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Ultra-high thermal stability perarylated ionic liquids as gas chromatographic stationary phases for the selective separation of polyaromatic hydrocarbons and polychlorinated biphenyls

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ABSTRACT

Ionic liquids (ILs) are well-known in the field of separation science for their unique selectivity when used as stationary phases in gas chromatography (GC). While a significant amount of knowledge has been attained in correlating structural features of an IL to separation selectivity, developments in producing IL-based stationary phases suitable for high temperature GC studies have lagged behind. Column bleed is a result of the stationary phase undergoing volatilization/decomposition at high temperatures and is undesirable in separations coupled to GC/MS. It has been well-known that traditional classes of ILs with long alkyl side chain substituents are susceptible to Hofmann elimination at elevated temperatures. In this study, a new class of IL stationary phases containing perarylated cations exhibiting improved thermal stability are introduced. These ILs were used to prepare wall-coated open tubular columns with

Key statements

Introduction

These ILs represent a class of compounds that have great potential in the separation of high molecular weight and...

Sulfonium- and phosphonium-based ils with aryl moieties hold promise as high thermal stability stationary phases tha...

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