

Supporting information

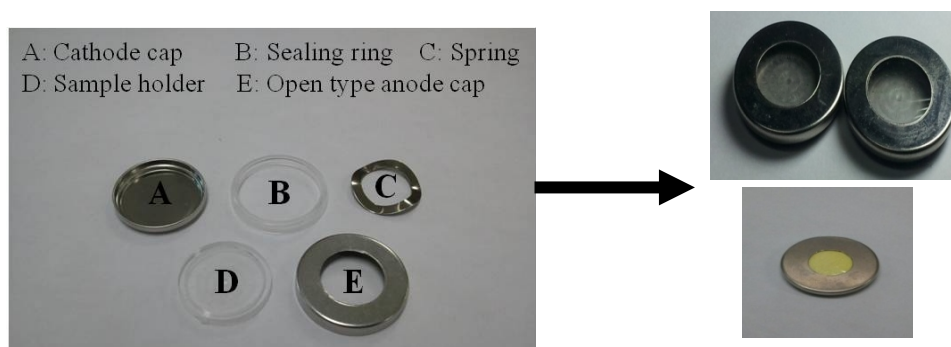


Figure S1: Components used for analyzing X-ray diffraction of thio-LICISON samples. The open type anode cap was covered with X-ray film (Mylar, XF-125, USA) resulting in the reflections of the sample holder at 26° , 44° and 52° in the X-ray diffraction pattern.

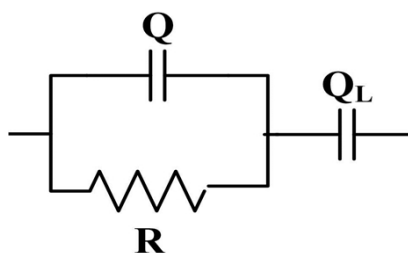


Figure S2: Equivalent circuit model for fitting the impedance plots obtained during ionic conductivity measurement. The R and Q represent the resistance and constant phase elements. The Q_L denotes the low frequency tail of the impedance plot.^{S1}

S1 H. Xie, J. B. Goodenough and Y. Lib, *J. Power Sources*, 2011, **196**, 7760-7762.