

Lippman's equation

An equation which gives the electric charge per unit area of an interface (electrode):

$$(\partial\gamma/\partial E_A)_{T,p,\mu_i\neq\mu} = -Q_A$$

where γ is the interfacial tension, E_A is the potential of a cell in which the reference electrode has an interfacial equilibrium with one of the ionic components of A, Q_A is the charge on unit area of the interface, μ_i is the chemical potential of the combination of species i whose net charge is zero, T is the thermodynamic temperature and p is the external pressure.

Since more than one type of reference electrode may be chosen, more than one quantity Q may be obtained. Consequently Q cannot be considered as equivalent to the physical charge on a particular region of the interphase. It is in fact an alternative way of expressing a *surface excess* or combination of surface excess of charged species.

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