

Germania-Silica-Based Sol-Gel Monolith and Uses Thereof

Researchers at the University of South Florida have developed a monolithic column of mixed Germania-silica hybrid materials for the purpose of extraction, isolation, pre-concentration and separation of target analytes.

Traditionally, silica based or polymer based monolithic beds are used in sample preparation or chromatographic separation. However, pH stability is very important in separation techniques and as a result of the importance of capillary micro-extraction and chromatography to the chemical and drug industries, research has focused on improving pH stability of monoliths.

Previously, USF researchers demonstrated the pH stability of purely Germania-based organic-inorganic hybrid extraction media. In a further improvement, our inventors explored the properties of Germania, an isostructural analog to silica, in developing a mixed Germania-silica-based hybrid sorbent whose stationary phase closely resembles silica-based models.

The resulting hybrid demonstrated a significantly improved pH stability. Furthermore, the Germania-silica sol-gel hybrid monolithic bed when combined with poly ligands and subsequently coupled to High-Performance Liquid Chromatography (HPLC) for micro-extraction, provided several ten-folds higher extraction efficiency compared with open tubular extraction columns with comparable coating composition. The invention will be useful in the chemical, pharmaceutical and biotechnology industries.

ADVANTAGES:

- Improved pH stability
- Higher and purer extracts yields
- Readily available materials

Improved Micro-Extraction Technique



High Performance Liquid Chromatography Columns

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