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Supplementary Materials

Vanadium Oxide-Poly(3,4-ethylenedioxythiophene) Nanocomposite as High-Performance Cathode for Aqueous Zn-Ion Batteries: The Structural and Electrochemical Characterization

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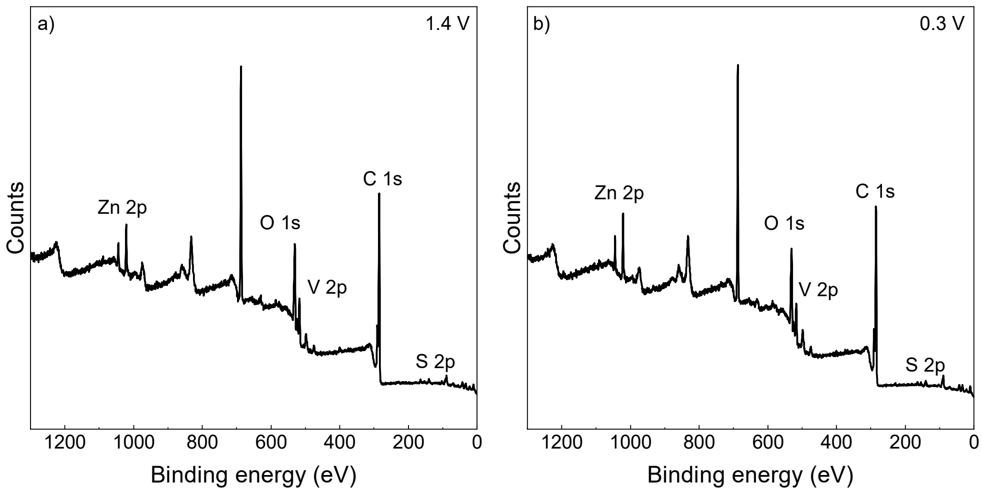

Figure S1. Ex situ XPS survey spectra of VO@PEDOT electrode materials: (**a**) in the charged state; (**b**) in the discharged state.

Table S1. The comparison of the VO@PEDOT cathode with other V_2O_5-based cathodes for Zn-ion batteries.

Material	Electrolyte	Specific capacity, mA·h·g^{-1} (current density)	Ref.
VO@PEDOT nanosheets	3 M $ZnSO_4$	390 (0.3 A·g^{-1}) 357 (1 A·g^{-1}) 274 (5 A·g^{-1}) 192 (10 A·g^{-1})	This work
Al-$V_{10}O_{24}$ nanobelts	3 M $Zn(CF_3SO_3)_2$	370 (0.5 A·g^{-1}) 327 (1 A·g^{-1}) 232 (5 A·g^{-1})	[1]
$V_{10}O_{24}$/C nanosheets	3 M $Zn(CF_3SO_3)_2$	290.5 (0.5 A·g^{-1}) 241 (1 A·g^{-1}) 148.6 (5 A·g^{-1}) 116.7 (10 A·g^{-1})	[2]
$V_{10}O_{24}\cdot12H_2O$ nanobelts	3 M $Zn(CF_3SO_3)_2$	134 (0.5 A·g^{-1}) 119 (1 A·g^{-1}) 90 (5 A·g^{-1}) 80 (10 A·g^{-1})	[3]
$V_{10}O_{24}\cdot12H_2O$ layered	2 M $ZnSO_4$	243 (0.5 A·g^{-1}) 200 (1 A·g^{-1}) 152 (2 A·g^{-1})	[4]
V_2O_5/PANI nanocomposite	3 M $Zn(CF_3SO_3)_2$	312 (0.5 A·g^{-1}) 283 (1 A·g^{-1}) 201 (6 A·g^{-1})	[5]
V_2O_5/PANI crisscrossed leaf-like	3 M $Zn(CF_3SO_3)_2$	278 (0.5 A·g^{-1}) 264 (1 A·g^{-1}) 202 (5 A·g^{-1}) 156 (10 A·g^{-1})	[6]
V_2O_5/THF nanobelts	3 M $Zn(CF_3SO_3)_2$	333 (0.5 A·g^{-1}) 307 (1 A·g^{-1}) 121 (5 A·g^{-1})	[6]
PANI-V_2O_5 nanosheets (100 °C)	3 M $Zn(CF_3SO_3)_2$	360 (0.5 A·g^{-1}) 342 (1 A·g^{-1}) 272 (5 A·g^{-1}) 216 (10 A·g^{-1})	[7]
PANI-V_2O_5 nanosheets (120 °C)	3 M $Zn(CF_3SO_3)_2$	297 (0.5 A·g^{-1}) 276 (1 A·g^{-1}) 199 (5 A·g^{-1}) 133 (10 A·g^{-1})	[7]
$(PANI)_x$ V_2O_5 nanosheets	3 M $Zn(CF_3SO_3)_2$	295 (0.5 A·g^{-1}) 250(1 A·g^{-1}) 190 (5 A·g^{-1})	[8]
PANI/V_2O_5	2 M $Zn(CF_3SO_3)_2$	~340 (0.5 A·g^{-1})	[9]

aggregated flakes		~330 (1 A·g^{-1}) ~290 (5 A·g^{-1}) 235 (20 A·g^{-1})	
PANI/V_2O_5 sponge-like particles	2 M $Zn(CF_3SO_3)_2$	380 (0.5 A·g^{-1}) 340 (1 A·g^{-1}) 247 (2 A·g^{-1})	[10]
PPy/VOH nanosheets	3 M $Zn(CF_3SO_3)_2$	327 (0.5 A·g^{-1}) 303 (1 A·g^{-1}) 281 (2 A·g^{-1})	[11]
V_2O_5@PPy	2 M $ZnSO_4$	186.4 (0.5 A·g^{-1}) 101.8 (1 A·g^{-1}) 65.3 (5 A·g^{-1})	[12]
V_2O_5@PEDOT monolithic grains	3 M $Zn(CF_3SO_3)_2$	360 (1 A·g^{-1}) 280 (5 A·g^{-1}) 197 (10 A·g^{-1})	[13]
PEDOT-VO 3D flowers	3 M $Zn(CF_3SO_3)_2$	~325 (0.5 A·g^{-1}) ~290 (5 A·g^{-1}) ~275 (10 A·g^{-1})	[14]
V_2O_5@PEDOT/CC core/shell nanosheet arrays	2.5 M $Zn(CF_3SO_3)_2$	282.2 (0.5 A·g^{-1}) 274.5 (1 A·g^{-1}) 254.1 (5 A·g^{-1}) 240.2 (10 A·g^{-1})	[15]
VO_2/PEDOT nanobelts	3 M $Zn(CF_3SO_3)_2$	448.5 (0.5 A·g^{-1}) 430.4 (1 A·g^{-1}) 347.2 (5 A·g^{-1}) 231.2 (10 A·g^{-1})	[16]
V_2O_5 nanopaper	2 M $ZnSO_4$	375 (0.5 A·g^{-1}) 355 (1 A·g^{-1}) 290 (6 A·g^{-1}) 219 (10 A·g^{-1})	[17]

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