



有机紫外吸收剂插层锌铝水滑石的制备及表征(英文)

Preparation and Photochemical Characterization of Compounds by Intercalation of Organic UV Absorbents into Zn-Al Hydrotalcite-like Compounds

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英文关键词: [Zn-Al hydrotalcite](#) [organic UV absorbent anions](#) [intercalation](#) [photochemical characterization](#)

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中文摘要:

采用离子交换法,以去离子水或乙二醇为分散介质,制备了层间为磺基水杨酸、4-羟基-3-甲氧基肉桂酸和2-羟基-4-甲氧基二苯甲酮-5-磺酸等紫外吸收剂阴离子插层的锌铝水滑石。利用XRD、IR、TG-DTA等技术对样品结构进行表征,采用UV-Vis吸收光谱研究产物的光化学特性,并用Gaussian-98软件包中*ab initio*分子轨道法(HF/6-31G)计算了3种有机紫外吸收剂的分子结构和电荷分布,提出了合理的客体分子在主体层间的排列方式,分析了其结构与光化学行为的关系。研究表明,由于有机紫外吸收剂进入层间,不仅客体与主体层板存在静电力和氢键相互作用,而且在受限空间中有利于客体之间的相互作用,从而使插层产物的紫外吸收范围和能力显著增强,是一类具有潜在应用价值的无机-有机超分子复合结构的紫外吸收材料。

英文摘要:

5-sulfosalicylic acid, 4-hydroxy-3-methoxycinnamic acid and 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid were intercalated into Zn-Al hydrotalcite-like compounds by ion-exchange procedures. The obtained intercalation compounds were characterized by XRD, IR and TG techniques. The guest molecular structure parameters and charge density were calculated using *ab initio* (HF/6-31G) method from G98w software package. From the XRD data, the guest size and the charge density on the oxygens of each of the three anions, the orientation of anions between the layers were determined and the photochemical properties of the compounds were studied by UV-Vis absorption spectroscopy. These results indicate that the confinement of the UV absorbents in their anionic forms within the restricted space of the interlayer region of hydrotalcites is in favor of guest-host and guest-guest interactions so that the UV absorption range and ability of the intercalation compounds are greatly increased.

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