Supplementary Materials

Improvement of Electrochemical Performance with Cetylpyridinium Chloride for Al Anode of Alkaline Al-Air Battery

Lei Guo [a, b*], Rui Sun [a], Xinlei Chen [a], Ting Shang [a], Qingbiao Li [a], Xingwen Zheng [c], Riadh Marzouki [d], Jun Chang [a, b], and Savaş Kaya [e]

[a] *School of Material and Chemical Engineering, Tongren University, Tongren 554300, China*

[b] *Guizhou Provincial Key Laboratory for Cathode Materials of New Energy Battery, Tongren 554300, China*

[c] *Key Laboratory of Material Corrosion and Protection of Sichuan Province, Sichuan University of Science and Engineering, Zigong 643000, China*

[d] *Department of Chemistry, College of Science, King Khalid University, P.O. Box 9004, 61413 Abha, Saudi Arabia*

[e] *Department of Chemistry, Faculty of Science, Sivas Cumhuriyet University, Sivas 58140, Turkey*

* Email: chygl@gztrc.edu.cn

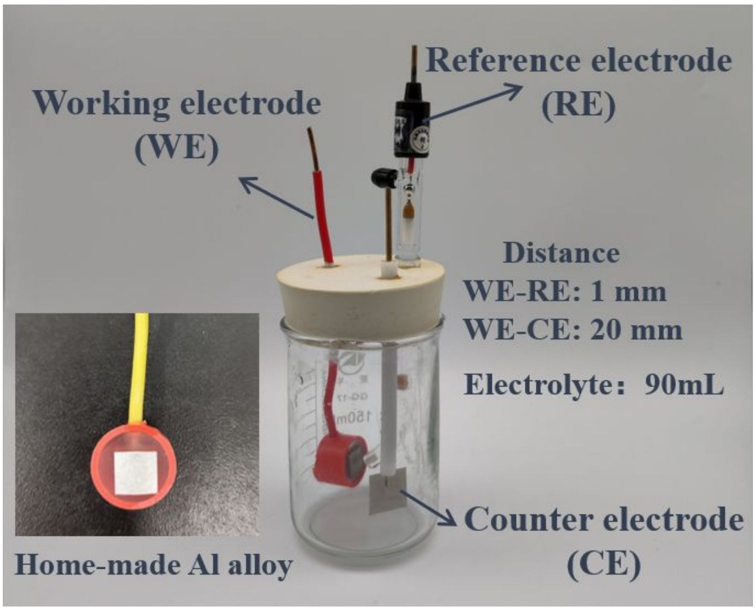

Figure S1 Schematic representation of the three-electrode setup.

As shown in Table S1, we have achieved a relatively good level compared to Al-air batteries with different electrolyte system. In comparison, solid electrolyte batteries and gel electrolyte batteries have lower capacity density than this work, which is more suitable for portable electronic products. The capacity density of dual electrolyte batteries is slightly higher than this work. However, the use of ion exchange membranes in these batteries leads to a relatively complex structure and increased costs. We acknowledge that many strategies possess distinct benefits and drawbacks, as well as specific situations in which they are relevant.

Table S1 Comparison of battery performance of AABs with various electrolytes.

Material	System	Anode utilization (%)	Capacity density (mAh g^{-1})	Refs.
Home-made Al alloy	Cetylpyridinium chloride	68.5	2041	This work
Commercial 3D porous Al foams	Citric acid & ZnO	58.23	1902	[1]
Commercial pure aluminum	ZnO & acrylamide	41.9	1241	[2]
Commercial 6061 Al alloy	4-amino-6-hydroxy-2-mercaptopyrimidine & ZnO	60.0	1785	[3]
Commercial 1060 Al	Ethylene glycol & Na_2SnO_3	40.0	1421	[4]
Commercial 1050 Al	Deep eutectic solvent-based solid electrolyte	-	35.8	[5]
Commercial pure aluminum	Dual-electrolyte system	78	2328	[6]
Commercial pure aluminum	Dual-electrolyte system	-	2100	[7]
Commercial Al7475, Al6062, and Al5052 Al alloys	NH_4VO_3 + CMC (gel electrolyte)	-	509.25	[8]

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