

Supporting Information

Morphology-Dependent Structural Evolution of Co_3O_4 from Co-ZIFs during Thermal Decomposition

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Materials

All chemicals used in this research were of analytical grade without further purification. Cobalt nitrate hexahydrate ($\text{Co}(\text{NO}_3)_2 \cdot 6 \text{H}_2\text{O}$, $\geq 99.9\%$) was purchased from Shanghai Macklin Biochemical Co. Ltd. (China). 2-methylimidazole (2-MI, $\geq 98\%$) was purchased from Shanghai Aladdin Reagent Co., Ltd. Methanol (MeOH , $\geq 99.9\%$), and ethanol (EtOH , $\geq 99.9\%$) were acquired from Chengdu Kelong Chemical Co. Ltd. (China). Deionized water was prepared using Chengdu HaoKang Technology HK-2RO-UP apparatus.

Characterization

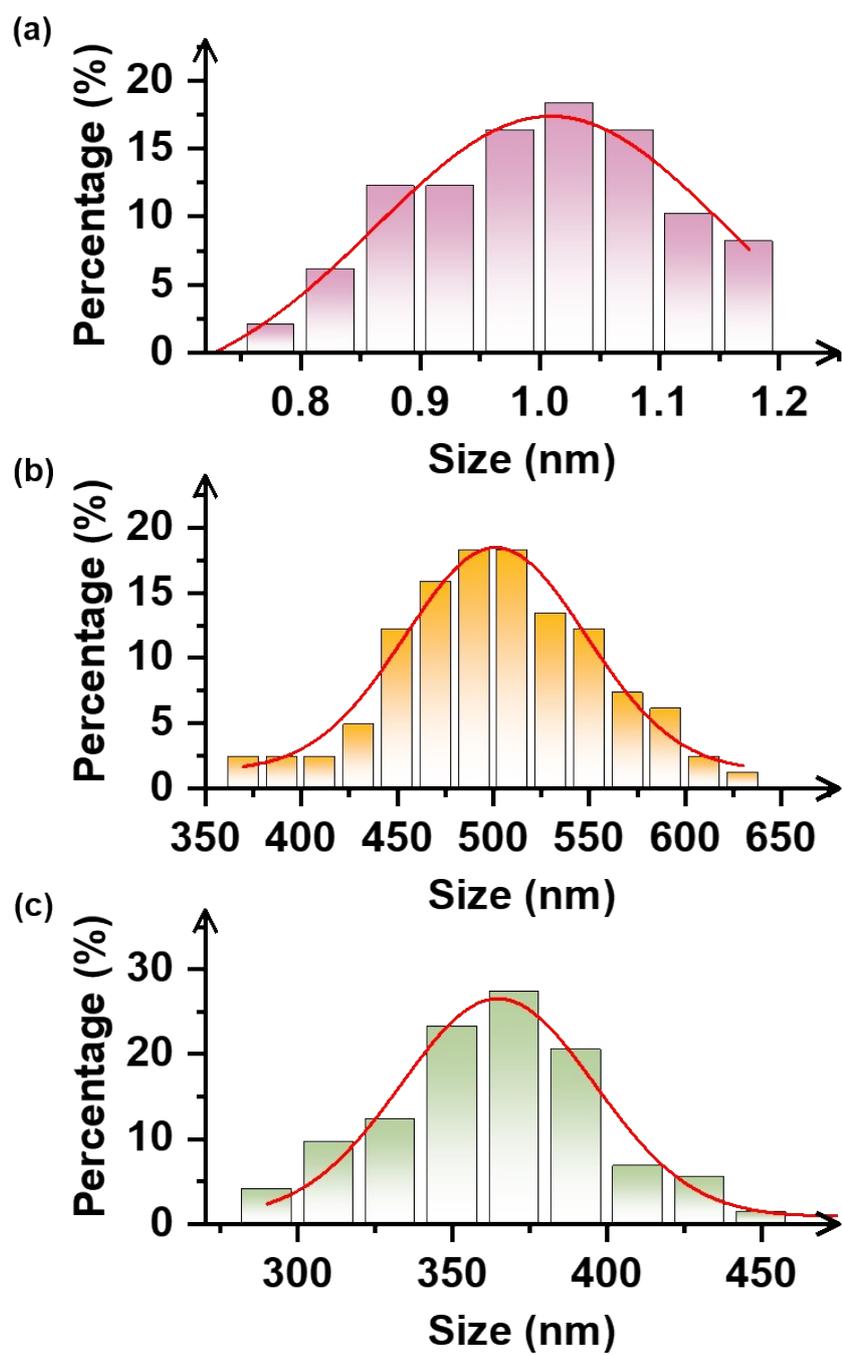
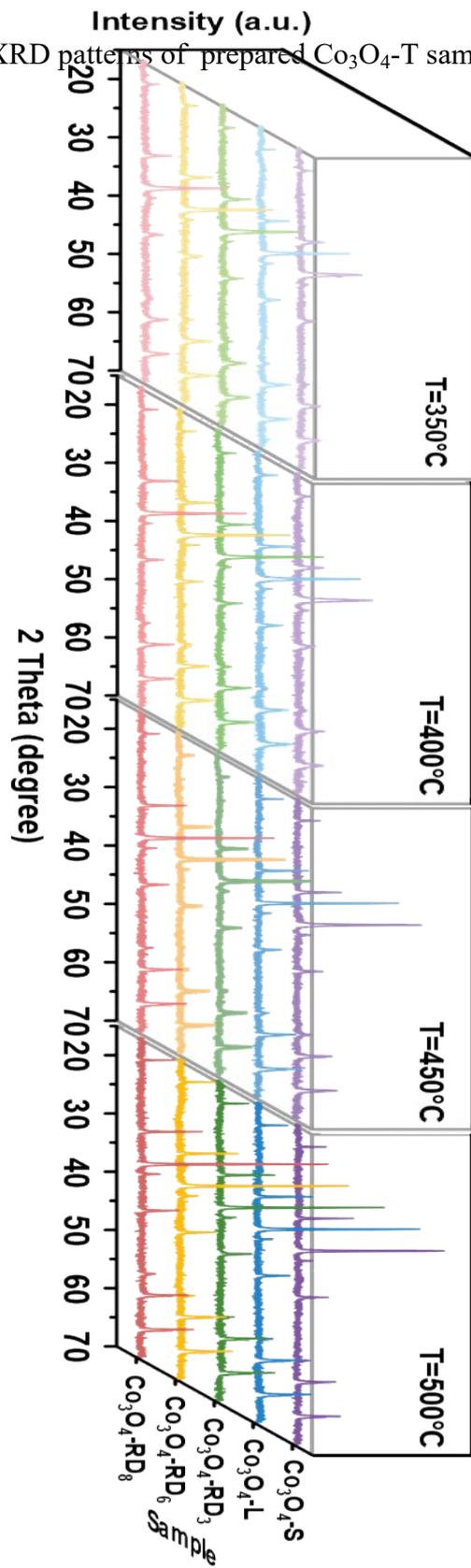


Figure S1. Size distribution of synthesized (a) Co-ZIF-RD₈, (b) Co-ZIF-RD₆, and (c) Co-ZIF-RD₃.

Figure S2. XRD patterns of prepared Co_3O_4 -T samples.



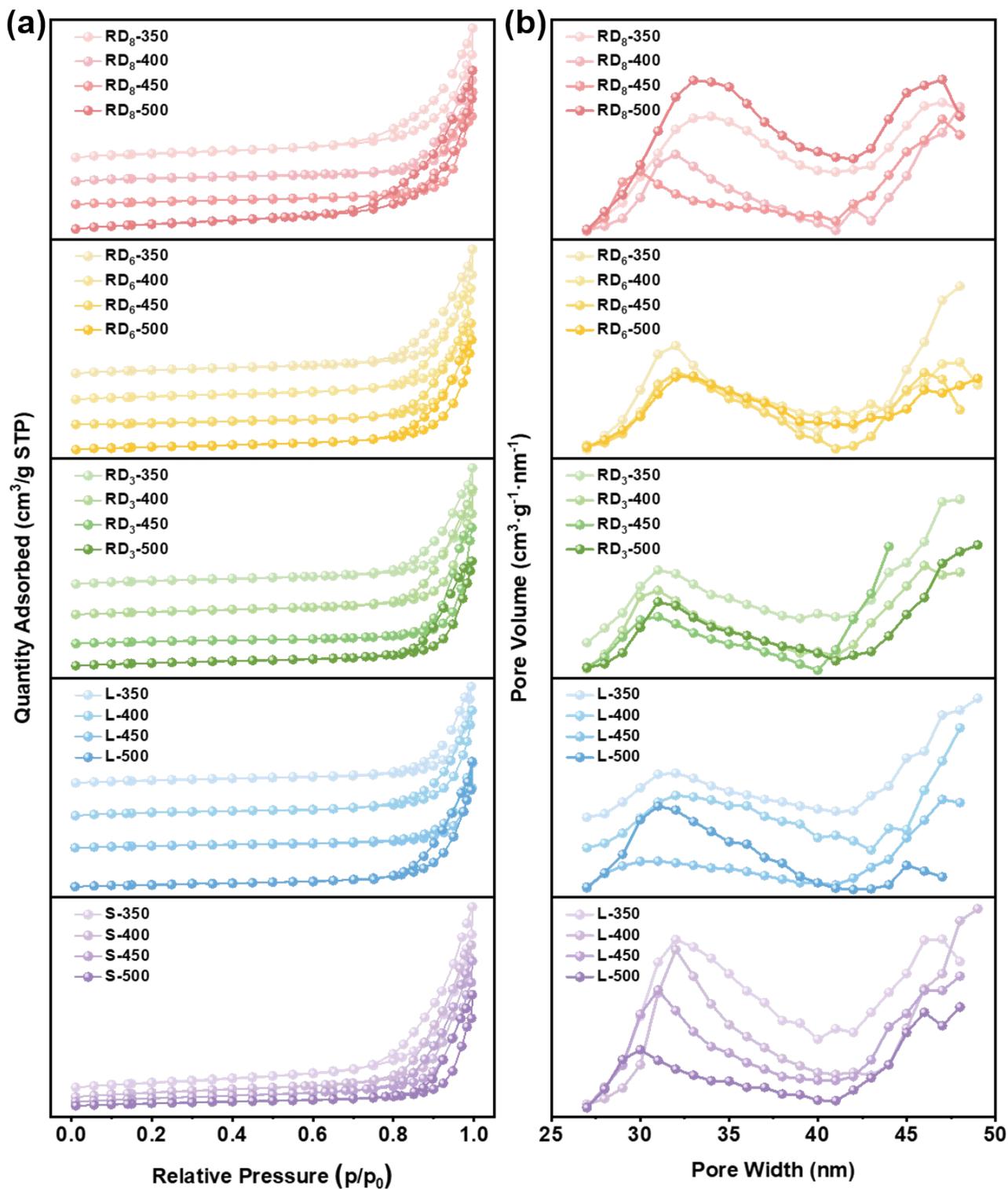


Figure S3. (a) N₂ adsorption-desorption isotherm and (b) pore size distributions of the catalysts of Co₃O₄-T.

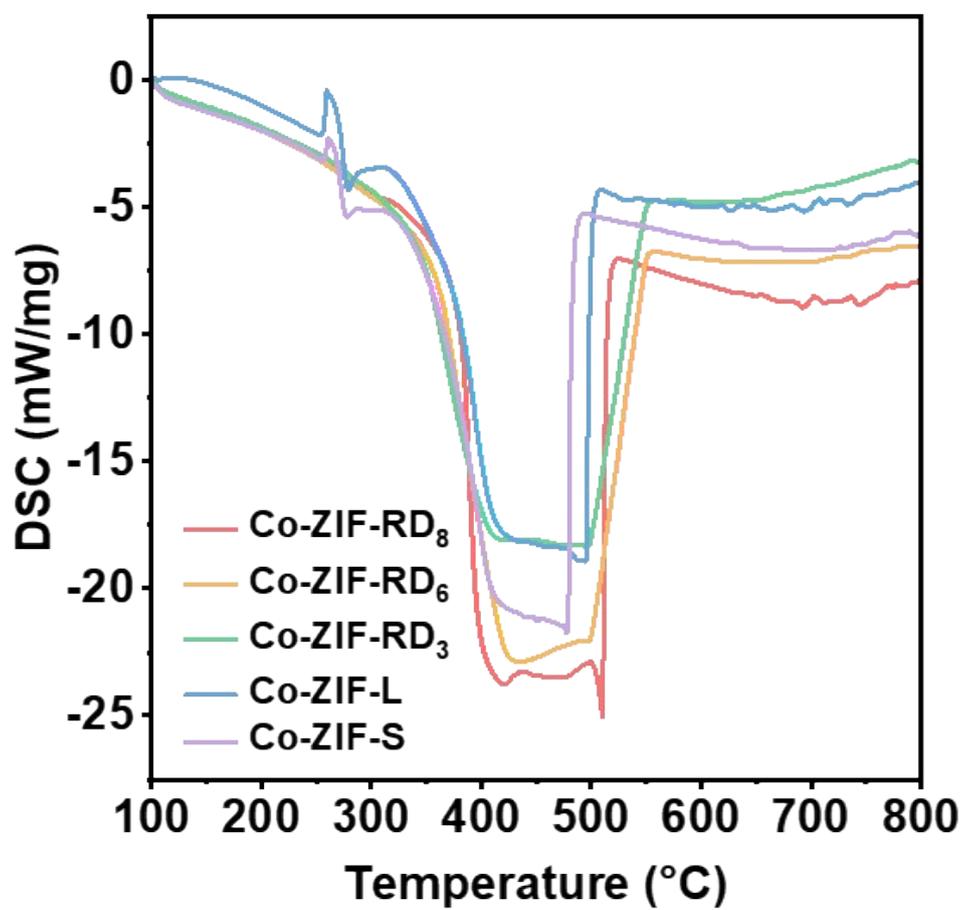


Figure S4. DSC curve of synthesized Co-ZIF samples.

Table S1. Textural properties of the Co₃O₄-T samples

Thermophysical properties	BET Surface Area (m ² ·g ⁻¹)	Pore volume (cm ³ ·g ⁻¹)	Average pore size (nm)
RD ₈ -350	44.10	0.14	17.3
RD ₈ -400	36.53	0.11	23.2
RD ₈ -450	34.53	0.12	26.1
RD ₈ -500	50.38	0.18	17.4
RD ₆ -350	40.94	0.14	21.5
RD ₆ -400	37.07	0.12	18.8
RD ₆ -450	33.28	0.11	21.2
RD ₆ -500	35.85	0.12	26.4
RD ₃ -350	38.96	0.13	23.0
RD ₃ -400	37.25	0.14	24.1
RD ₃ -450	34.81	0.13	29.7
RD ₃ -500	37.29	0.12	22.0
L-350	34.80	0.11	23.9
L-400	32.98	0.11	21.7
L-450	30.42	0.09	28.2
L-500	31.60	0.14	22.0
S-350	50.91	0.20	16.7
S-400	49.16	0.17	19.7
S-450	42.67	0.16	22.0
S-500	34.30	0.12	26.4