

不对称变色酸双偶氮衍生物与某些非稀土元素的显色反应及其应用研究 III:偶氮氯磷-pN与铋(III)的 β 型反应的研究

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 本文报道铋(III)与不对称变色酸双偶氮衍生物之间的一类特殊反应—— β 型反应,研究了试剂分子结构与反应性能的关系,着重探讨铋(III)与偶氮氯磷-pN的 β -型反应行为,在高氯酸介质中,铋(III)与上述试剂形成灵敏度很高的稳定 β 型配合物, $\lambda_{\max}=713\text{nm}$, $\epsilon_{\max}=9.84 \times 10^4 \text{L} \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$,并考察了反应酸度、显色剂浓度、有机溶剂(或表面活性剂)、显色温度及显色时间等对反应的影响,测定了 α 和 β 型配合物的组成,初步探索了 α 和 β 型配合物之间相互转化的规律。

关键词 [分子结构](#) [显色反应](#) [高氯酸](#) [结构与性能关系](#) [铋](#) [偶氮化合物](#) [偶氮氯磷](#) [非稀土元素](#) [不对称变色酸](#)

分类号 [0651](#) [0621](#)

Study on the colour reactions between asymmetric bis-arylazo derivatives of chromotropic acid and some non-rare-earth elements and their analytical applications: III, study on the β -type reaction between bismuth (III) and chlorophosphonazo-pN

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Abstract The β -type reaction between Bi^{3+} and some unsym. bis(arylazo) derivatives of chromotropic acid is described. The relationship between the mol. structure of reagents and reaction conditions were studied. The β -type reaction behavior between Bi^{3+} and chlorophosphonazo-pN was studied. In strong HClO_4 medium Bi^{3+} reacts with the reagent to form a sensitive and stable β -type complex with $\lambda_{\max} = 713 \text{ nm}$, $\epsilon = 9.84 \times 10^4 \text{ L} \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$. The effect of acidity, reagent concns., added organic solvents or surfactants, temperature, and time on the color reaction were examined. The composition of α - and β -type complex were determined. The factors affecting transforming between the 2 complexes were studied.

Key words [MOLECULAR STRUCTURE](#) [COLOR REACTION](#) [PERCHLORIC ACID](#) [STRUCTURE AND PROPERTY CORRELATION](#) [BISMUTH](#) [AZO COMPOUNDS](#) [CHLOROPHOSPHONAZO](#) [NON-RARE EARTH ELEMENTS](#) [ASYMMETRY](#) [CHROMOTROPIC ACID](#)

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