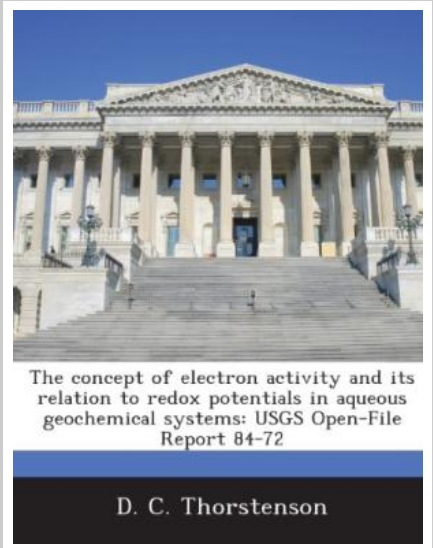

The Concept of Electron Activity and Its Relation to Redox Potentials in Aqueous Geochemical Systems: Usgs Open-File Report 84-72 (Paperback)

By D C Thorstenson

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.The definition of a formal thermodynamic activity of electrons in redox reactions appears in the literature of the 1920 s. The concept of pe as -log (electron activity) was introduced by Jorgensen in 1945 and popularized in the geochemical literature by Sillen, who considered pe and pH as master variables in geochemical reactions. The physical significance of the concept of electron activity was challenged as early as 1928. However, only in the last two decades have sufficient thermodynamic data become available to examine this question quantitatively. The chemical nature of hydrated electrons differs greatly from that of hydrated protons, and thermodynamic data show that hydrated electrons cannot exist at physically meaningful equilibrium concentrations under natural conditions. This has important consequences for the understanding of redox processes in natural waters. These are: (1) the analogy between pe and pH as master variables is generally carried much further than is justified; (2) a thermodynamically meaningful value of redox potential cannot be assigned to disequilibrium systems; (3) the most useful approach to the study of redox characteristics is the analysis and...

Reviews

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