

研究论文

长链烷胺及手性钛的螯合物  $\text{Ti}[(\text{OC}_2\text{H}_4)_3\text{N}][\text{OCH}(\text{CH}_3)_2]$  在层状  $\text{V}_2\text{O}_5$  中的插层行为

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**摘要** 用一种简便快速方法合成了一系列长链有机胺插层  $\text{V}_2\text{O}_5$  化合物. 用粉末X射线衍射(XRD)、红外光谱(FT-IR)、漫反射紫外-可见光谱(DR UV-VIS)等手段对插层产品的结构进行了表征. 除了正十六胺插层  $\text{V}_2\text{O}_5$  产品外, 其它长链烷胺插层  $\text{V}_2\text{O}_5$  产品的层间距  $d_{001}$  与长链烷胺碳数  $n$  之间具有良好的线性关系:  $d_{001} = 0.160n_C + 0.731$  nm. 正十六胺与  $\text{V}_2\text{O}_5$  反应后生成两个插层相, 一个相的层间距  $d_{001}$  为 4.01 nm, 另一相的  $d_{001}$  为 3.20 nm. 此外, 研究了手性钛的螯合物  $\text{Ti}[(\text{OC}_2\text{H}_4)_3\text{N}][\text{OCH}(\text{CH}_3)_2]$  (记为TEAIP) 在  $\text{V}_2\text{O}_5$  层间的插层行为, 得到相应的插层产品.

**关键词** [有机胺](#) [手性钛的螯合物](#) [插层](#) [层状  \$\text{V}\_2\text{O}\_5\$](#)  [结构表征](#)

分类号

## Intercalation Behavior of Long-chain *n*-Alkylamine and Chiral $\text{Ti}[(\text{OC}_2\text{H}_4)_3\text{N}][\text{OCH}(\text{CH}_3)_2]$ in Layered $\text{V}_2\text{O}_5$

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**Abstract** A series of long-chain *n*-alkylamine-intercalated layered  $\text{V}_2\text{O}_5$  materials were synthesized through a simple and quick route. X-ray diffraction (XRD), framework FT-IR and diffuse reflectance UV-visible spectroscopy (DR UV-Vis) were employed to investigate the structure of the obtained products. An excellent linear relationship between the basal interlayer distances of the *n*-alkylamine-intercalated  $\text{V}_2\text{O}_5$  and the number of carbon atoms in the *n*-alkyl chain ( $d_{001} = 0.160n_C + 0.731$  nm) with an exception for *n*-hexadecanamine was presented. *n*-Hexadecanamine-intercalated  $\text{V}_2\text{O}_5$  was composed of two guest-intercalated layered phases, and the basal interlayer distances ( $d_{001}$ ) of the two phases were 4.01 and 3.20 nm, respectively. The intercalation behavior of titanium(IV) (triethanolaminate)-isopropoxide (TEAIP) in layered  $\text{V}_2\text{O}_5$  was also investigated, and the TEAIP intercalated layered  $\text{V}_2\text{O}_5$  product was obtained.

**Key words** [organic amine](#) [chiral titanium\(IV\) pentacoordinated complex](#) [intercalation](#) [layered  \$\text{V}\_2\text{O}\_5\$](#)  [characterization of structure](#)

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