

三水合高氯酸镨与18-冠-6配合的研究

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摘要 采用半微量相平衡方法研究了三元体系 $\text{Pr}(\text{ClO}_4)_3 \cdot 3\text{H}_2\text{O}-18\text{C}_6-\text{C}_2\text{H}_5\text{OH}$ 在298.15K的溶解度,测定了饱和溶液的折光率。该体系在298.15K时生成两种化学计量的配合物: $\text{Pr}(\text{ClO}_4)_3 \cdot 18\text{C}_6 \cdot 3\text{H}_2\text{O}(1)$ 和 $\text{Pr}(\text{ClO}_4)_3 \cdot 2(18\text{C}_6) \cdot 3\text{H}_2\text{O}(2)$ 。制备了两种固态配合物,用化学分析,IR,DTG和TG研究了配合物的组成和性质,采用量热法,测定了298.15K时18C6,配合物1和2在乙醇中的积分溶解热,以及 $\text{Pr}(\text{ClO}_4)_3 \cdot 3\text{H}_2\text{O}$ 在18C6- $\text{C}_2\text{H}_5\text{OH}$ 溶液中的积分溶解热。利用本文设计的热化学循环,求得了两种配合物的标准生成焓。

关键词 [相平衡](#) [红外分光光度法](#) [三元体系](#) [冠式化合物](#) [生成焓](#) [高氯酸盐](#) [镨络合物](#)

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Study on complexes of trihydrated praseodymium perchlorate with 18-crown-6

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Abstract The solubilities of the ternary system, $\text{Pr}(\text{ClO}_4)_3 \cdot 3\text{H}_2\text{O}-18\text{C}_6-\text{C}_2\text{H}_5\text{OH}$, have been investigated by a semimicro method at 298.15K for study of phase equilibrium and the refractive indexes of saturated solutions have been determined. The results indicate that there are two kinds of coordination compounds formed in the system, their chemical compositions are: $\text{Pr}(\text{ClO}_4)_3 \cdot 18\text{C}_6 \cdot 3\text{H}_2\text{O}(1)$ and $\text{Pr}(\text{ClO}_4)_3 \cdot 2(18\text{C}_6) \cdot 3\text{H}_2\text{O}(2)$. The two solid coordination compounds have been prepared. The composition and properties of the complexes have been investigated by chemical analysis, IR, TG and DTG. The integral heats of solution of $\text{Pr}(\text{ClO}_4)_3 \cdot 3\text{H}_2\text{O}$ in 18C- $\text{C}_2\text{H}_5\text{OH}$ solution, the complexes (1) and (2) in $\text{C}_2\text{H}_5\text{OH}$, and 18C6 in $\text{C}_2\text{H}_5\text{OH}$ have been measured calorimetrically at 298.15K. By means of a thermochemical cycle suggested in this paper, the standard molar enthalpies of formation for two complexes were obtained.

Key words [PHASE EQUILIBRIUM](#) [INFRARED SPECTROPHOTOMETRY](#) [TERNARY SYSTEM](#) [CROWN ETHER COMPOUNDS](#) [ENTHALPY OF FORMATION](#) [PERCHLORATE](#) [PRASEODYMIUM COMPLEX](#)

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