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One-step synthesis of Co-doped Zn_2SnO_4-graphene-carbon nanocomposites with improved lithium storage performances

Hui-Yuan Wang, Bang-Yong Wang, Jin-Kui Meng, Jin-Guo Wang and Qi-Chuan Jiang*

Key Laboratory of Automobile Materials of Ministry of Education & School of Materials Science and Engineering, Nanling Campus, Jilin University, No. 5988 Renmin Street, Changchun 130025, PR China

* Corresponding authors: Tel/Fax: +86 431 8509 4699

E-mail: wanghuiyuan@jlu.edu.cn; jgwang@jlu.edu.cn

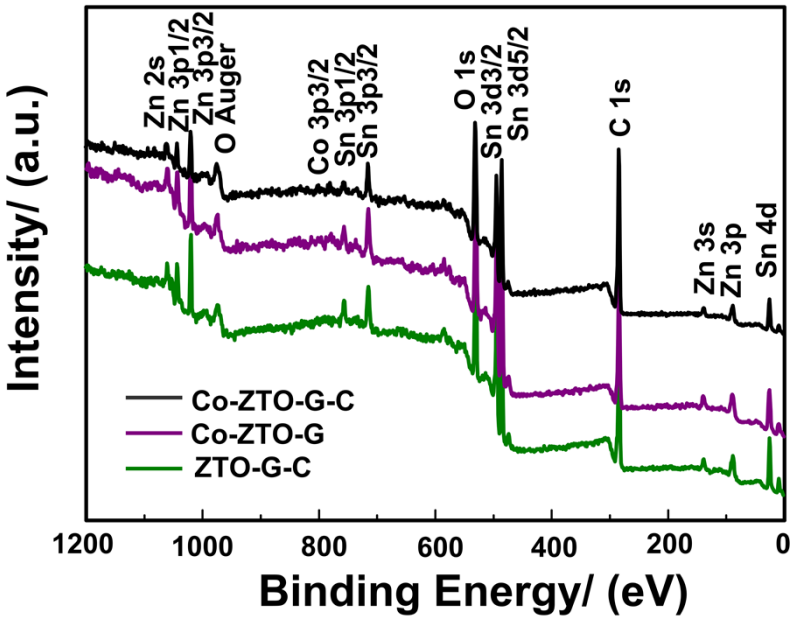

Figure S1. Survey XPS spectra of Co-ZTO-G-C, Co-ZTO-G and ZTO-G-C nanocomposites.

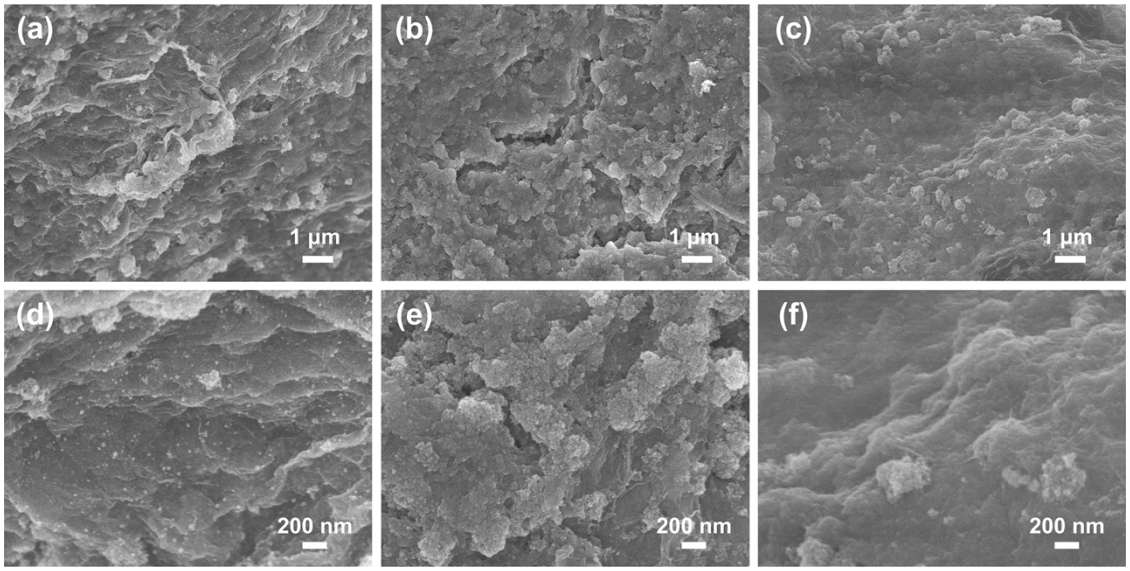

Figure S2. FESEM images of (a) and (d) Co-ZTO-G-C, (b) and (e) Co-ZTO-G and (c) and (f) ZTO-G-C nanocomposites.

Table S1 Atomic and weight ratios of Zn, Sn and Co elements of Co-ZTO-G-C nanocomposites.

Element	Weight %	Atomic %
Zn (K)	41	53
Sn (K)	52	37
Co (K)	7	10

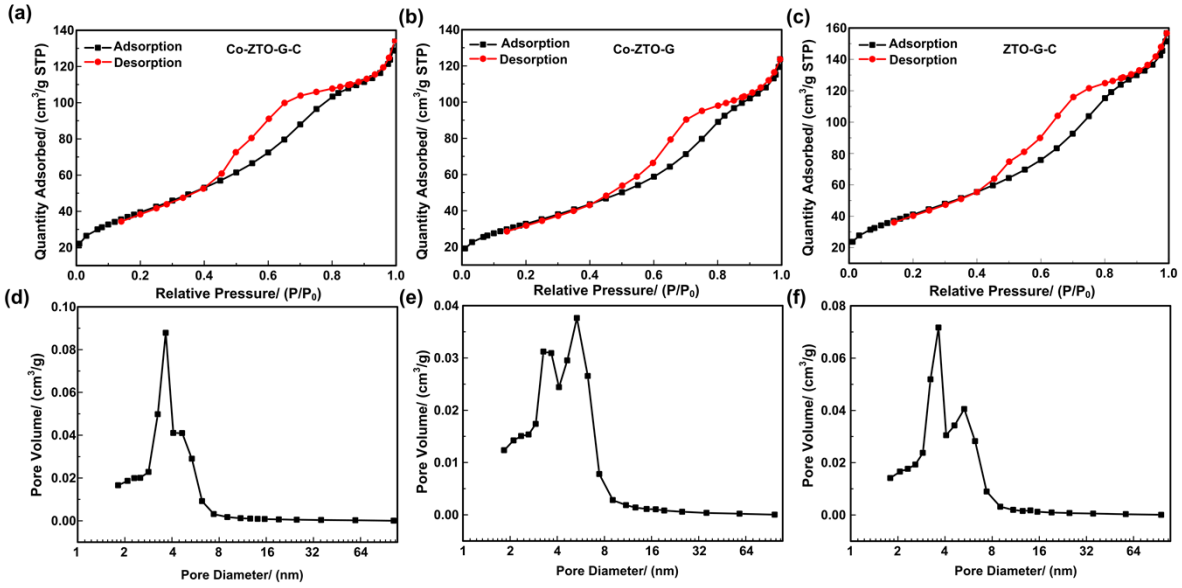

Figure S3. N_2 adsorption-desorption isotherm loop and pore-size distribution plots of (a) and (d) Co-ZTO-G-C, (b) and (e) Co-ZTO-G and (c) and (f) ZTO-G-C nanocomposites.

Table S2 The N_2 adsorption-desorption test results of three nanocomposites.

Composites	Specific surface area (m^2/g)	Pore volume (cm^3/g)	Pore size (nm)
Co-ZTO-G-C	144.5	0.188	5.20
Co-ZTO-G	118.9	0.175	5.88
ZTO-G-C	150.9	0.220	5.84

Table S3 Kinetic parameters of Co-ZTO-G-C, Co-ZTO-G and ZTO-G-C electrodes.

Sample	R_e (Ω)	R_{ct} (Ω)	i^0 (mA cm^{-2})
Co-ZTO-G-C	4.9	47.4	3.76×10^{-5}
Co-ZTO-G	6.7	112.9	1.58×10^{-5}
ZTO-G-C	5.4	72.4	2.46×10^{-5}

Note: The exchange current density i^0 is calculated according to the equation of $i^0 = RT/ nFR_{ct}$, where R is the gas constant (8.314 J mol^{-1} K^{-1}), T is the absolute temperature (298.15 K), n is the number of transferred electrons, F is the Faraday constant (96500 C mol^{-1}).