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Correction: Local structure of a highly concentrated NaClO₄ aqueous solution-type electrolyte for sodium ion batteries

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Correction for 'Local structure of a highly concentrated NaClO₄ aqueous solution-type electrolyte for sodium ion batteries' by Ryo Sakamoto *et al.*, *Phys. Chem. Chem. Phys.*, 2020, **22**, 26452–26458, DOI: 10.1039/D0CP04376A.

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The authors apologise that the Walden plot of NaClO₄ aq. solution shown in Fig. 1 and the viscosity and electrical conductivity plot shown in Fig. S1 were incorrect because the concentration used in the calculation was incorrect. The figures are corrected as follows:

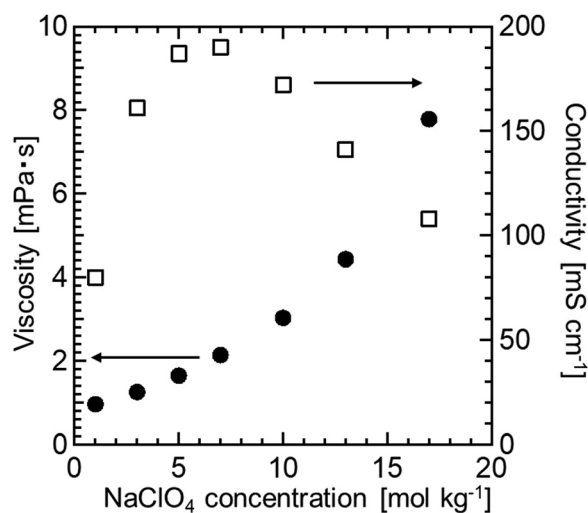


Fig. S1 Viscosity and electrical conductivity of the NaClO₄ aq. electrolytes at various concentrations.

The corrections shown here do not affect the conclusions in the paper. But, the discussion about Fig. 1 and Fig. S1 on page 26454 should read as follows:

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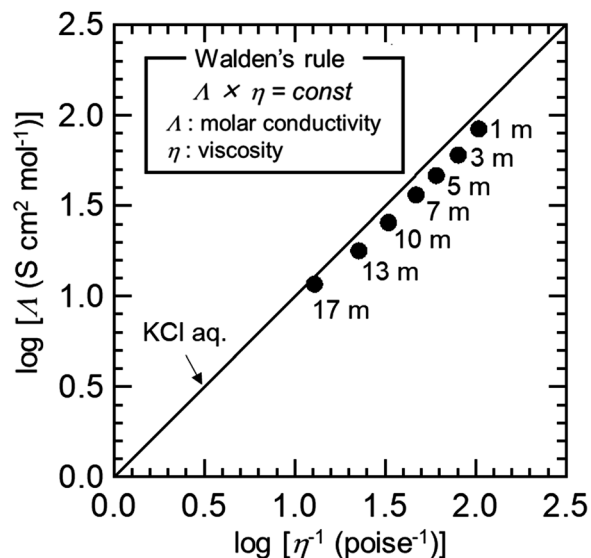


Fig. 1 Walden plot of NaClO₄ aq. electrolyte.

Fig. S1 (ESI[†]) summarizes the viscosity and the ionic conductivity at each NaClO₄ concentration. The viscosity was higher with increasing NaClO₄ salt concentration, but the ionic conductivity showed a maximum value at 7 m NaClO₄ aq. solution. The 17 m NaClO₄ aq. solution had a viscosity of 7.8 mPa s and an ionic conductivity of 108 mS cm⁻¹. The viscosity of the NaClO₄ aq. electrolyte was comparable to that of the non-aqueous electrolyte (6.8 mPa s, 1 M NaClO₄ in PC), but the ionic conductivity was much higher than that of the non-aqueous electrolyte (6.5 mS cm⁻¹).¹ These results suggested that the ionic conductivity of the NaClO₄ aq. electrolyte was not impaired even at a high salt concentration. Fig. 1 shows the Walden plot of the NaClO₄ aq. solution, and that of KCl aq. solution as an ideal solution. Here, Walden's rule is " $\Lambda \times \eta = \text{const.}$ " (Λ : molar conductivity; η : viscosity). For 1 m NaClO₄ aq. solution, it was close to the straight line of the KCl aq. solution, and it was again close to the straight line of KCl aq. solution at 17 m NaClO₄ aq. solution. Although NaClO₄ was completely dissociated in 1 m NaClO₄ aq. solution, ion pairs between the Na⁺ ions and ClO₄⁻ ions were formed in concentrated NaClO₄ aq. solution, as shown by the Raman and EPSR results described later. Nevertheless, no significant decrease in ionic conductivity was observed in the concentrated region, suggesting the specific ion-transport mechanism, such as ion hopping mechanism, between vicinal Na⁺ ions in the orderly solution structure over a long range. Similar behavior was also reported in concentrated LiTFSA aq. solution² and LiFSA in dinitrile electrolytes.³

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

References

- 1 A. Ponrouch, E. Marchante, M. Courty, J. M. Tarascon and M. R. Palacín, *Energy Environ. Sci.*, 2012, 5, 8572.
- 2 T. Tsurumura, Y. Hashimoto, M. Morita, Y. Umebayashi and K. Fujii, *Anal. Sci.*, 2019, 35, 289–294.
- 3 Y. Ugata, M. L. Thomas, T. Mandai, K. Ueno, K. Dokko and M. Watanabe, *Phys. Chem. Chem. Phys.*, 2019, 21, 9759.

