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SUZUKI Shin, TANAKA Koichi

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A High-Temperature Cell Assembly for Absorption Spectroscopy and Absorption Spectra of Palladium(II) in Fused Lithium Chloride-Potassium Chloride Eutectic*

Shin SUZUKI and Kōichi TANAKA

The Research Institute for Iron, Steel and Other Metals

Abstract

A high-temperature cell assembly attached to a Hitachi Model EPU-2A spectrophotometer was constructed to measure the absorption spectra of fused salt solutions. The measurable spectrum range of this instrument is 50000 to 5000 cm\(^{-1}\) over the temperature range from 300° to 890°C.

Absorption spectra of Pd(II) in fused LiCl-KCl eutectic were measured in the spectrum range from 29000 to 10000 cm\(^{-1}\) at various temperatures between 400° and 700°C. Only one absorption band was found at 20200 cm\(^{-1}\) and its molar absorptivity was 315 at 400°C. An increase in temperature caused both a shift of the absorption maximum to a lower wave number and an increase in molar absorptivity. Some discussions on the species of Pd(II) in this solvent are made in comparison of these results and absorption spectra of Pd(II) in aqueous solutions of high chloride concentration.