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## HIGH TEMPERATURE ELECTRONIC ABSORPTION SPECTROSCOPY OF RHODIUM (III) IN LiCl-KCl-CsCl EUTECTIC BASED MELTS

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The aim of this work is to study the behavior of rhodium (III) chloro-species in the ternary LiCl–KCl–CsCl eutectic based melts in the temperature range of 300–800 °C using electronic absorption spectroscopy in standard silica spectroelectrochemical cells and fiber optic spectrometer.

Calculations showed that the SNF processing plant with an annual capacity of 1000 tons can extract 775 kg of rhodium per year [1]. Melts based on alkali metal chlorides can be used as working media in spent nuclear fuel pyrochemical reprocessing. The development of such processes requires knowledge of the physical and chemical properties of salt melts containing ions of fission product elements including rhodium. High temperature electronic absorption spectroscopy provides important information on composition and structure of complex metal species in fused salts. The measurements are performed in the visible as well as near ultraviolet and IR regions. This method is applied to identify the oxidation state of ions, study redox reactions in molten salt mixtures and monitor the process of changing concentration of components in the salt electrolyte.

The available literature contains no information on electronic absorption spectra of rhodium(III) chloro-species in the low melting LiCl–KCl–CsCl eutectic. Such mixture enables to widen working temperature range. The upper temperature value is limited by vapor pressure and decomposition point of rhodium trichloride.

In the present study the behavior of rhodium (III) chloro-species was studied in the ternary LiCl–KCl–CsCl eutectic based melts in the temperature range of 300–800 °C. Rhodium was added to the electrolyte as anhydrous trichloride  $RhCl_3$ . Electronic absorption spectroscopy was employed as a research method. The experimental spectra were resolved into individual overlapping Gaussian bands. Principle spectroscopic parameters were determined from the results of analysis. The effect of temperature on the basic characteristics of spectral bands was analyzed.

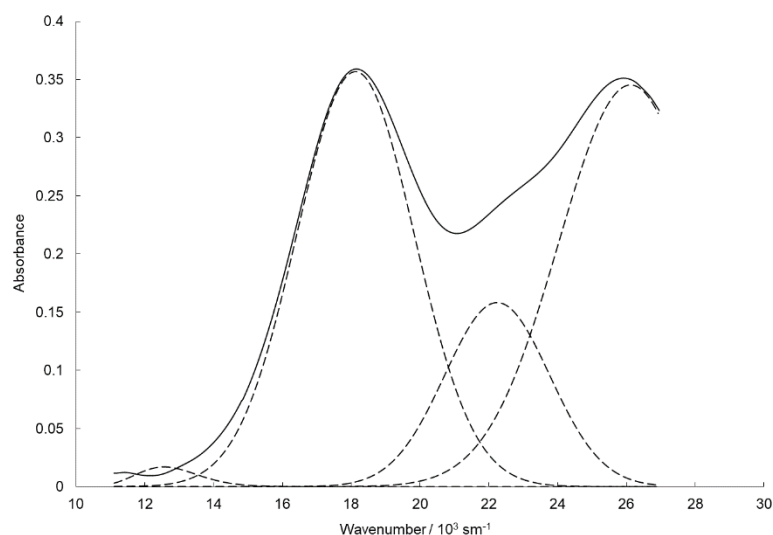


Fig. 1. Analysis of obtained spectrum

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## ИССЛЕДОВАНИЕ ВЛИЯНИЯ ДОПАНТОВ И ПАРАМЕТРОВ СИНТЕЗА НА КИСЛОТНО-ОСНОВНЫЕ ЦЕНТРЫ ПОВЕРХНОСТИ ОКСИДА АЛЮМИНИЯ

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## INFLUENCE OF DOPANTS AND SYNTHESIS PARAMETERS ON ALUMINA ACID-BASIC SURFACE SITES

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The effect of synthesis parameters and dopants on a ratio of acid and base surface site of alumina was studied. It was established that a sample precipitated in natural medium has the highest concentration of Bronsted base sites. Doping of Zr or La increases the concentration of Bronsted base sites.

$\gamma$ -Оксид алюминия один из самых доступных материалов для производства катализаторов и носителей каталитически активных веществ. Сегодня весьма актуально исследование влияния параметров синтеза и стабилизирующих добавок на свойства поверхности оксида алюминия, в том числе на количество и соотношение кислотных и основных центров [1-2]. Цель работы – исследовать влияние