

## CORRECTION

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[rsc.li/materials-a](https://rsc.li/materials-a)Correction: Hydrothermal synthesis of  $\alpha$ -MnO<sub>2</sub> and  $\beta$ -MnO<sub>2</sub> nanorods as high capacity cathode materials for sodium ion batteriesDawei Su,<sup>a</sup> Hyo-Jun Ahn<sup>b</sup> and Guoxiu Wang<sup>\*ab</sup>Correction for 'Hydrothermal synthesis of  $\alpha$ -MnO<sub>2</sub> and  $\beta$ -MnO<sub>2</sub> nanorods as high capacity cathode materials for sodium ion batteries' by Dawei Su, *et al.*, *J. Mater. Chem. A*, 2013, 1, 4845–4850, <https://doi.org/10.1039/C3TA00031A>.

The authors regret that the Introduction, page 4845, contained errors in terminology and references.

In column one, the word “diameter” should be corrected to “radius”. The corrected paragraph and references should read:

“However, the higher ionization potential<sup>3</sup> and larger ionic radius of Na (1.02 Å) *versus* Li (0.76 Å)<sup>5</sup> limit the structural variability and choice of Na insertion materials in crystalline materials. Therefore, finding and optimizing suitable electrode materials are crucial for the development of Na-ion batteries. So far, considerable progress has been achieved. Hard carbon materials with a large interlayer distance and disordered structure, which facilitate Na ion insertion and extraction, have been studied as anode materials.<sup>6–9</sup> Alternative oxide anodes such as Na<sub>2</sub>Ti<sub>3</sub>O<sub>7</sub> (ref. 10) and TiO<sub>2</sub>-nanotubes.<sup>5</sup>”

In column two, “Manganese dioxide has” should be corrected to “Manganese oxide minerals have”, and “all” should be corrected to “many”. The corrected paragraph and references should read:

“Morales *et al.* reported that layered P2-Na<sub>0.6</sub>MnO<sub>2</sub> can deliver a 150 mA h g<sup>−1</sup> capacity in the first cycle.<sup>20,24–26</sup> However, this material showed a poor capacity retention with more than 50% capacity loss after only 10 cycles. Manganese oxide minerals have many different types of polymorphs, and many of them have large open tunnels, which can accommodate guest cations.<sup>27</sup>”

The authors regret the following errors in the Results and discussion section.

On page 4847, left column, line 12, “It suggests that  $\beta$ -MnO<sub>2</sub> can accommodate more Na ions” should be changed to “It suggests that  $\beta$ -MnO<sub>2</sub> could accommodate more Na ions”.

The sentence “The radius of Na ion (1.02 Å) is much smaller than the size of the (1 × 1) tunnel (2.3 Å × 2.3 Å).<sup>30,31</sup> Therefore, Na ions can facily insert and extract along the (1 × 1) tunnels in  $\beta$ -MnO<sub>2</sub> nanorods.” and ref. 31 should be removed. The main experimental findings of the original paper are unchanged.

The following paragraph should be added to the end of Results and discussion section on page 4849.

Furthermore, after applying the density functional theory (DFT) calculations (Fig. S9–S11 and Table S1 ESI<sup>†</sup>), it was found that the Na<sup>+</sup> ions are absorbed on the bottleneck (window) of the [1 × 1] tunnel of  $\beta$ -MnO<sub>2</sub> {001} facets and two-fold coordinated with the 4f Wyckoff position oxygen of the  $\beta$ -MnO<sub>2</sub> {110} facets with moderate binding energies, and large charge transfer between the Na<sup>+</sup> ions and oxygen ligands from  $\beta$ -MnO<sub>2</sub> facets. These also could be the reasons for the better electrochemical performances of the as-prepared  $\beta$ -MnO<sub>2</sub> nanorods.

The density functional theory calculation results and discussion were added to the ESI.<sup>†</sup>

The Royal Society of Chemistry apologises for these errors and any consequent inconvenience to authors and readers.

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