Electronic Supplementary Material (ESI) for Chemical Communications

Electronic Supplementary Information for:

Novel titanium-based O3-type $NaTi_{0.5}Ni_{0.5}O_2$ as a cathode material for sodium ion batteries

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Experimental details

We prepare this O3-NNT material by a simple solid-state method. Proportional amounts of $Ni(AC)_2 \cdot 4H_2O$, TiO_2 and Na_2CO_3 were mixed and ball milled for 24h for preparing O3-NNT. The mixture was dried at 100˚C for 12h, calcined at 900 ˚C for 15h, and then stored in an argon-filled glovebox until use. The samples were grinded with mortar and pestle in the glovebox to avoid damage by moisture. The crystal structures of the sample were characterized by XRD (Bruker D8 Advance diffractometer) equipped with a Cu Kα radiation.

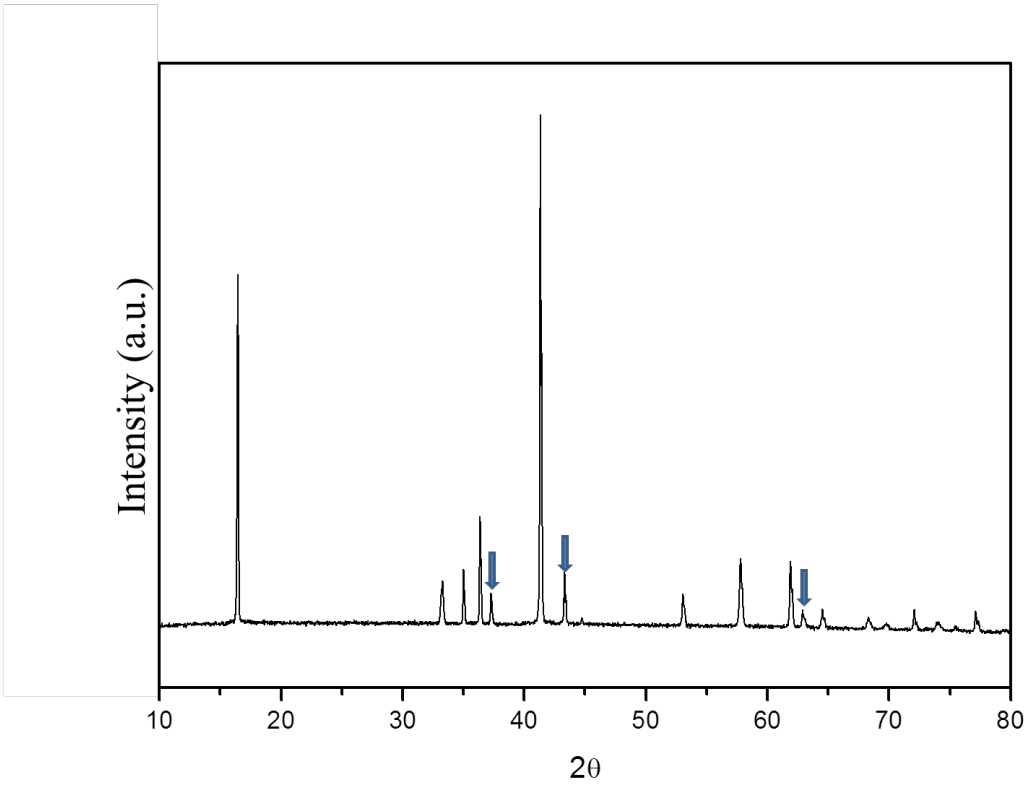

Fig. S1 Powder X-ray diffraction patterns of the $NaNi_{0.5}Ti_{0.5}O_2$ material associated with NiO impurity (indicated with the blue arrows).

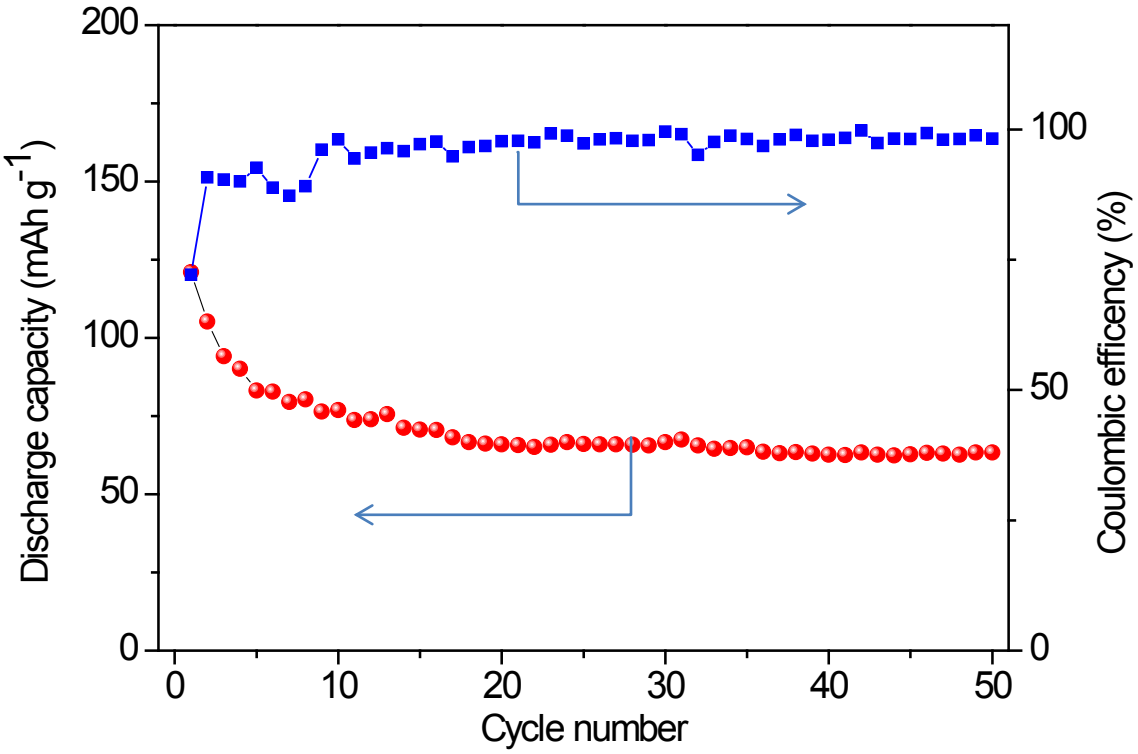

Fig. S2 Cycle performance and relative coulombic efficiency of the Na/O3-NNT cells at a rate of 0.2 C in the voltage ranges of 2.0-4.7 V.