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分离工程

红外光谱测量法研究超临界CO_2中夹带剂与溶质的相互作用

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摘要

利用红外光谱技术研究了在超临界CO_2中加入不同夹带剂时，水杨酸中基团的伸缩振动频率的位移及夹带剂与溶质的相互作用。以乙醇为夹带剂时，水杨酸中C=O基团、O—H基团的伸缩振动频率均向低频方向移动;以丙酮为夹带剂时，水杨酸中C=O基团伸缩振动频率向高频方向移动。研究结果表明：当以乙醇为夹带剂时，水杨酸的溶解度远大于以丙酮为夹带剂时的结果，夹带剂对溶质增溶的作用能力，形成氢键的作用远大于溶剂极性的作用。

关键词

超临界CO_2 红外光谱 水杨酸 分子作用

分类号

Interaction of entrainer and solute in supercritical CO_2 by using infrared spectroscopy

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Abstract

The shifts of stretching vibration frequency of the radicals in salicylic acid and the interaction of entrainer and solute in supercritical CO_2 with the addition of entrainer by using infrared spectroscopy were studied. The stretching vibration frequency of both radicals C=O and O—H shifted towards a lower frequency with ethanol as entrainer, while the stretching vibration frequency of radical C=O shifted towards a higher frequency with acetone as entrainer. The results showed that the solubility of salicylic acid in supercritical CO_2 with ethanol as entrainer was much higher than that with acetone as entrainer. The influence of the action of hydrogen bond was much stronger than the action of solvent polarity on the increase of solute solubility.

Key words

supercritical CO_2 infrared spectroscopy salicylic acid molecular interaction

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