

离子液体中Pb²⁺ / Pb⁴⁺溶质局域结构的EXAFS研究

王伟,寇元,田中庸裕

北京大学化学与分子工程学院;京都大学分子工程系

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摘要 在超稀浓度条件下 $w[\text{Pb}(\text{OAc})_2]$ 或 $w[\text{Pb}(\text{OAc})_4] < 0.2$, 我们使用EXAFS方法对溶解在离子液体中的铅化合物的局域结构进行了研究。从结果中可以看出, Pb(OAc)₄的铅中心在(0.200±0.003) nm处有8个氧近邻, 而Pb(OAc)₂的铅中心在(0.225±0.003)nm处有6个氧近邻。但是溶解在离子液体中的铅化合物均具有较低的配位数(一般小于4), 这显示出离子液体具有较低的配位性能。另一方面, 铅中心与最近邻氧的原子间距有较大的变化。例如: 溶解于[bmim]PF₆的Pb⁴⁺的Pb-O间距为(0.186±0.005)nm, 配位数仅为2.4, 从Fourier变换谱上可清楚地看出有第二配位壳层的贡献; 溶解于[bmim]PF₆的Pb²⁺的Pb-O间距也明显地小于纯样品中Pb-O的间距。相比之下, 溶解于[bmim]BF₄的铅离子显示出的Pb-O间距与纯样品几乎没有差别, 对于Pb²⁺为0.223nm, 而对于Pb⁴⁺为0.210nm。

关键词 [铅络合物](#) [配位数](#) [溶质](#) [离子液体](#)

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Study on Stability of Nateglinide Polymorphism

Wang Wei,Kou Yuan,Tanaka Tsunehiro

College of Chemistry and Molecular Engineering,Peking University;Department of Molecular Engineering,Byoto University

Abstract Under the condition of ultra diluted concentration $w[\text{Pb}(\text{OAc})_2]$ or $w[\text{Pb}(\text{OAc})_4] < 0.2\%$, the local structure of lead complex dissolved in ionic liquids has been studied by Pb *Z*/m-edge EXAFS. Pb⁴⁺ in bulk Pb(OAc)₄ shows 8 nearest oxygen neighbors at (0.200 ± 0.003) nm while Pb²⁺ in bulk Pb(OAc)₂ shows 6 nearest oxygen neighbors at (0.225 ± 0.003) nm. However, both Pb⁴⁺ and Pb²⁺ dissolved in ionic liquids have very low coordination numbers, normally less than 4, indicating a low coordination property for the ionic liquids. On the other hand, the interatomic distance between Pb center and the nearest oxygen seems not comparable with each other. For example, the Pb-O distance observed for Pb²⁺ in [bmim] PF₆ is only (0.186 ± 0.005) nm with a very low coordination number of 2.4, while the Fourier transform clearly indicates a second coordination shell for Pb⁴⁺ in [bmim]PF₆. The Pb-O distance observed for Pb²⁺ in [bmim]PF₆, which is only (0.211 ± 0.005) nm, is also significantly shorter than that (0.225 nm) in bulk Pb(OAc)₂. The Pb ions dissolved in [bmim]BF₄, which are 0.223nm for Pb²⁺ and 0.210 nm for Pb⁴⁺ respectively, exhibit that the Pb-O distances are of no more difference with those in bulk samples.

Key words [LEAD COMPLEX](#) [COORDINATION NUMBER](#) [SOLUTE](#) [ionic liquids](#)

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