

## Supporting information

### ***In operando* Analysis of the Charge Storage Mechanism in Conversion ZnCo<sub>2</sub>O<sub>4</sub> Anode and the Application in Flexible Li-ion Batteries**

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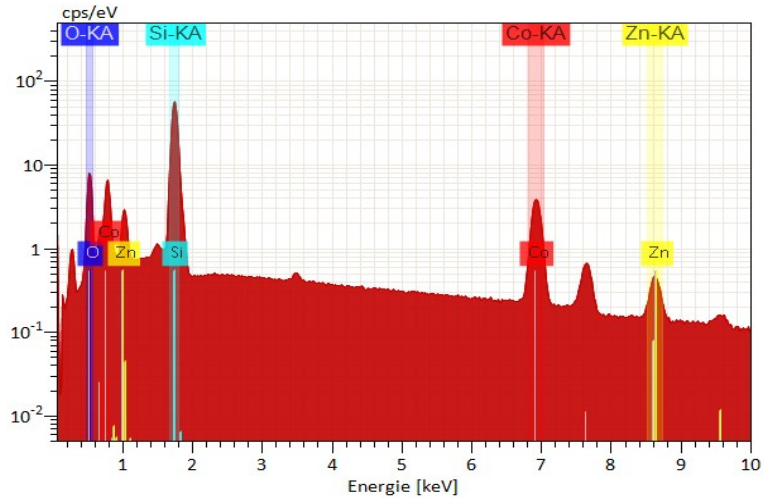


Fig. S1 EDS spectrum of the ZCO (Si corresponds to the sample holder).

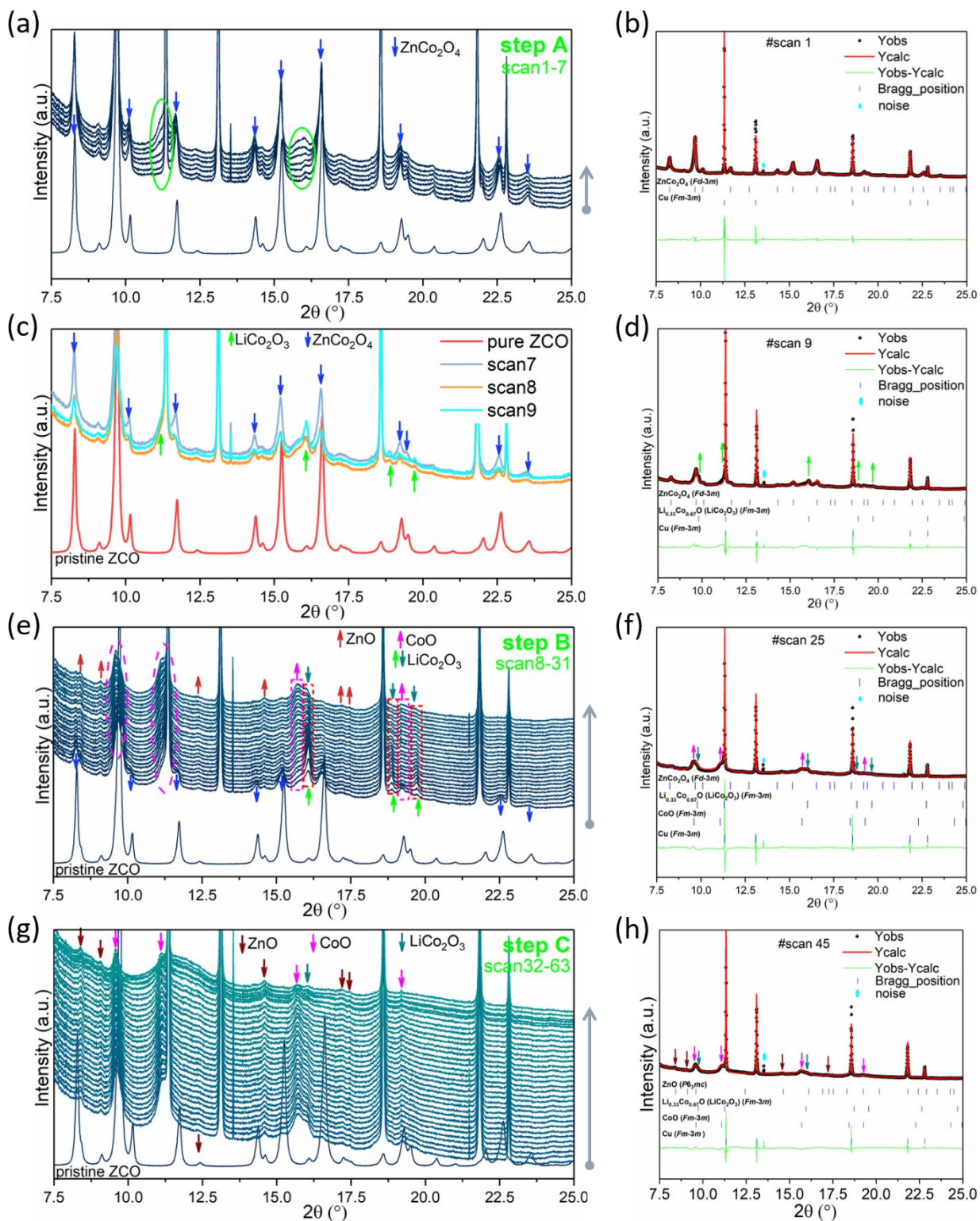


Fig. S2 Evolution of the operando SRD patterns of the ZCO electrode: step A (a, b), step A+B (c, d), step B (e, f) and step C (g, h).

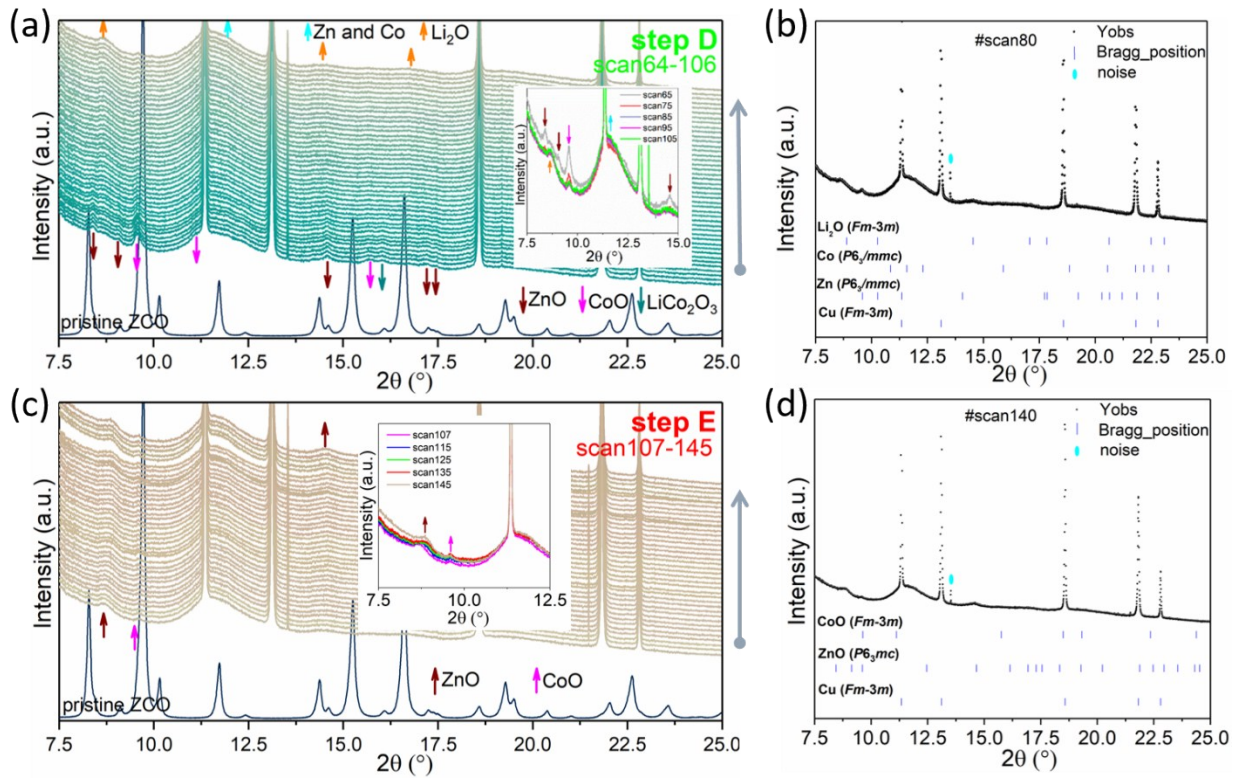


Fig. S3 Evolution of the operando SRD patterns: step D (a, b) and step E (c, d).

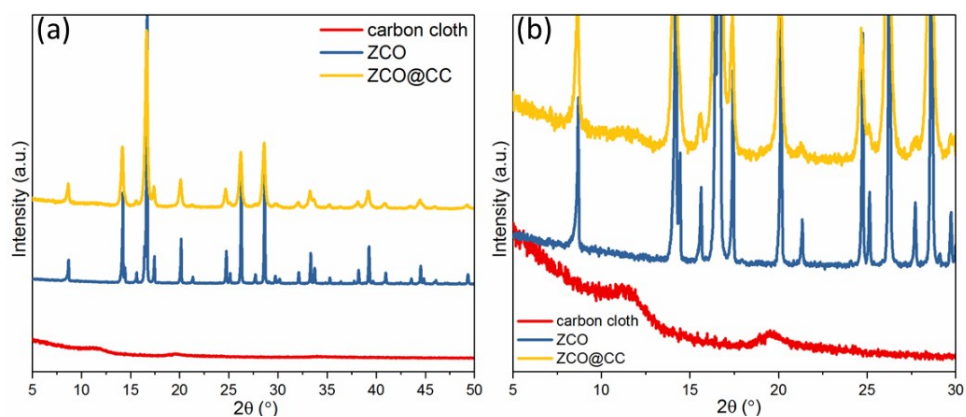


Fig. S4 XRD patterns (Mo  $K_{\alpha 1}$ ) of the CC, ZCO and ZCO/CC.

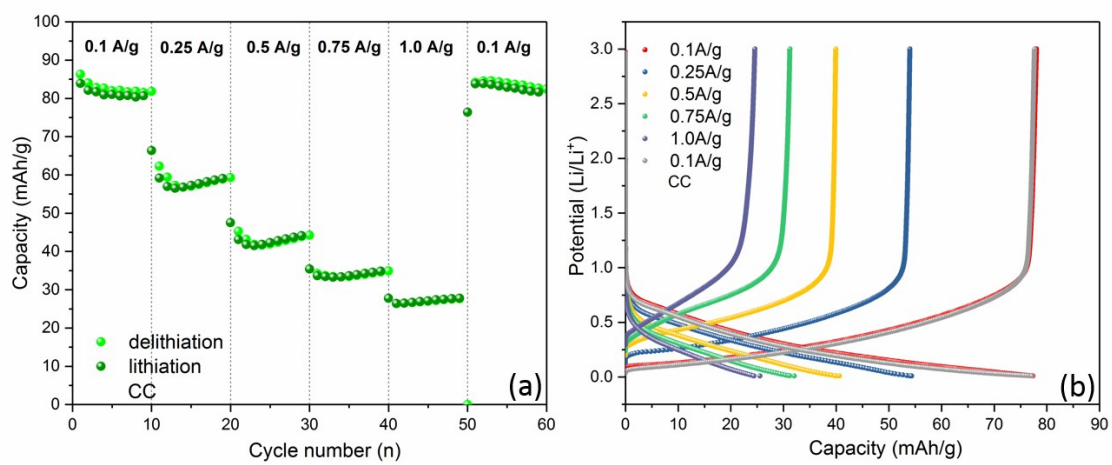


Fig. S5 Electrochemical performance of the CC: (a) GC specific capacity and (b) potential profiles at different current densities.

Table S1 Peak currents of the CVs of the ZCO and the ZCO@CC at different scan rates, and corresponding Li<sup>+</sup> diffusion parameter ( $AD_{Li}^{1/2}$ )

scan rate (V/s) <sup>1/2</sup>	ZCO anodic (A)	ZCO cathodic (A)	ZCO@CC anodic (A)	ZCO@CC cathodic (A)
0.01	0.000287	-0.00059	0.000479	-0.00078
0.015811	0.000788	-0.00175	0.001101	-0.00178
0.022361	0.001258	-0.00252	0.002288	-0.00368
0.027386	0.002274	-0.00419	0.002649	-0.00433
0.031623	0.003675	-0.00567	0.004627	-0.00698
fitted slope	0.14686	-0.22622	0.17636	-0.26879
$AD_{Li}^{1/2}$ (cm <sup>3</sup> /s <sup>1/2</sup> )	$2.48 \times 10^{-7}$	$3.81 \times 10^{-7}$	$2.97 \times 10^{-7}$	$4.53 \times 10^{-7}$

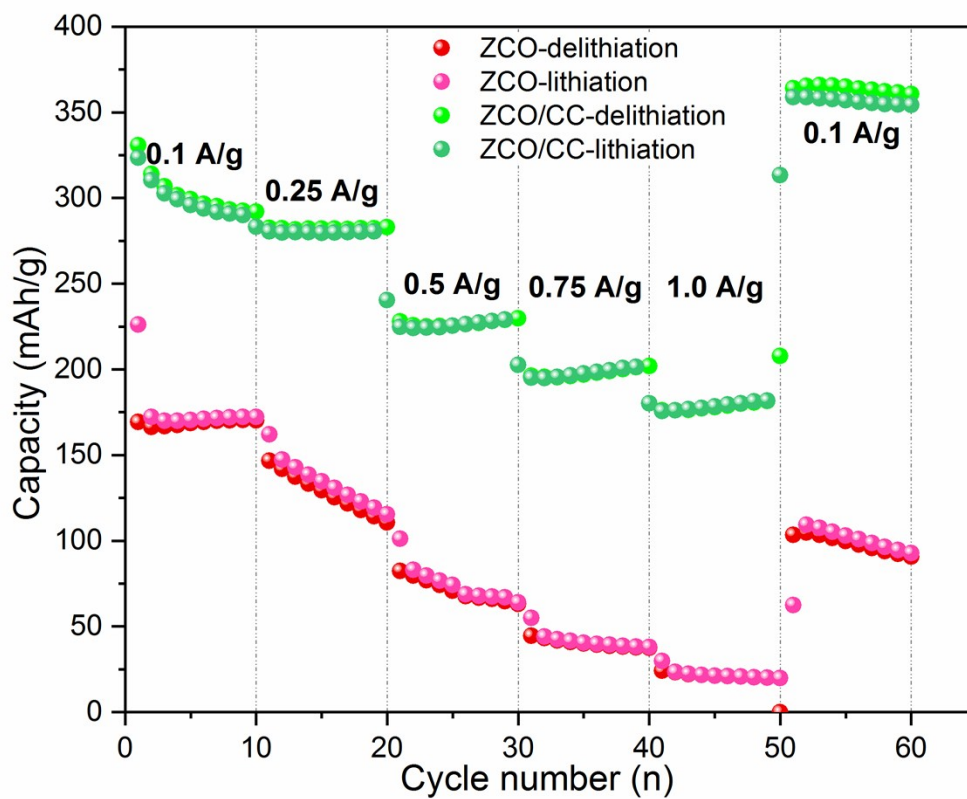


Fig. S6 Rate capability of the ZCO and the ZCO/CC based on the apparent specific capacity calculated from the whole electrode (including all electrode parts).