

稀土高氯酸盐-甘氨酸配合物[Sm<sub>2</sub>(Gly)<sub>6</sub>(H<sub>2</sub>O)<sub>4</sub>](ClO<sub>4</sub>)<sub>6</sub>·5H<sub>2</sub>O单晶体的低温热容及标准生成焓

吴新明,刘义,李琳,刘平,高秀英,谭志诚,屈松生

武汉大学化学与分子科学学院;中国科学院大连化学物理研究所.大连(116012)

收稿日期 修回日期 网络版发布日期 接受日期

**摘要** 合成了稀土高氯酸盐-甘氨酸配合物晶体。经热重、差热、化学化析及有关文献对比,确定其组成是[Sm<sub>2</sub>(Gly)<sub>6</sub>(H<sub>2</sub>O)<sub>4</sub>](ClO<sub>4</sub>)<sub>6</sub>·5H<sub>2</sub>O,单晶结构,纯度是99.0%。熔点分析仪分析知其没有固定熔点,在79~370K温区,用高精度全自动绝热量仪对单晶配合物进行了热容测定,发现该配合物在低温段没有反常热容。

348.07K附近是该配合物的分解温区,配合物的分解温度、分解焓和分解熵分别是346.89K,44.669kJ/mol和128.77J/K·mol。计算机拟合了热容对温度的多项式方程,在79~318K温区,  $C_p=1294.56+624.17K-11.893X^2+75.075X^3+23.762X^4$ 。在常压,

298.15K下用具有恒温环境的反应热量计测定了配合物的标准生成焓值为-8022.405kJ/mol。

**关键词** [高氯酸盐](#) [甘氨酸](#) [钐络合物](#) [比热](#) [生成焓](#)

分类号 [0642](#)

## Low-temperature heat capacity and standard enthalpy of formation of samarium glycine perchlorate complex [Sm<sub>2</sub>(Gly)<sub>6</sub>(H<sub>2</sub>O)<sub>4</sub>](ClO<sub>4</sub>)<sub>6</sub>·5H<sub>2</sub>O

Wu Xinming,Liu Yi,Li Lin,Liu Ping,Gao Xiuying,Tan Zhicheng,Qu Songsheng

Dalian Inst Chem Phys, CAS.Dalian(116012)

**Abstract** Rare-earth perchlorate-glycine complex [Sm<sub>2</sub>(Gly)<sub>6</sub>(H<sub>2</sub>O)<sub>4</sub>](ClO<sub>4</sub>)<sub>6</sub>·5H<sub>2</sub>O was synthesized and obtained as single crystals. By using TG, DTA and chemical analytic method, and comparing with relevant literature, its single crystal structure was established. The purity was found to be 99.0%, with no distinct melting point. Heat capacity measurement of this compound was carried out on a high-precision fully-automated adiabatic calorimeter over the temperature range from 79 to 370K. No obvious thermal anomaly was observed. Thermal decomposition temperature range of this compound is near 348.07K, its decomposition temperature, decomposition enthalpy and entropy are 346.89K, 44.669 kJ/mol and 128.77J/K·mol, respectively. The polynomial equation of heat capacity of this compound has been fitted as:  $C_p=1294.56K+624.17X-11.893X^2+75.075X^3+23.762X^4$  in the temperature range of 79~318K. The standard enthalpy of formation was measured to be -8022.405kJ/mol with isoperable reaction calorimeter at 298.15K.

**Key words** [PERCHLORATE](#) [GLYCINE](#) [SAMARIUM COMPLEX](#) [SPECIFIC HEAT](#) [ENTHALPY OF FORMATION](#)

DOI:

通讯作者

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(0KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中包含“高氯酸盐”的相关文章](#)

▶ [本文作者相关文章](#)

· [吴新明](#)

· [刘义](#)

· [李琳](#)

· [刘平](#)

· [高秀英](#)

· [谭志诚](#)

· [屈松生](#)