

Supporting information

Evaluation of performance metrics for high energy density rechargeable lithium–oxygen batteries

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Table S1. Parameters of LOB cells used in discharge/charge test.

SUS fiber mesh	Mass loading	3.5	mg/cm ²
	Thickness	30	μm
Carbon fiber membrane	Mass loading	8.4	mg/cm ²
	Thickness	190	μm
Carbon electrode	Mass loading	5.4	mg/cm ²
	Thickness	300	μm
Separator	Mass loading	1.08	mg/cm ²
	Thickness	20	μm
Lithium foil	Mass loading	5.34	mg/cm ²
	Thickness	100	μm
Copper foil	Mass loading	10.8	mg/cm ²
	Thickness	12	μm
Electrolyte		22	mg/cm ²

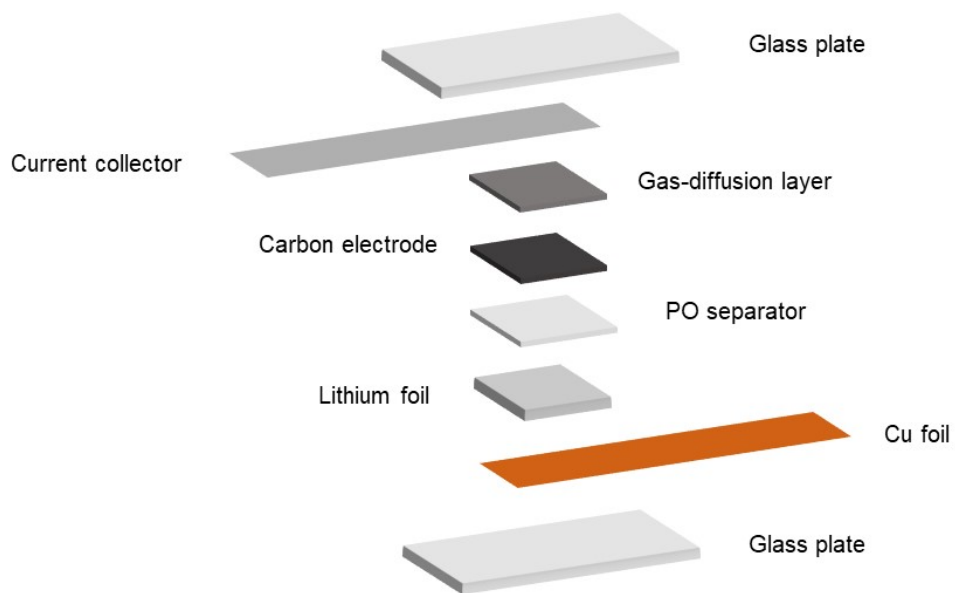


Figure S1. Schematic illustration of cell configuration of LOBs cells.

Table S2. Physical parameters of gas-diffusion layers.

Sample	Material	Structure	Weight [mg/cm ²]	Thickness [μm]	Fiber diameter [μm]	Sheet resistance [ohm/square]
Carbon-fiber membrane	Carbon	Random	8.4	190	5	0.66
SUS fiber mesh	SUS-304	Mesh	3.5	30	13	0.42
Ni-coated PET-fiber mesh	Nickel and PET	Mesh	1.4	50	27	1.3
PTFE membrane	PTFE	Porous membrane	2.6	90		>10 ³

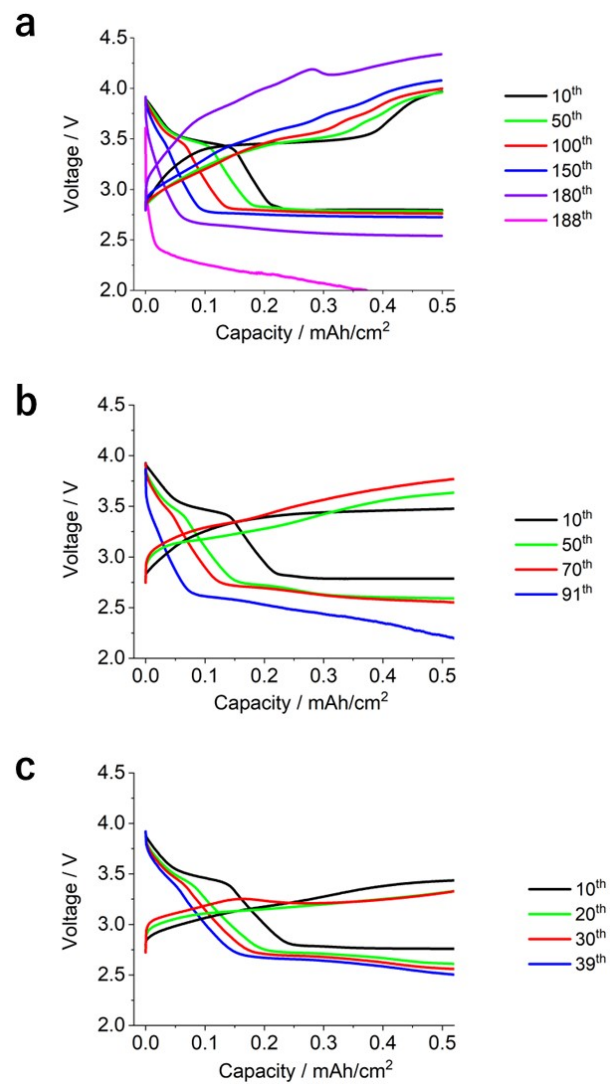


Figure S2. Magnified discharge/charge profile of LOB cells with different capacity limitation and current density conditions. (a) 0.05 mA/cm², 0.5 mAh/cm², (b) 0.1 mA/cm², 1 mAh/cm², (c) 0.2 mA/cm², 2 mAh/cm².

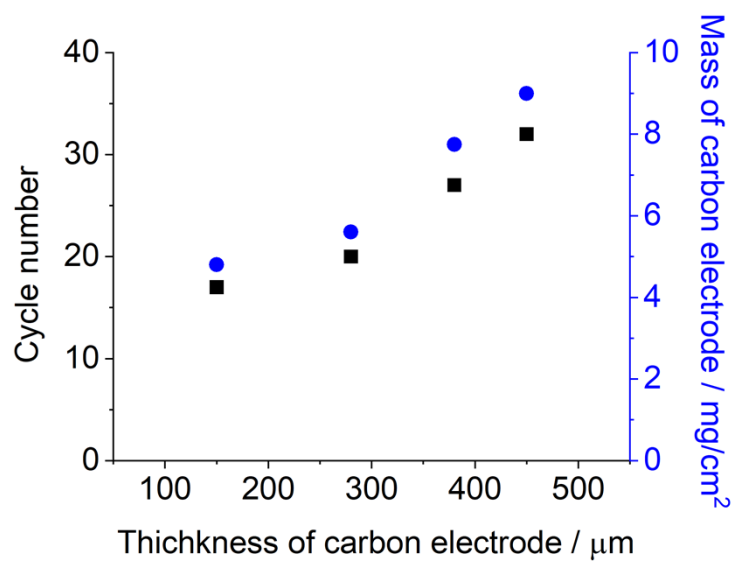


Figure S3. Relationships between cycle number, mass of carbon electrode and thickness of carbon electrode.

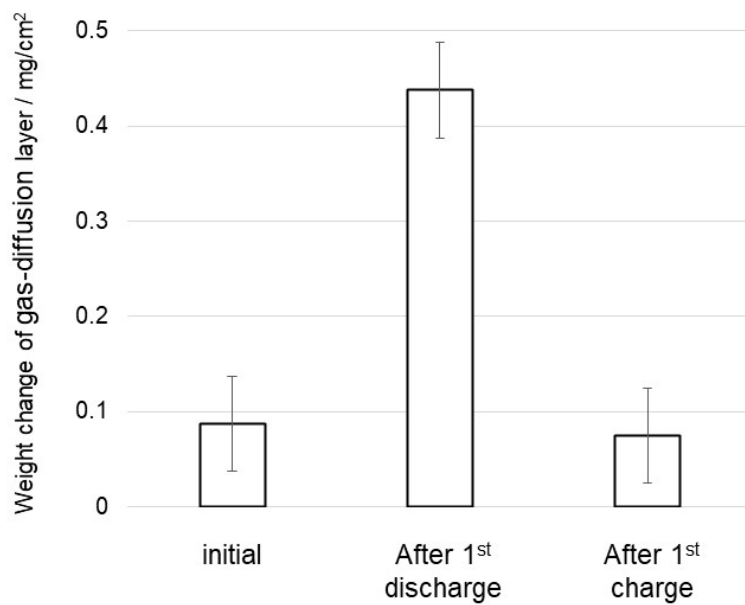


Figure S4. Weight change of gas-diffusion layer during 1st discharge/charge process.