

## Electronic supplementary information

### Quantifying an acceptable open-circuit corrosion current for aluminum–air batteries

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**Table S1** Data for Figure 1.

| Approach                                   | Open-circuit corrosion current (mA cm <sub>geo</sub> <sup>-2</sup> ) | Specific energy (Wh g <sub>Al</sub> <sup>-1</sup> ) | Reference |
|--------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------|-----------|
| anode alloy, alkaline electrolyte          | 1.8                                                                  | 2724                                                | 9         |
| anode alloy, alkaline electrolyte          | 2.42                                                                 | 3519                                                | 10        |
| anode alloy, alkaline electrolyte          | 4.7                                                                  | 3364                                                | 11        |
| anode alloy, alkaline electrolyte          | 5.44                                                                 | 3342                                                | 12        |
| anode alloy, alkaline electrolyte          | 42.76                                                                | 1776                                                | 13        |
| anode alloy, alkaline electrolyte          | 53.03                                                                | 1812                                                | 14        |
| electrolyte additive, alkaline electrolyte | 3.24                                                                 | 3959                                                | 15        |
| electrolyte additive, alkaline electrolyte | 3.32                                                                 | 2546                                                | 16        |
| electrolyte additive, alkaline electrolyte | 6.17                                                                 | 2750                                                | 17        |
| electrolyte additive, alkaline electrolyte | 7.5                                                                  | 3248                                                | 18        |
| electrolyte additive, alkaline electrolyte | 10.43                                                                | 3240                                                | 19        |

|                                                                                               |         |      |    |
|-----------------------------------------------------------------------------------------------|---------|------|----|
| electrolyte additive,<br>alkaline electrolyte                                                 | 18.23   | 3254 | 20 |
| electrolyte additive,<br>alkaline electrolyte                                                 | 21.97   | 3267 | 21 |
| electrolyte additive,<br>alkaline electrolyte                                                 | 25.59   | 1956 | 22 |
| saline electrolyte                                                                            | 16.2    | 3385 | 23 |
| saline electrolyte                                                                            | 0.02523 | 3240 | 24 |
| ionic liquid<br>electrolyte                                                                   | 0.0029  | 86   | 25 |
| ionic liquid<br>electrolyte                                                                   | 0.025   | 2315 | 26 |
| dual electrolyte,<br>alkaline electrolyte<br>with methanol and<br>alkaline gel<br>electrolyte | 2       | 1793 | 27 |
| electrolyte gel and<br>anode film, alkaline<br>electrolyte                                    | 0.0613  | 2008 | 28 |
| temperature<br>modification, alkaline<br>electrolyte                                          | 0.448   | 2565 | 29 |
| anode grain size,<br>alkaline electrolyte                                                     | 19.33   | 1444 | 30 |
| anode grain size,<br>alkaline electrolyte                                                     | 4.965   | 2682 | 24 |
| anode crystal<br>orientation, alkaline<br>electrolyte                                         | 5.41    | 2885 | 31 |
| anode crystal<br>orientation, alkaline<br>electrolyte                                         | 9.89    | 3680 | 31 |
| oil displacement,<br>alkaline electrolyte<br>and PFPE oil                                     | 0.0006  | 3730 | 32 |