

## 新型苯基桥键色谱固定相的热力学性质

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## Thermodynamic properties of novel phenylene-bridged periodic organosilica as high performance liquid chromatographic stationary phase

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摘要

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**摘要** 将制备的球形苯基桥键型杂化介孔色谱固定相与商品化的C18和苯基键合硅胶固定相对比,研究其热力学性质。以稠环芳烃为溶质,考察其在固定相和流动相之间的迁移焓变、迁移熵变等热力学参数的变化。结果表明,与两种商品化的固定相不同,实验制备的苯基桥键固定相表现出明显的焓-熵补偿效应,证实新型桥键固定相分离机理是疏水作用、 $\pi$ - $\pi$ 作用、包结作用等协同作用的结果。

**关键词:** 苯基桥键 介孔材料 焓-熵补偿 保留机理 色谱固定相

**Abstract:** The thermodynamic properties of spherical phenylene-bridged periodic mesoporous organosilica (PMOs) as high performance liquid chromatographic stationary phase were investigated and compared with commercial C18 and phenyl stationary phases. The retention behavior of several compounds of polycyclic aromatic hydrocarbons was investigated. The thermodynamic parameters of transfer from mobile phase to stationary phase were discussed. The results showed that the enthalpy-entropy compensation effect does not exist for homemade phenylene-bridged PMOs. The retention mechanism of solutes on the prepared stationary phase involves synergistic interaction of hydrophobic,  $\pi$ - $\pi$  and inclusion interactions, which is different with that on the commercial stationary phases.

**Keywords:** phenylene-bridged periodic mesoporous organosilica enthalpy-entropy compensation retention mechanism chromatographic stationary phase

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