

The revised potential – pH diagram for Pb – H₂O system

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Abstract. Thermodynamic properties of lead species in aqueous solution are collected. The chemical equilibria between various forms of Pb(II) are considered. The speciation diagrams for the equilibria $4[\text{PbOH}]^+(\text{aq}) \rightleftharpoons [\text{Pb}_4(\text{OH})_4]^{4+}(\text{aq})$ and $2[\text{Pb}_3(\text{OH})_4]^{2+}(\text{aq}) \rightleftharpoons [\text{Pb}_6(\text{OH})_8]^{4+}(\text{aq})$, and the thermodynamic activity – pH diagram of Pb(II) species are plotted. Basic chemical and electrochemical equilibria for lead are calculated. The potential – pH diagram for Pb – H₂O system is revised.

Keywords: lead species, aqueous environment, speciation diagram, thermodynamic activity – pH diagram, chemical and electrochemical equilibria, Pourbaix diagram.

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