Supplementary information

N-doped Mo_2C Particles as Cathode Catalyst of Asymmetric Neutral-alkaline Microbial Electrolysis Cells for Hydrogen Production

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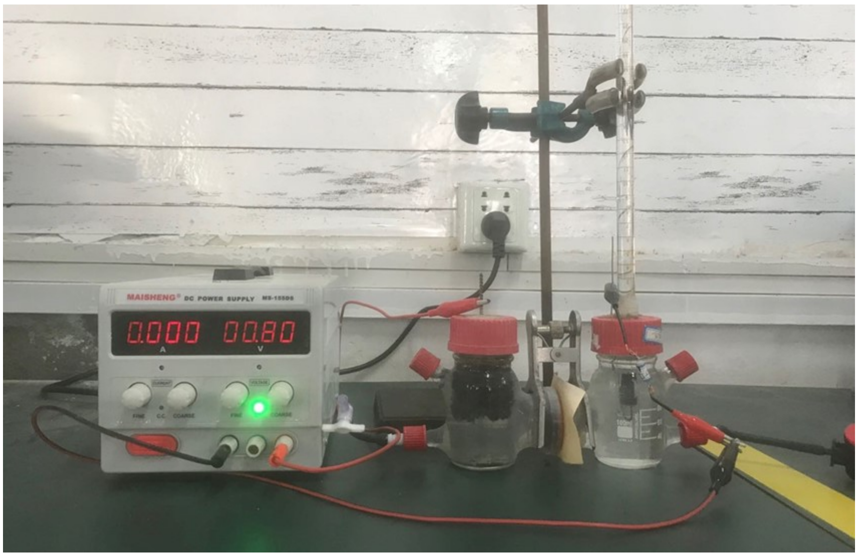

Fig.S1. Pictures of Microbial Electrolysis Cells.

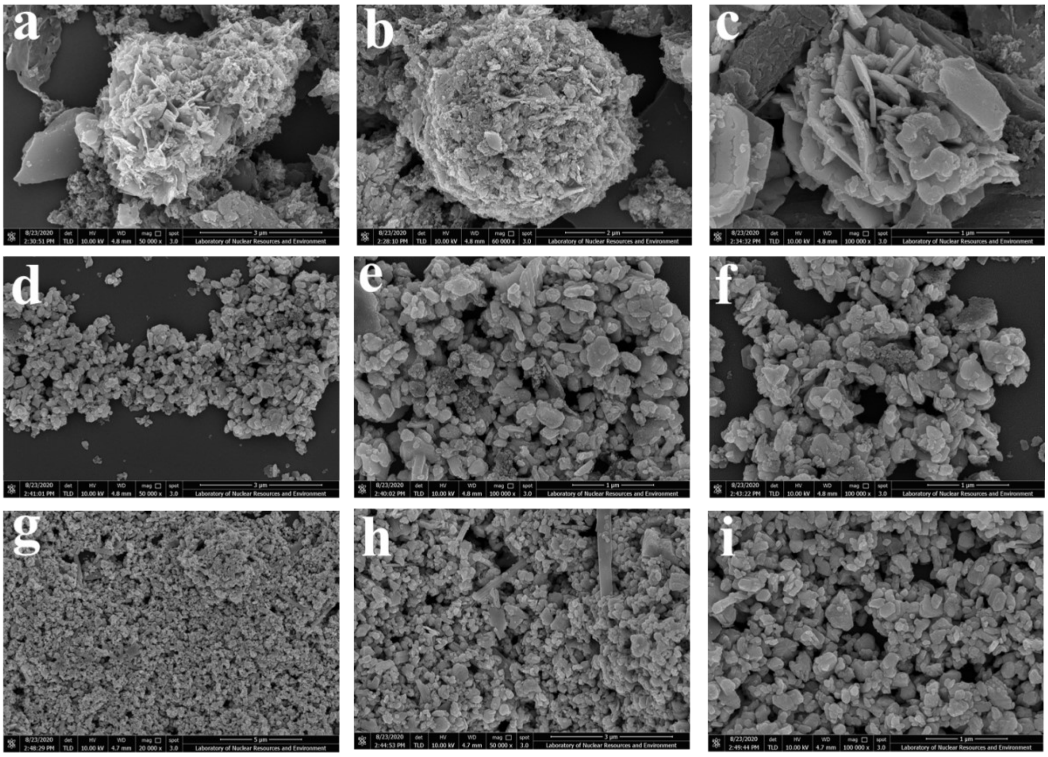

Fig.S2. SEM diagrams of Mo_2C-800 (a-c), Mo_2C-900 (d-f) and Mo_2C-1000 (g-i).

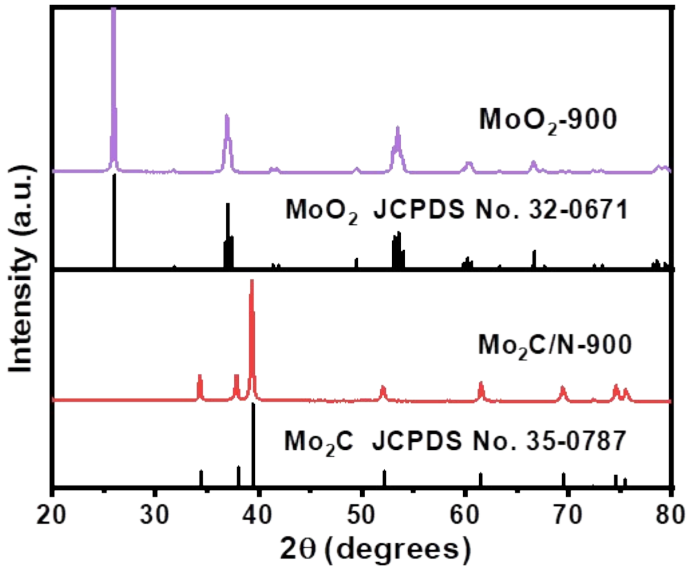

Fig.S3. XRD patterns of MoO_2.

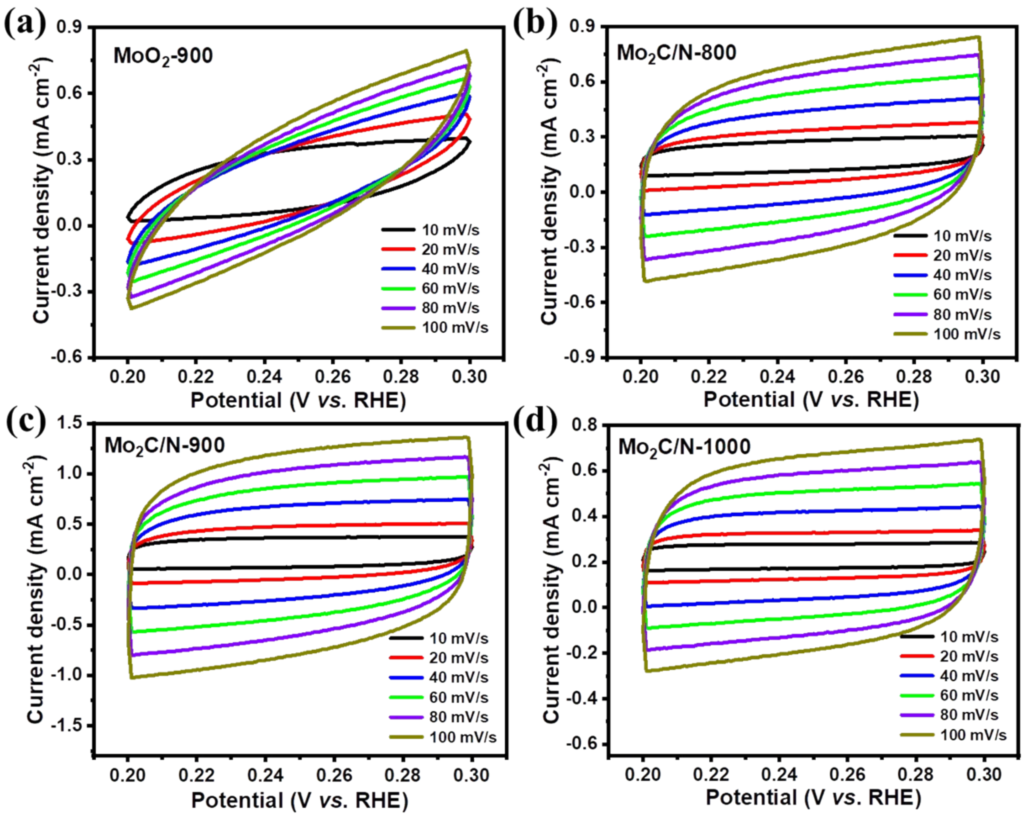

Fig.S4. (a-e) CV images of different sweep speeds of MoO_2, Mo_2C/N-800, Mo_2C/N-900 and Mo_2C/N-1000, all tests were performed in 1 M KOH.

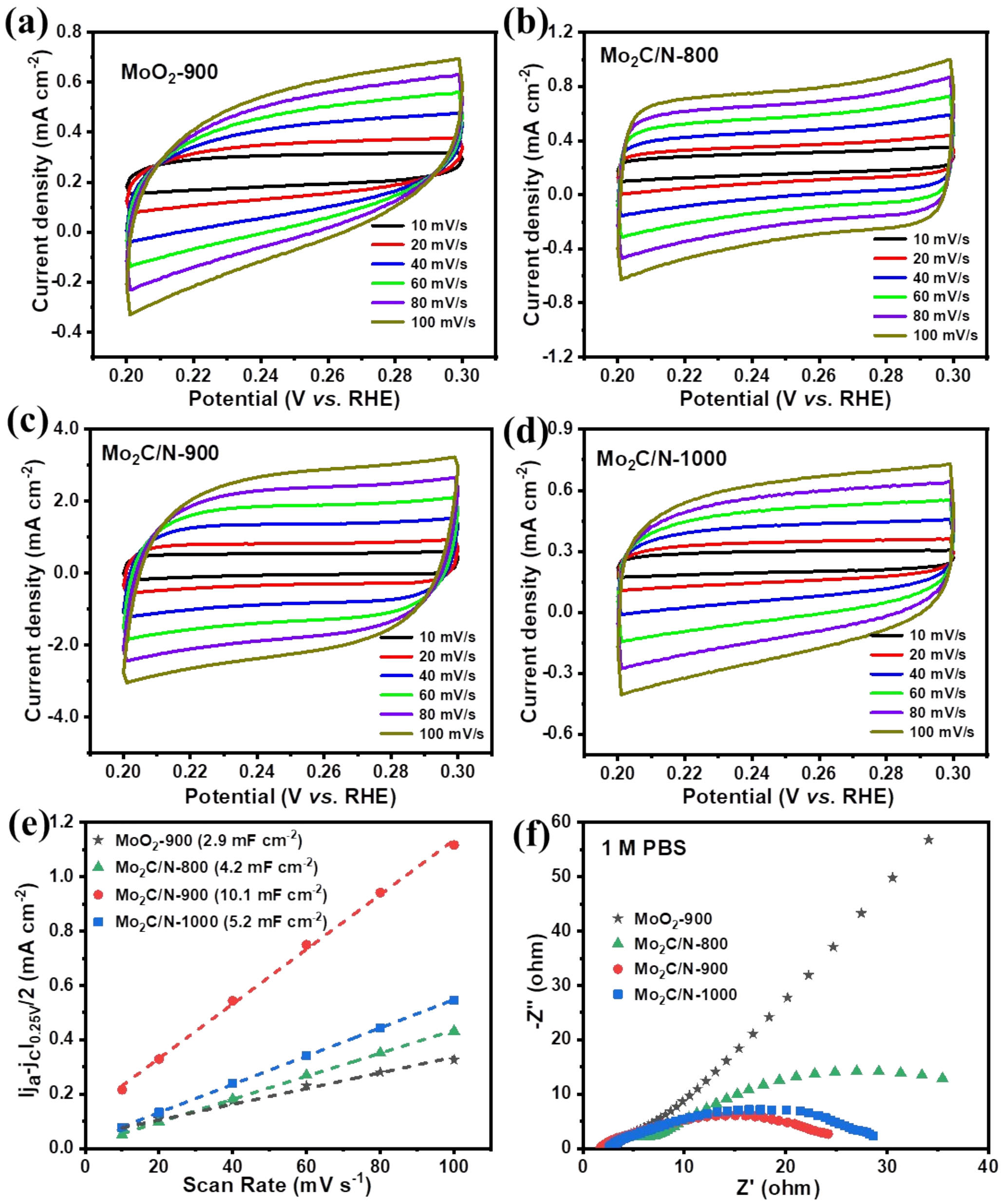

Fig.S5. (a-d) CV images of different sweep speeds, (e) the C_{dl} images of all materials and (f) Nyquist plots of different electrode, all tests were performed in 1 M PBS.

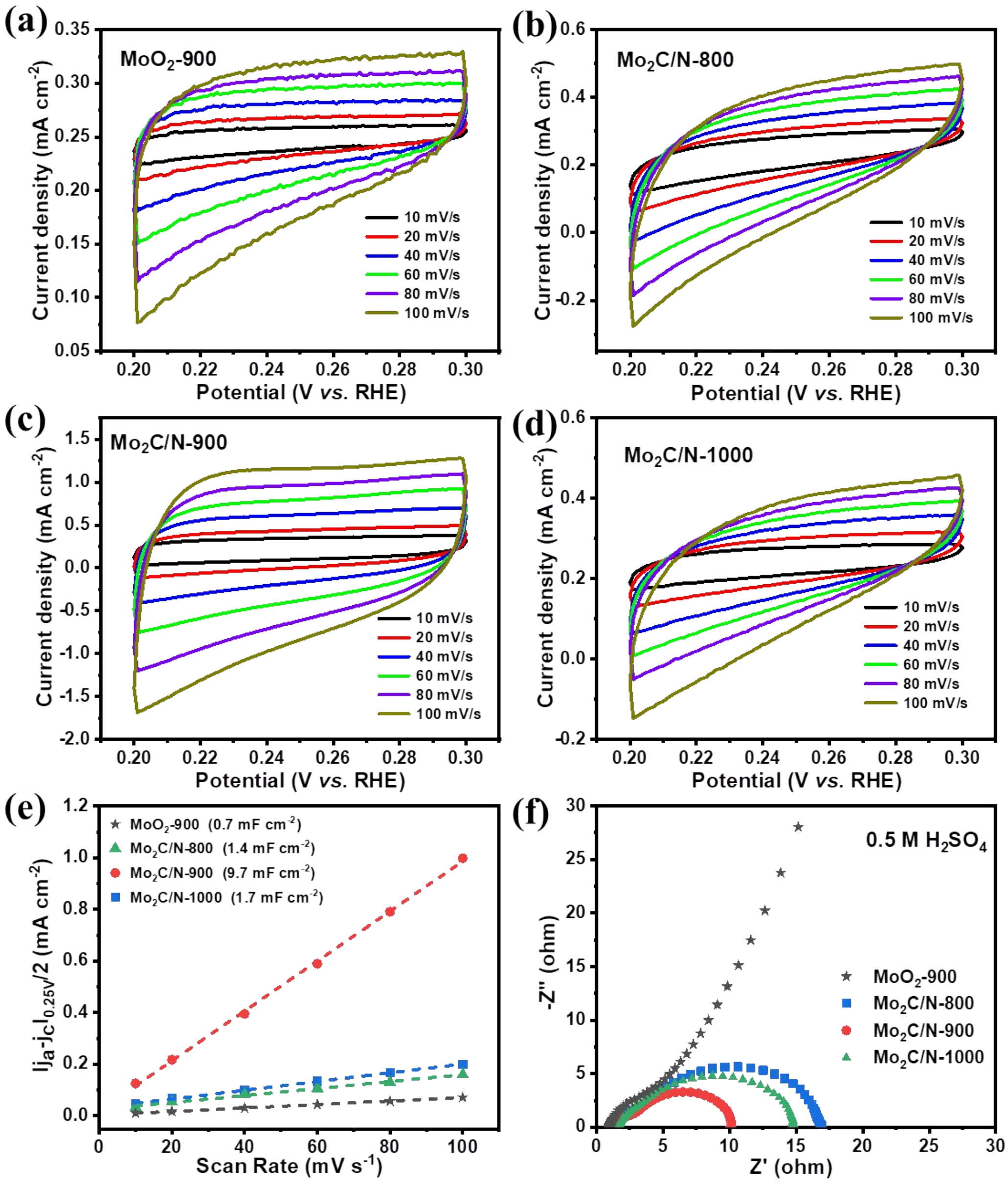

Fig.S6. CV images of different sweep speeds, (e) the C_{dl} images of all materials and (f) Nyquist plots of different electrode, all tests were performed in 0.5 M H_2SO_4.

Table S1 Hydrogen production efficiency of different catalyst MECs in 0.1 M KOH catholyte

Cathode materials	$^{a}E_{ap}$ [V]	$^{b}C_{total}$ [C]	^{c}CE [%]	$^{d}R_{cat}$ [%]	$^{e}R_{H2}$ [%]	$^{f}Q_{H2}$ [L m^{-2} d^{-1}]
CC	0.8	272.4	44.5	5.5	2.5	9.5
$Pt_{20\%}/C$	0.8	583.1	95.3	86.9	82.9	138.5
Mo_2C/N-800	0.8	464.5	75.9	60.1	45.6	61.0
Mo_2C/N-900	0.8	524.9	85.8	71.5	61.4	103.0
Mo_2C/N-1000	0.8	476.3	77.9	62.4	48.6	75.5

a: applied voltage; *b*: total coulombic amount; *c*: coulombic efficiency; *d*: cathode hydrogen recovery rate; *e*: total hydrogen recovery rate; *f*: hydrogen production rate.

Table S2 Hydrogen production efficiency of different catalyst MECs in 0.1 M PBS catholyte

阴极材料	$^{a}E_{ap}$ [V]	$^{b}C_{total}$ [C]	^{c}CE [%]	$^{d}R_{cat}$ [%]	$^{e}R_{H2}$ [%]	$^{f}Q_{H2}$ [L m^{-2} d^{-1}]
CC	0.8	208.6	34.1	6.1	2.1	2.5
$Pt_{20\%}/C$	0.8	552.7	90.4	85.6	75.5	105.0
Mo_2C/N-800	0.8	324.6	53.1	38.1	20.2	17.5
Mo_2C/N-900	0.8	542.6	88.7	48.6	43.1	41.0
Mo_2C/N-1000	0.8	419.1	68.5	35.6	24.4	27.2

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