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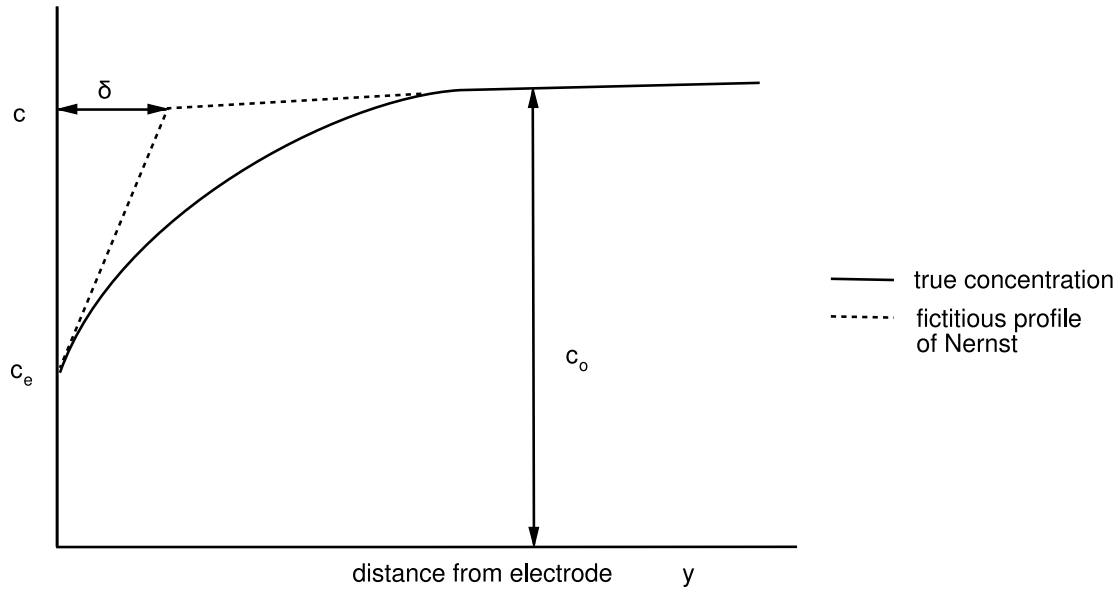
Nernst's diffusion layer

Also contains definition of: effective thickness of diffusion layer

A fictitious layer corresponding to the dotted straight lines of the diagram which shows the concentration profile along the direction perpendicular to an electrode surface. The thickness δ of this layer is called the effective (or equivalent) thickness of the diffusion layer. Its definition is apparent from the figure. It is the thickness which the diffusion layer would have if the concentration profile were a straight line coinciding with the tangent to the true concentration profile at the interface, and that straight line were extended up to the point where the bulk concentration is reached. δ has a formal significance only. It is simply another way of writing the mass transfer coefficient k_d defined in terms of a resistivity instead of a conductivity.



Source:
PAC, 1981, *53*, 1827 *(Nomenclature for transport phenomena in electrolytic systems)* on page 1837

