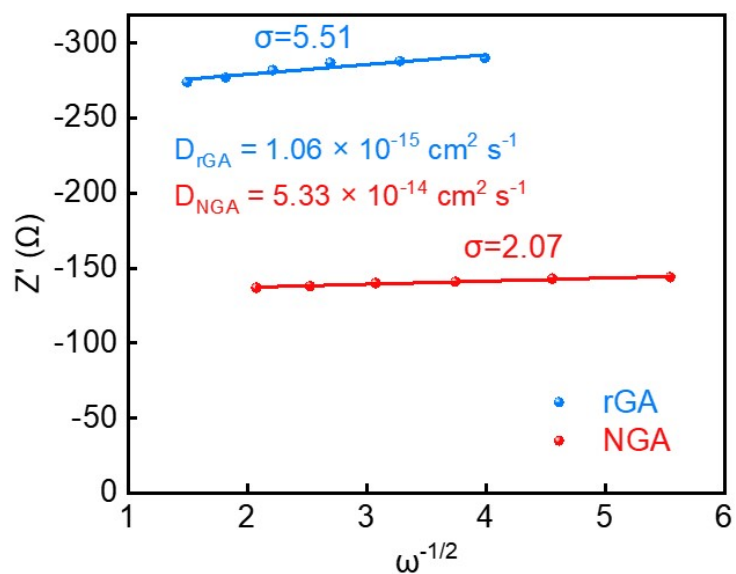


Fig. S10. Diffusion coefficients calculated from the 3DP-rGA and 3DP-NGA electrodes after 10 cycles.

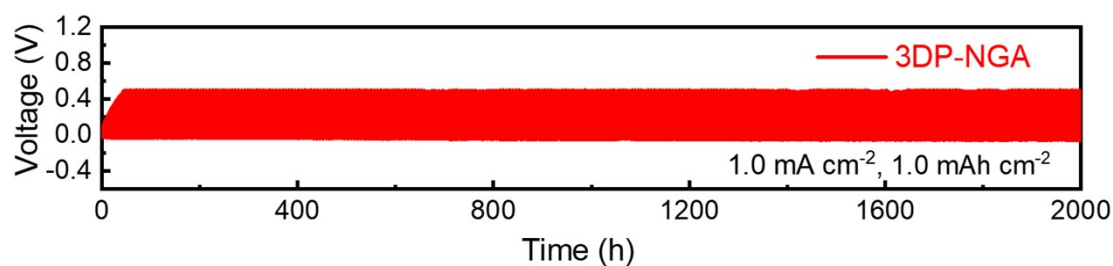


Fig. S11. GCD voltage curves of the 3DP-NGA electrode at 1.0 mA cm^{-2} with 1.0 mAh cm^{-2} .

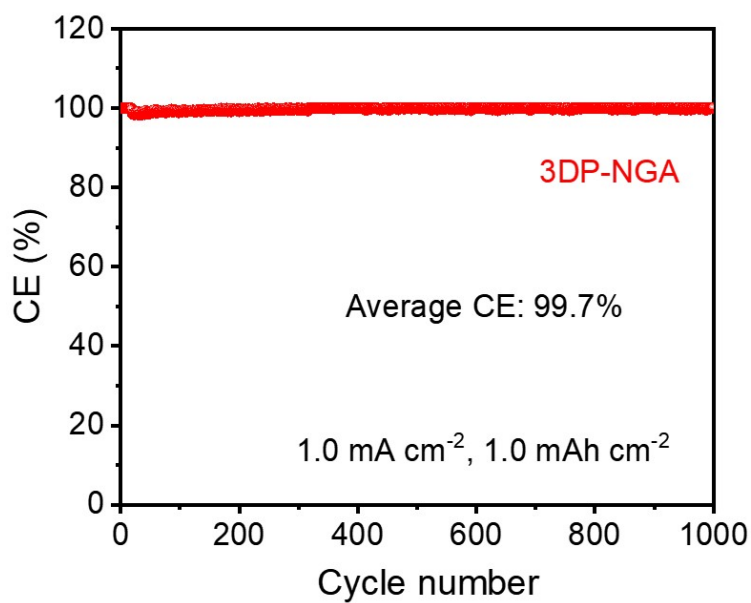


Fig. S12. CE of the 3DP-NGA electrode at 1.0 mA cm^{-2} with 1.0 mAh cm^{-2} .

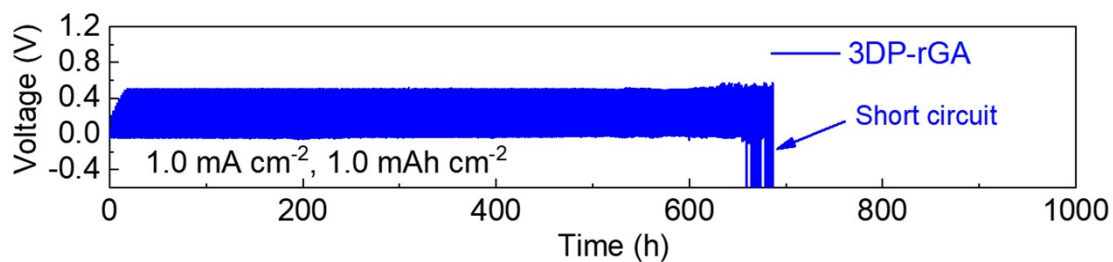


Fig. S13. GCD voltage curves of the 3DP-rGA electrode at 1.0 mA cm⁻² with 1.0 mAh cm⁻².

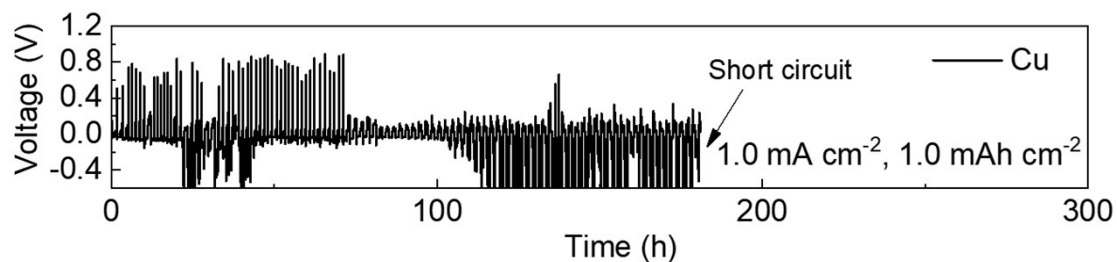


Fig. S14. GCD voltage curves of Cu electrode at 1.0 mA cm⁻² with 1.0 mAh cm⁻².

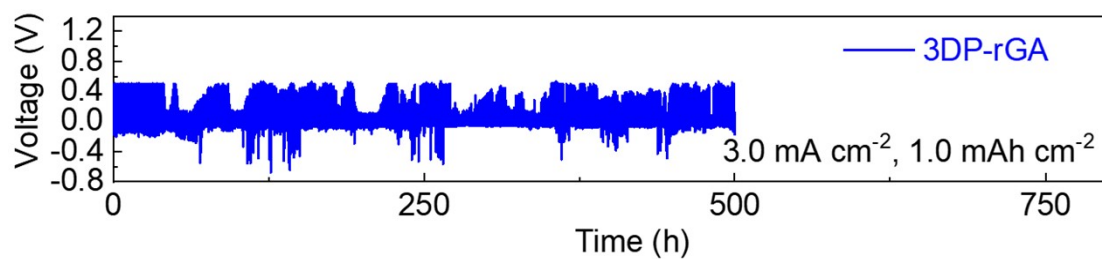


Fig. S15. GCD voltage curves of the 3DP-rGA electrode at 3.0 mA cm⁻² with 1.0 mAh cm⁻².

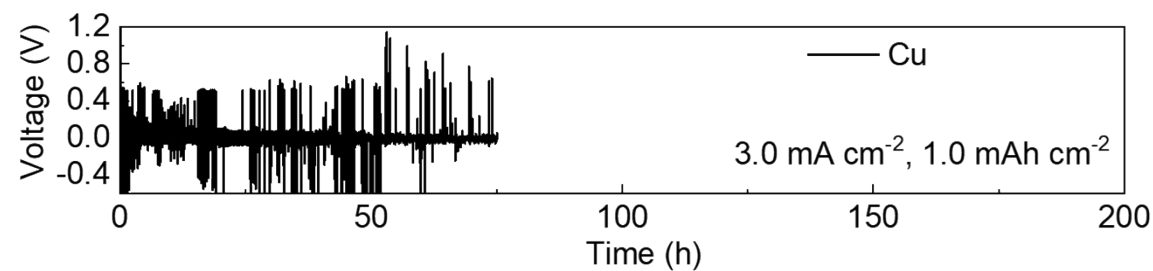


Fig. S16. GCD voltage curves of Cu electrode at 3.0 mA cm⁻² with 1.0 mAh cm⁻².

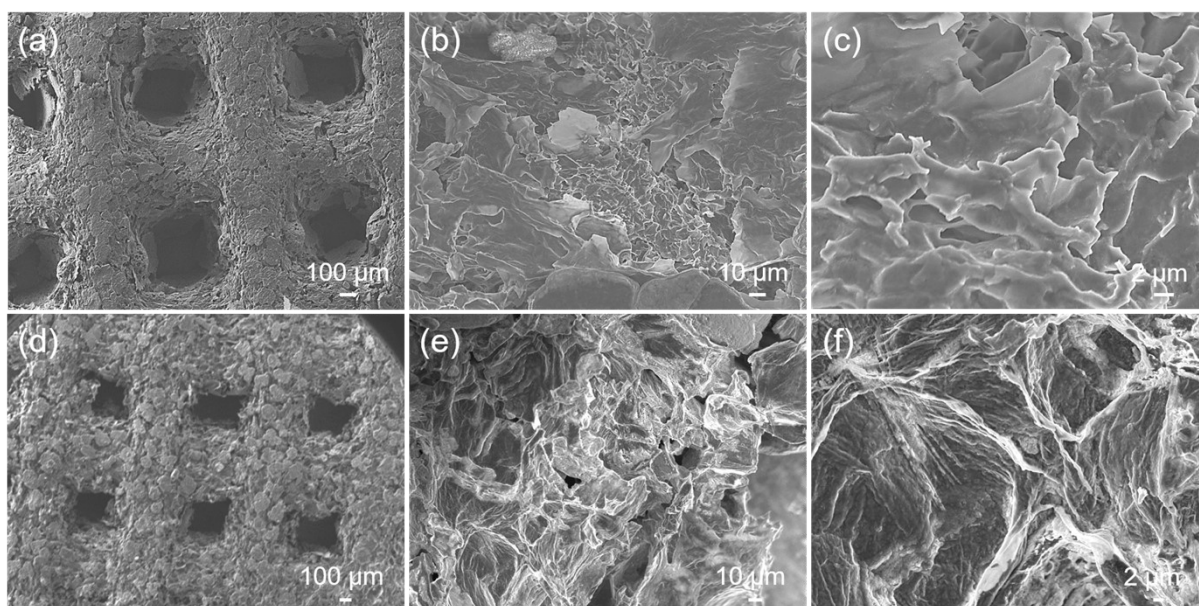


Fig. S17. SEM images of the Na@3DP-NGA microlattice electrodes before (a-c) and after 50 cycles (d-f) at a current density of 3.0 mA cm^{-2} with 1.0 mAh cm^{-2} .

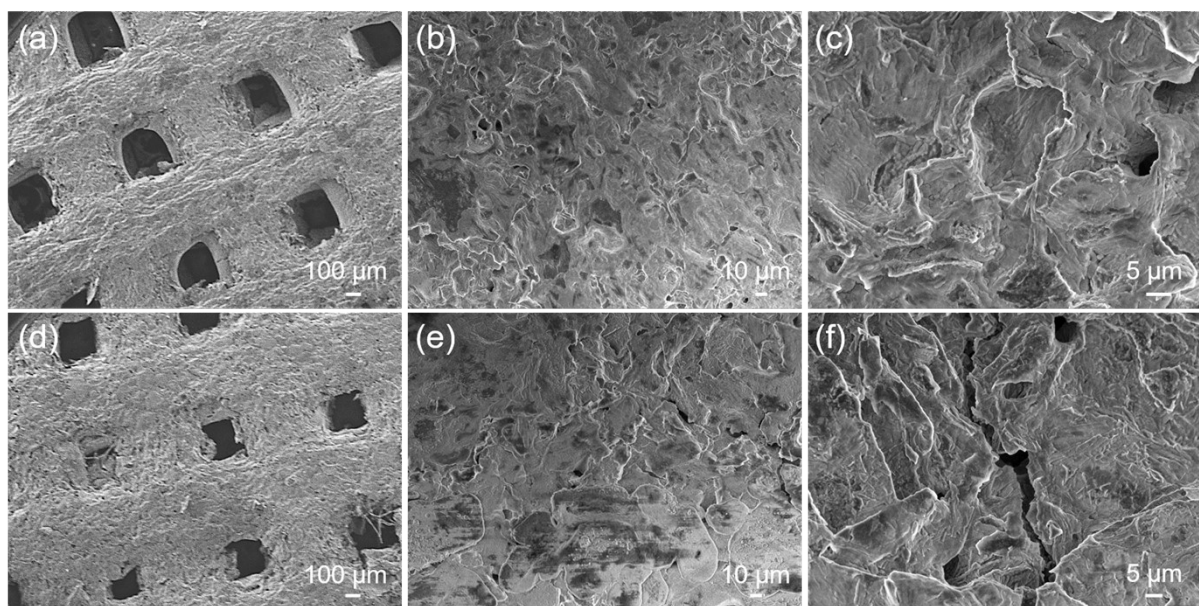


Fig. S18. The SEM images of the Na@3DP-rGA microlattice electrodes before (a-c) and after 50 cycles (d-f) at 3.0 mA cm^{-2} with 1.0 mAh cm^{-2} .

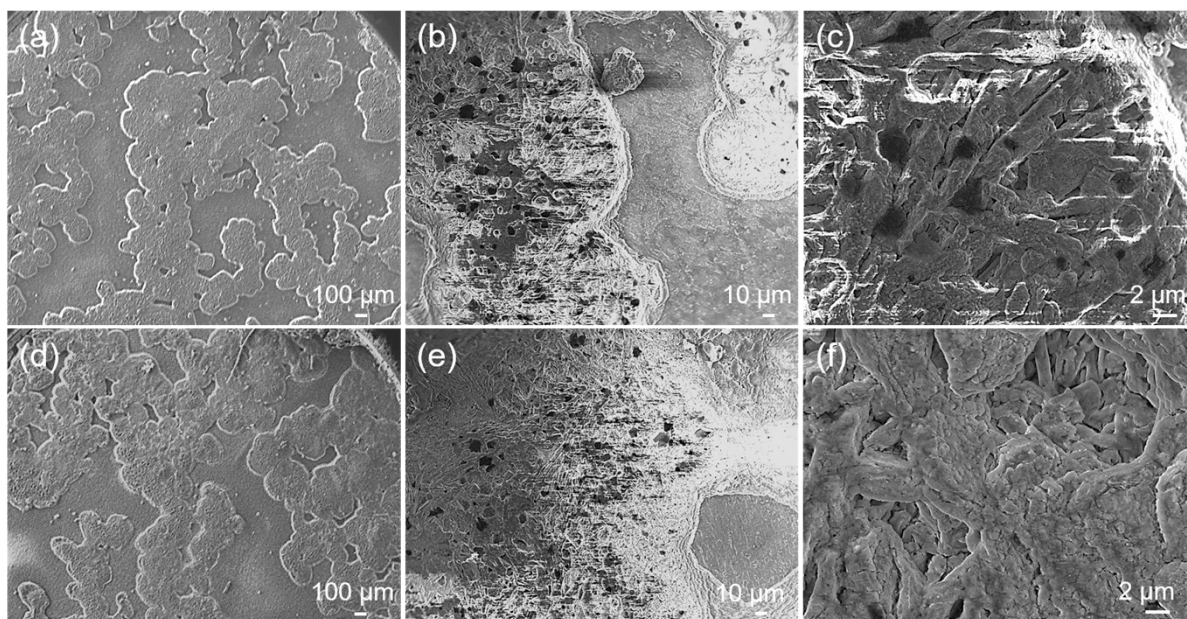


Fig. S19. The SEM images of the Na@Cu microlattice electrodes before (a-c) and after 50 cycles (d-f) at 3.0 mA cm^{-2} with 1.0 mAh cm^{-2} .

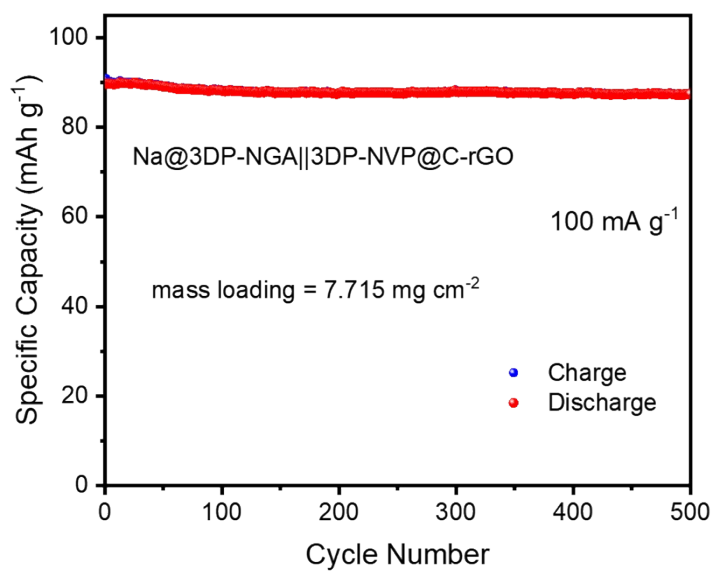


Fig. S20. Cycle performance of the full cell with NVP@C mass loading of 7.715 mg cm^{-2} at 100 mA g^{-1} for 500 cycles

Table S1. Content of C, N and O elements in the 3DP-NGA microlattices with each plasma durations.

Time	C at%	N at%	O at%
1 min	82.93	1.91	15.16
10 min	79.28	2.94	17.78
30 min	78.46	4.19	17.35
60 min	76.26	4.57	19.17
90 min	75.11	2.70	22.19
180 min	79.47	2.77	17.76