
Supporting Information

Iridium-decorated carbon nanotubes as cathode catalysts for Li-CO₂ batteries with a highly efficient direct Li₂CO₃ formation/decomposition capability

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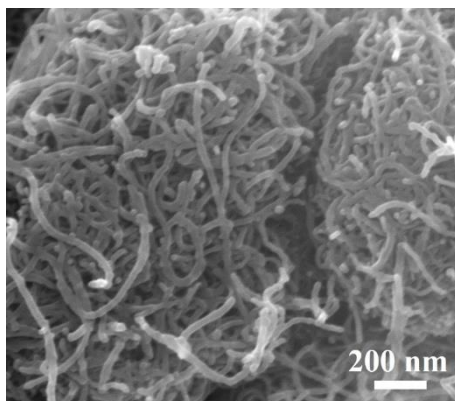


Figure S1. SEM image of the Ir-CNT composite.

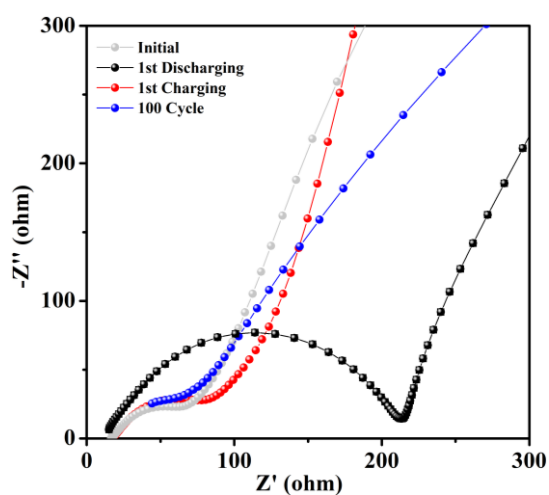


Figure S2. Electrochemical Impedance Spectroscopy (EIS) dates at different stages of Ir-CNT cathodes.

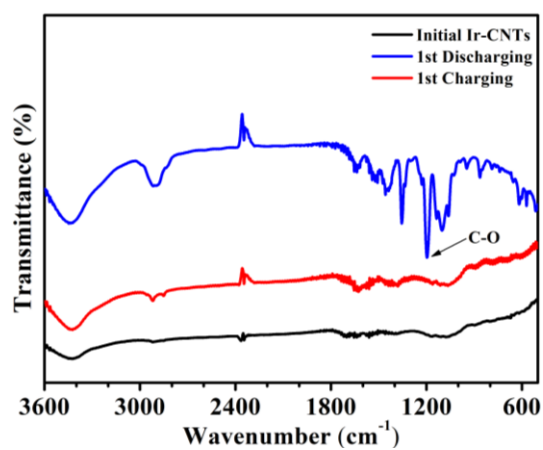


Figure S3. FTIR spectra of Ir-CNT cathodes at initial, 1st discharging and 1st charging stage.

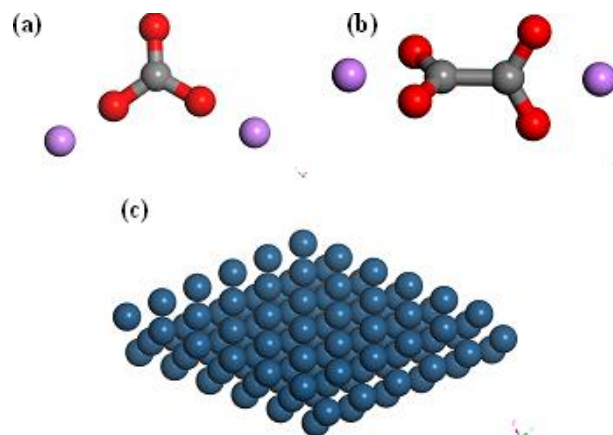


Figure S4. Schematic illustrations of (a) Li_2CO_3 monomer, (b) Li_2CO_4 monomer and (c) Ir (111) models.

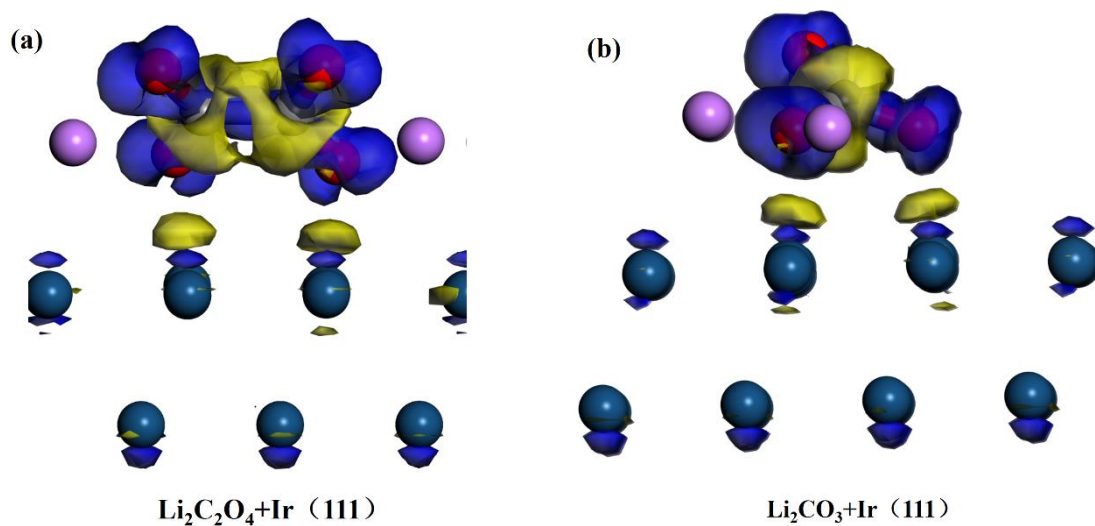


Figure S5. Difference charge densities and corresponding binding models of (a) $\text{Li}_2\text{C}_2\text{O}_4$ monomer on Ir (111) plane and (b) Li_2CO_3 monomer on Ir (111) plane.

Table 1. Performance comparison of the Ir-CNT cathode with other typical cathodes reported in the literature.

Catalyst	Discharge product	Main Electrolyte	Current Density (mA g ⁻¹)/ Fixed Capacity (mAh g ⁻¹)/ Cycles	Ref. No
Ir-coated GDLs	Li ₂ CO ₃	DOL	100/500/150	1
Li₂MnO₃	Li ₂ CO ₃	DMC	/800/30	2
CNTs	Li ₂ CO ₃	polymer	500/1000/20	3
CPE@CNTs	Li ₂ CO ₃	polymer	2.5 mA/993.3 mAh/44	4
CC@Mo₂C	Li ₂ C ₂ O ₄	TEGDME	50 μA cm ⁻² /100 μAh cm ⁻² /20	5
Mo₂C/CNT	Li ₂ C ₂ O ₄	TEGDME	20 μA/100 μAh/40	6
Ru/NS-G	Li ₂ CO ₃	TEGDME	100/1000/100	7
MnO@NC-G	Li ₂ CO ₃	TEGDME	50/1000/15	8
CoPPc	Li ₂ CO ₃	TEGDME	0.05 mA cm ⁻² //50	9
Adj. Co/GO	Li ₂ CO ₃	TEGDME	100/1000/100	10
Ir/CNFs	Li ₂ CO ₃	TEGDME	50/1000/45	11
Ir-CNTs	Li₂CO₃	TEGDME	100/1000/100	This Work

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