



Cite this: *Phys. Chem. Chem. Phys.*, 2021, **23**, 10130

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

Ryo Sakamoto,^a Maho Yamashita,^b Kosuke Nakamoto,^c Yongquan Zhou,^d Nobuko Yoshimoto,^b Kenta Fujii,^b Toshio Yamaguchi,^e Ayuko Kitajou*^{bf} and Shigeto Okada*^{cf}

DOI: 10.1039/d1cp90077c

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.

rsc.li/pccp

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:

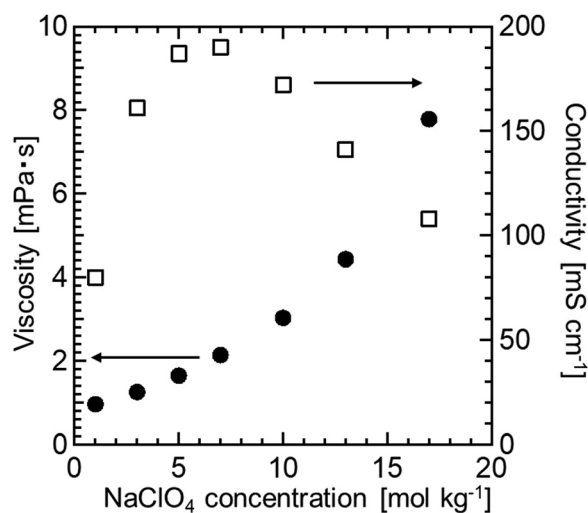


Fig. S1 Viscosity and electrical conductivity of the NaClO₄ aq. electrolytes at various concentrations.

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:

^a Interdisciplinary Graduate School of Engineering Sciences, Kyushu University, 6-1 Kasuga-koen, Kasuga 816-8580, Japan

^b Graduate School of Sciences and Technology for Innovation, Yamaguchi University, 2-16-1 Tokiwadai, Yamaguchi Ube, 755-8611, Japan.

E-mail: kitajou@yamaguchi-u.ac.jp

^c Institute for Materials Chemistry and Engineering, Kyushu University, 6-1 Kasuga-koen, Kasuga 816-8580, Japan. E-mail: s-okada@cm.kyushu-u.ac.jp

^d Key Laboratory of Comprehensive and Highly Efficient Utilization of Salt Lake Resources, Qinghai Institute of Salt Lakes, Chinese Academy of Sciences, Xining 810008, China

^e Department of Chemistry, Faculty of Science, Fukuoka University, 8-19-1 Nanakuma, Jonan, Fukuoka 814-0180, Japan

^f Elements Strategy Initiative for Catalysts and Batteries (ESICB), Kyoto University, Kyoto, 615-8245, Japan



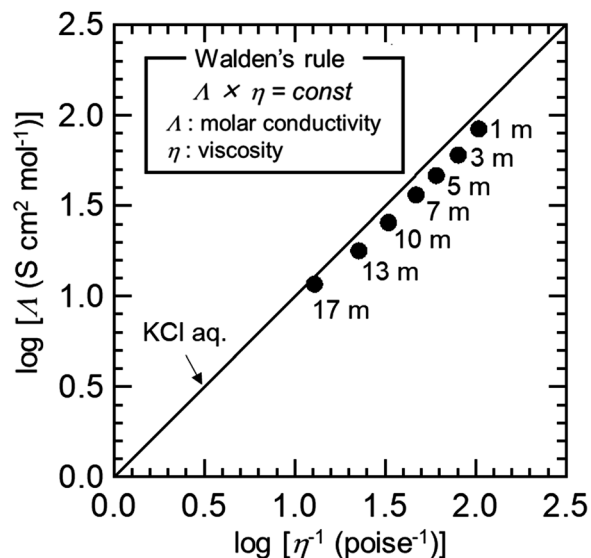


Fig. 1 Walden plot of NaClO_4 aq. electrolyte.

Fig. S1 (ESI[†]) summarizes the viscosity and the ionic conductivity at each NaClO_4 concentration. The viscosity was higher with increasing NaClO_4 salt concentration, but the ionic conductivity showed a maximum value at 7 m NaClO_4 aq. solution. The 17 m NaClO_4 aq. solution had a viscosity of 7.8 mPa s and an ionic conductivity of 108 mS cm^{-1} . The viscosity of the NaClO_4 aq. electrolyte was comparable to that of the non-aqueous electrolyte (6.8 mPa s, 1 M NaClO_4 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 NaClO_4 aq. electrolyte was not impaired even at a high salt concentration. Fig. 1 shows the Walden plot of the NaClO_4 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 NaClO_4 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 NaClO_4 aq. solution. Although NaClO_4 was completely dissociated in 1 m NaClO_4 aq. solution, ion pairs between the Na^+ ions and ClO_4^- ions were formed in concentrated NaClO_4 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.

