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MDPI

Supplementary Materials

A Ru-Doped $VTi_{2.6}O_{7.2}$ Anode with High Conductivity for Enhanced Sodium Storage

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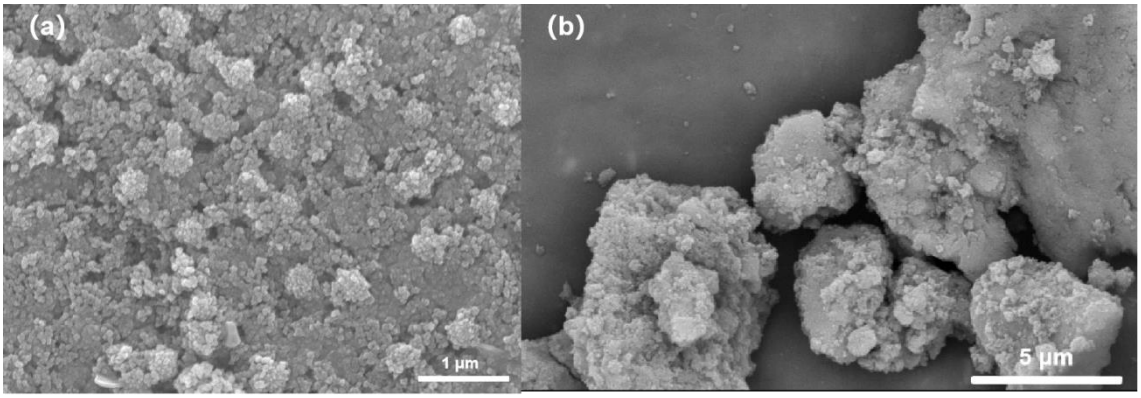

Figure S1. SEM images of (**a**) Ru-VTO and (**b**) VTO.

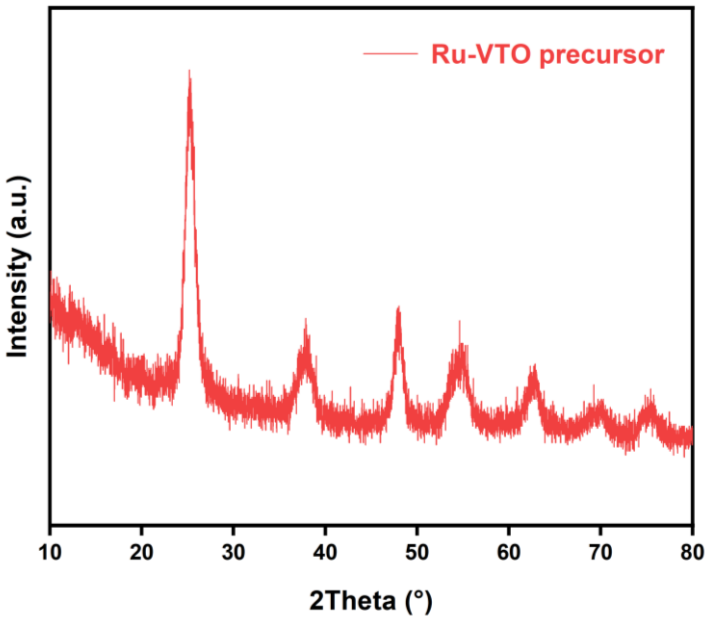

Figure S2. XRD pattern of Ru-VTO precursor.

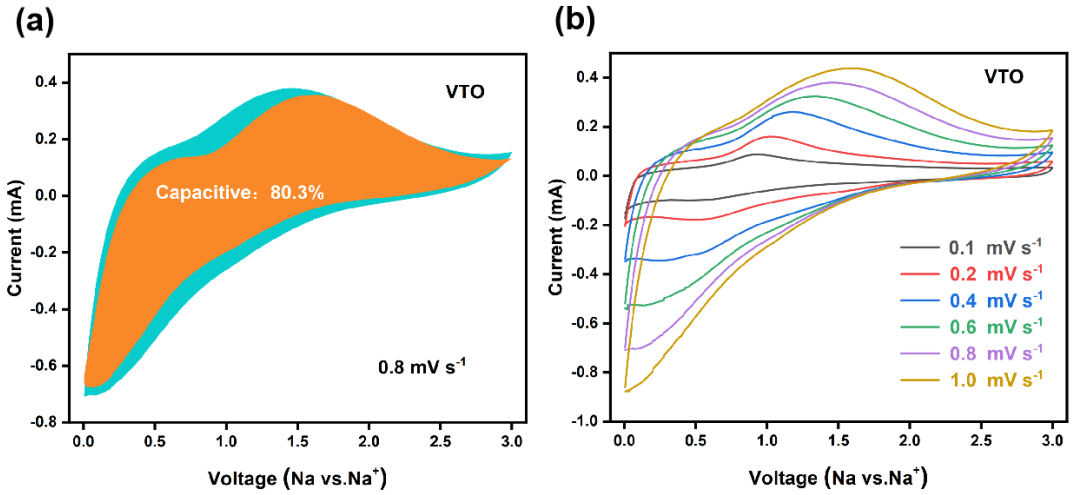

Figure S3. (**a**) The contribution ratio of the capacitive capacities at 0.8 mV s^{-1} for VTO. (**b**) CV curves of VTO at scan rates range from 0.1 to 1.0 mV s^{-1}.

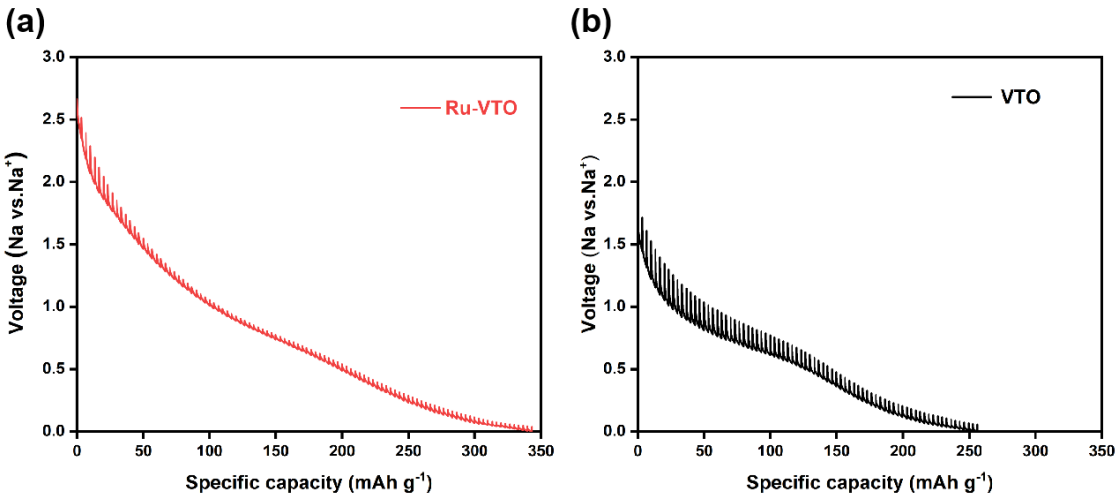

Figure S4. Potential response during GITT measurements at 20 mA g-1 for (**a**) Ru-VTO and (**b**) VTO.

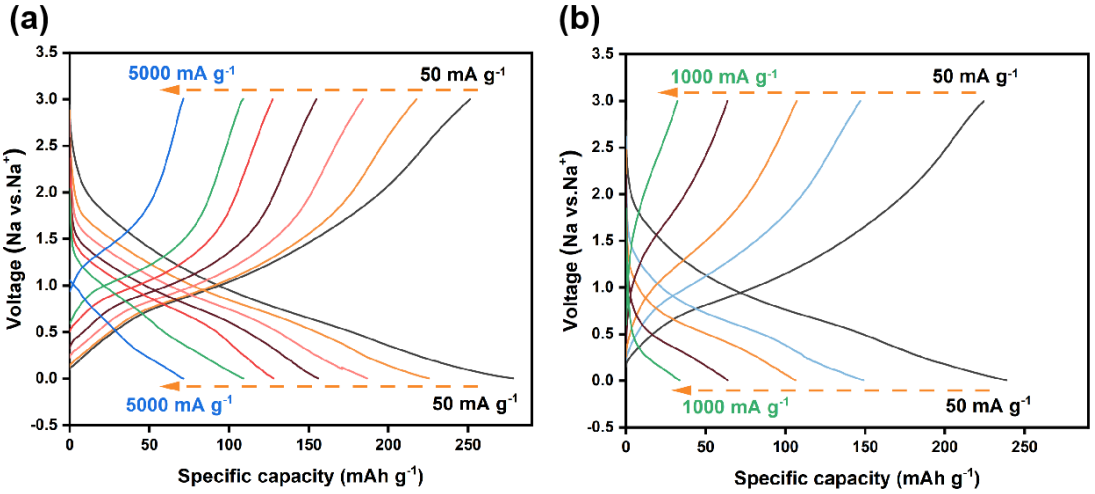

Figure S5. Galvanostatic charge and discharge voltage profiles of (**a**) Ru-VTO and (**b**) VTO under different current densities.

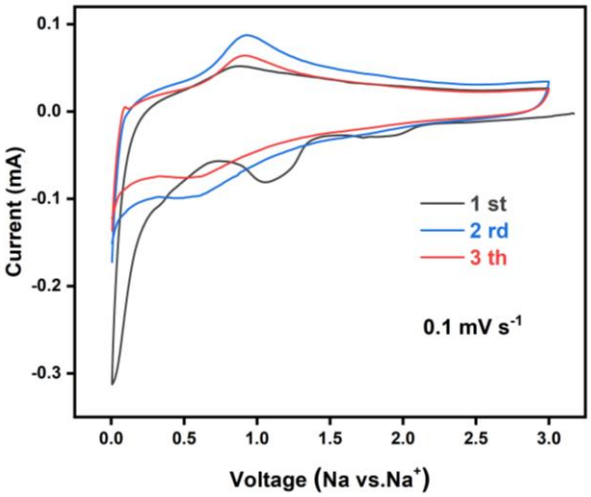

Figure S6. CV test result for the initial three cycles of Ru-VTO at 0.1 mV s^{-1}.

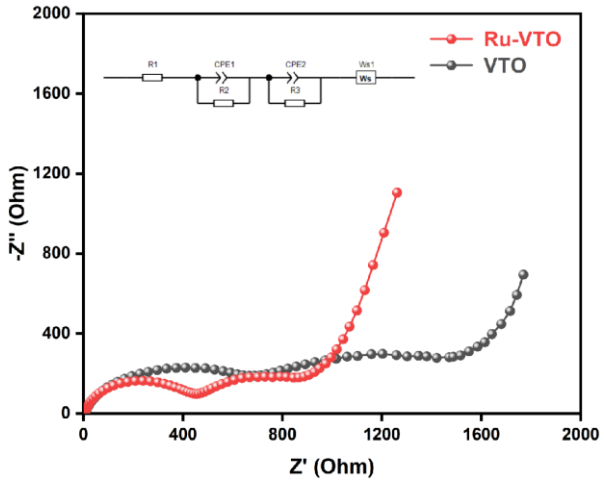

Figure S7. EIS curves of Ru-VTO and VTO.

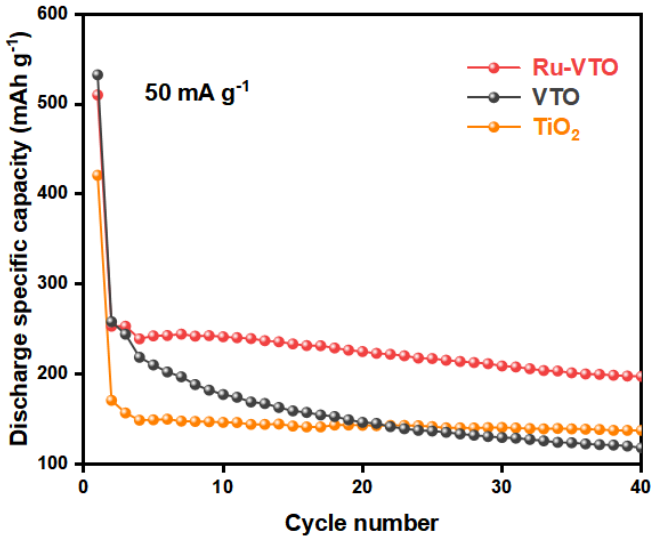

Figure S8. Cycling performance at 50 mA g^{-1} for TiO_2, VTO and Ru-VTO.

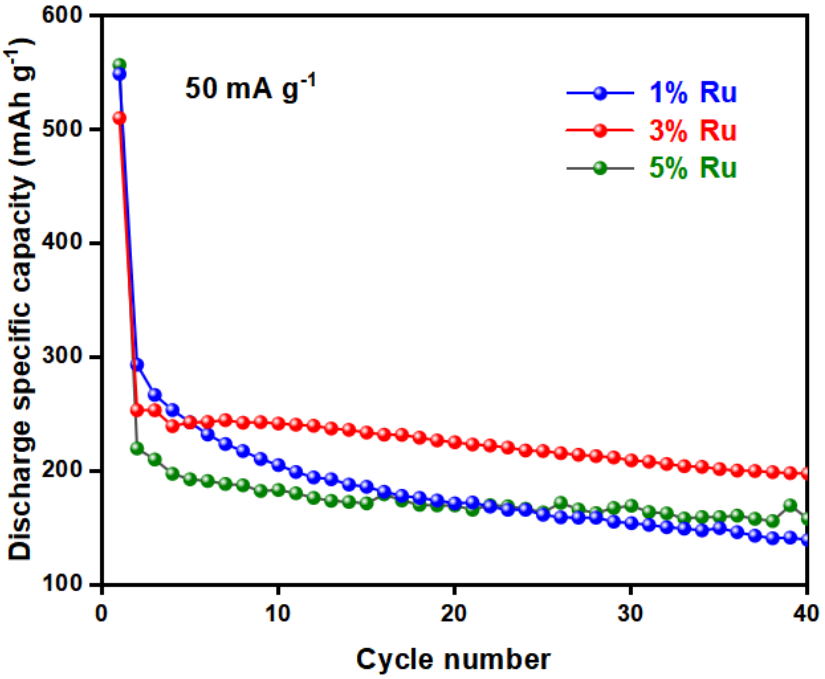

Figure S9. Cycling performance of Ru-doped samples with different concentrations at 50 mA g^{-1}.

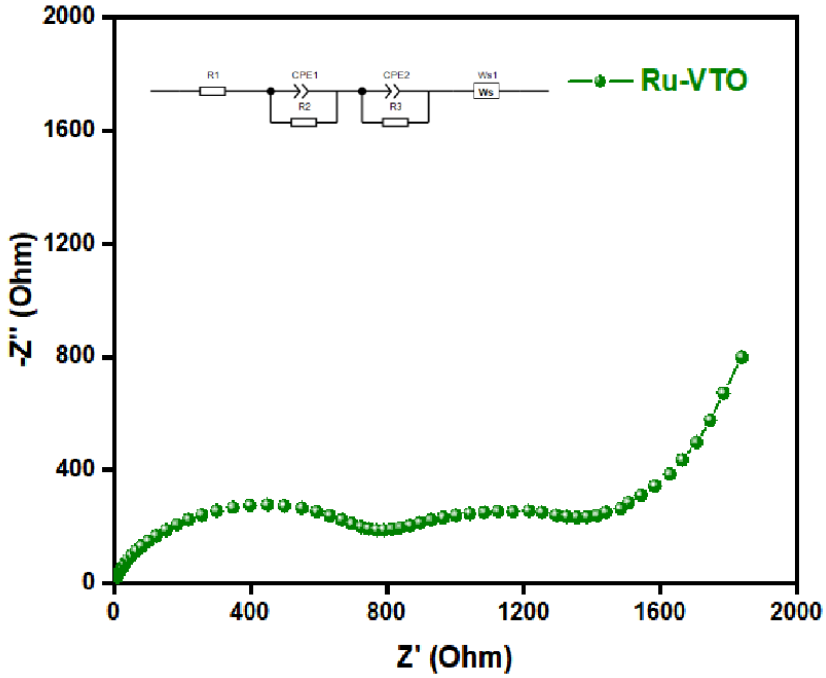

Figure S10. EIS of Ru-VTO after the galvanostatic tests.

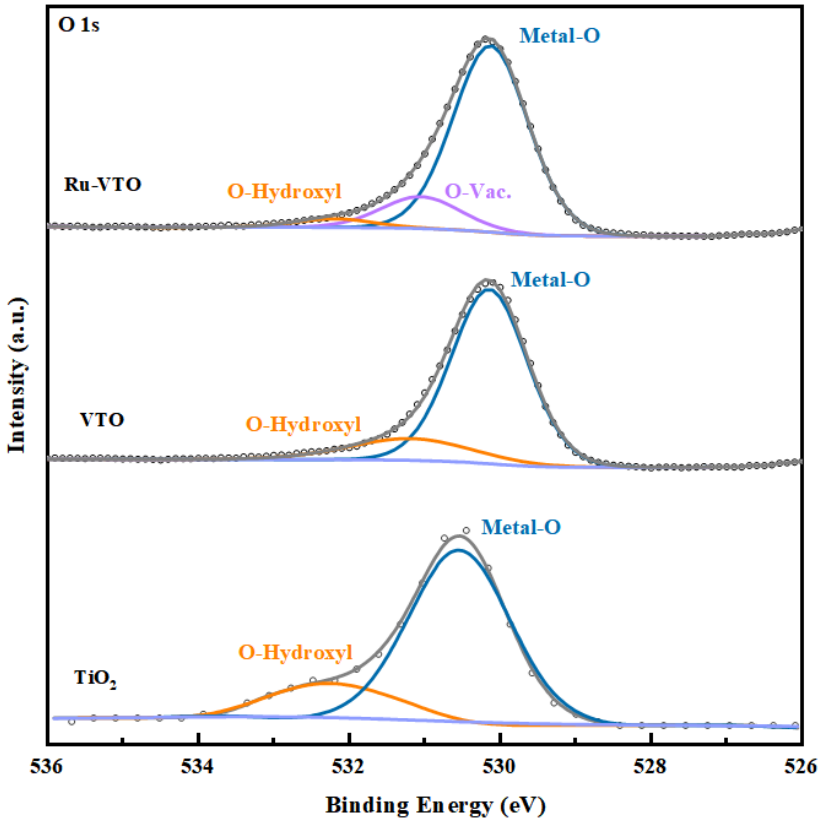

Figure S11. XPS spectra of O 1s for TiO_2、VTO and Ru-VTO.

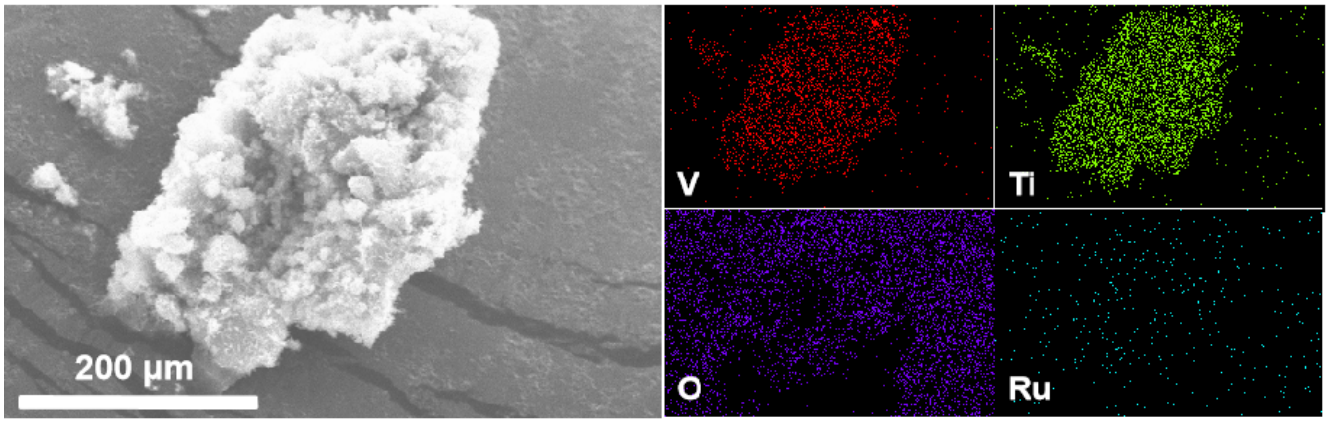

Figure S12. Element mapping of Ru-VTO.

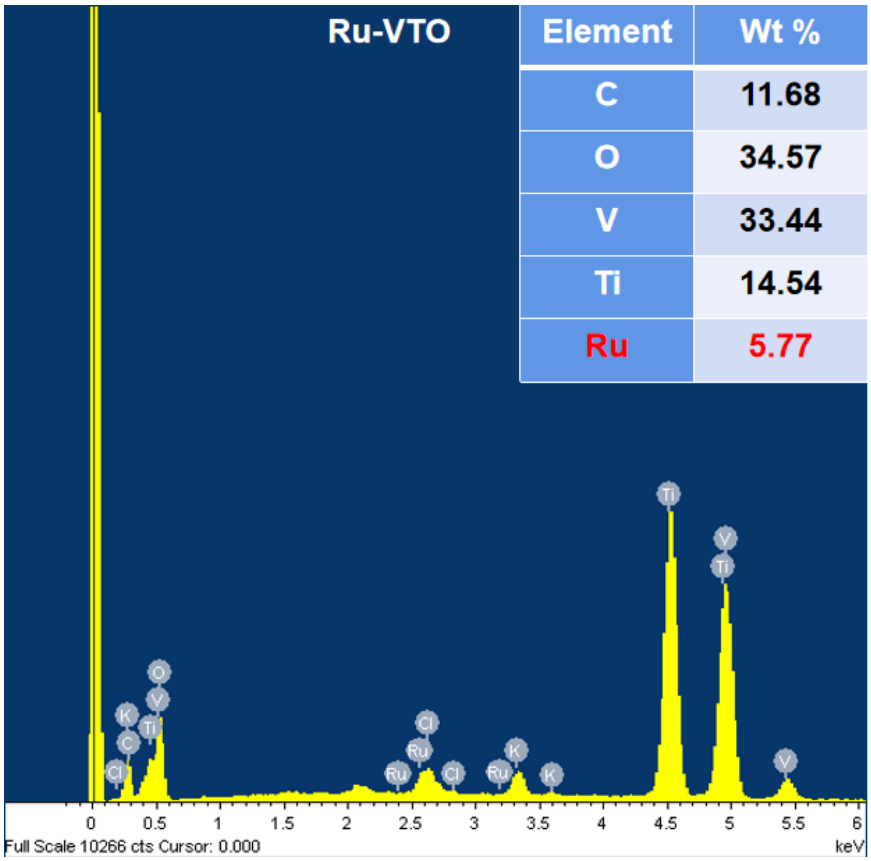

Figure S13. The quantitative EDS analysis for Ru-VTO.

The crystallite size of Ru-VTO sample can be calculated according to the following equation:

$$D = \frac{k\lambda}{\beta \cos\theta} \quad \text{(S1)}$$

D is the grain size, k, λ, β, and θ are Scherrer constant, X-ray wavelength, Diffraction peak half-height width, and Cape Prague respectively. The value of k is 0.89, and λ is 0.154056, while β and θ need to be obtained by XRD profile.

Table S1. Elemental content analysis of XPS for Ru-VTO.

Name	Pos.	Area	At. %
V 2p	517	8276.17	8.77
Ti 2p	468	19371.82	21.70
O 1s	531	23666.72	68.00
Ru 3d	281	2930.60	1.54