Journal of Materials Chemistry A

ROYAL SOCIETY OF CHEMISTRY

CORRECTION

View Article Online
View Journal | View Issue

Cite this: J. Mater. Chem. A, 2023, 11, 25072

Correction: Hydrothermal synthesis of α-MnO_2 and β-MnO_2 nanorods as high capacity cathode materials for sodium ion batteries

Dawei Su,[a] Hyo-Jun Ahn[b] and Guoxiu Wang*[ab]

DOI: 10.1039/d3ta90111d

rsc.li/materials-a

Correction for 'Hydrothermal synthesis of α-MnO_2 and β-MnO_2 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[3] and larger ionic radius of Na ((1.02 Å) *versus* Li (0.76 Å))[5] 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.[6–9] Alternative oxide anodes such as $Na_2Ti_3O_7$ (ref. 10) and TiO_2-nanotubes.[5]"

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-$Na_{0.6}MnO_2$ can deliver a 150 mA h g^{-1} capacity in the first cycle.[20,24–26] 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.[27]"

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

On page 4847, left column, line 12, "It suggests that β-MnO_2 can accommodate more Na ions" should be changed to "It suggests that β-MnO_2 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).[30,31] Therefore, Na ions can facilely insert and extract along the (1 × 1) tunnels in β-MnO_2 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†), it was found that the Na^+ ions are absorbed on the bottleneck (window) of the [1 × 1] tunnel of β-MnO_2 {001} facets and two-fold coordinated with the 4f Wyckoff position oxygen of the β-MnO_2 {110} facets with moderate binding energies, and large charge transfer between the Na^+ ions and oxygen ligands from β-MnO_2 facets. These also could be the reasons for the better electrochemical performances of the as-prepared β-MnO_2 nanorods.

The density functional theory calculation results and discussion were added to the ESI.†

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

[a]*Clean Energy Technology, School of Chemistry and Forensic Science, University of Technology, Sydney, NSW 2007, Australia. E-mail: Guoxiu.Wang@uts.edu.au; Fax: +61 2 95141460; Tel: +61 2 95141741*

[b]*School of Materials Science and Engineering, Gyeongsang National University, 900 Gazwa-dong, Jinju, Gyeongnam 660-701, Republic of Korea*