Correction to "Faster Time Response by the Use of Wire Electrodes in Capacitive Salinity Gradient Energy Systems"

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A numerical error was made in the calculations in the paper. The authors regret to have mistaken the ion−ion species diffusion coefficient, $D_{Na,Cl}$, for being the salt component diffusion coefficient of salt in water, $D_{NaCl,W}$.

The ion−ion species diffusion coefficient, $D_{Na,Cl}$, gives the binary Fick's first law diffusion coefficient for the sodium species in relation to the chloride species.[40] The sodium chloride component diffusion coefficient, $D_{NaCl,W}$, gives the binary Fick's first law diffusion coefficient of sodium chloride as a component in water.[40] Because of the strong interaction between the two ion species, Na$^+$ and Cl$^-$, relatively to the salt component in water, NaCl$_{(diss)}$ in water, the species ion−ion diffusion coefficient ($D_{Na,Cl}$) is much lower than the component in solvent diffusion coefficient ($D_{NaCl,W}$).[40]

The numerical value for the diffusion coefficient in the model should have been 1.6×10^{-9} m^2 s^{-1} [40,41] not 1.2×10^{-10} m^2 s^{-1}, as was in fact used. Due to the relation between the diffusion layer and the diffusion coefficient ($D\,\delta^{-2}$), all estimated thicknesses increase by a factor of 3.7.

Due to this, the discussed 30 μm becomes 111 μm and Table 2 becomes

δ/R (μm)	rel increase (%)	$\Delta t^{OCP}_{PL/wire}$ (s)
111	0	8/4
126	12	10/5
167	50	17/9
196	75	20/11
222	100	30/16

These numerical values are used in a discussion of a transported water film that impedes both the CDP and the CDI processes.

These changes do not, however, change our conclusions:

- Using analytical models and experiments, it was demonstrated that the time response for reaching the open circuit potential (OCP) of CDP electrodes in sea and river water was mainly controlled by diffusion. Because of the manner in which CDLE is operated, the results are also relevant for this technology.
- Using a wire electrode design instead of plates has the potential to decrease the time response of the OCP build up by at least a factor of 2.
- Replacing plate electrodes with wire electrodes presents an improvement equal to that of adding forced convection on the plates. Hence, work related to pumping water can be mitigated.

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