

High-Capacity, Enhanced Selectivity SPME Fibers

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Executive Statement:

This technology introduces a novel type of solid phase microextraction (SPME) fibers with enhanced efficiency and selectivity for chromatography applications.

Technology Overview:

The invention comprises new SPME fibers developed through a sputtering process that employs oblique angle deposition. This innovative approach results in fibers with high porosity and increased surface area, significantly improving the concentration of trace chemicals for analytical purposes. These advancements promise to enhance the precision and speed of chromatographic analysis, offering substantial benefits over existing commercial SPME fibers.

Key Advantages:

- Increased porosity and surface area for better chemical concentration
- Enhanced selectivity and efficiency in chromatography
- Faster analysis times compared to conventional SPME fibers
- Improved detection of trace chemicals
- Potential for customization through different materials and coatings

Problems Addressed:

- Limited sensitivity and efficiency of current SPME fibers
- Challenges in detecting trace amounts of chemicals in complex mixtures
- Long analysis times in chromatographic procedures

Market Applications:

- Pharmaceutical quality control and purity testing
- Environmental monitoring and analysis
- Food safety and quality assurance
- Forensic analysis and toxicology
- Research and development in analytical chemistry