

Equitransferent Solutions

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When working with liquid junction potentials the present author found that the terminology is not adequate as there is no term which distinctly indicates that the total cation and the total anion mobilities are the same within a solution, *i. e.* the equation

$$\sum u_i \cdot c_i = \sum v_j \cdot c_j$$

is satisfied, u_i and v_j denoting the equivalent-conductances for cations and anions, respectively, and c_i and c_j the corresponding equivalent concentrations.

Acree and co-workers have applied the term isoelectric to the above condition.

Their definition of this concept may be seen from the following quotation: «The ideal reference half-cell is one with a stable, reversible electrode (AgCl , Hg_2Cl_2), without hysteresis, with a low emf-temperature coefficient, and whose electrolyte is very concentrated and isoelectric, that is, of such a composition that equal numbers of positive and negative charges diffuse into its junction with another liquid whose pH is to be determined.»

It may be said in passing that it is very questionable whether we are justified in discussing a separate diffusion of positive and negative charges from one phase to another as such a phenomenon can hardly be imagined on account of the electrostatic forces present. The work quoted shows that the said authors have applied the term isoelectric to the quality defined above. Against this may, however, be objected, that the term isoelectric has already for many years been used to denote another quality, namely a certain state of a solution containing amfoions.

The present author therefore suggests the term equitransferent, as the quality we wish to describe involves that the effective cation- and anion-transference are equal in the solution in question.

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