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Polyamide/titania hollow nanofibers prepared by core-shell electrospinning as a microextractive phase in a fabricated sandwiched format microfluidic device

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Highlights

- Core-shell polyamide/titania hollow nanofibers were synthesized using electrospinning.
- A low-cost microfluidic device was fabricated by laser engraving technique.
- The device is consisted of a central chip unit with an aligned microchannel.
- The microfluidic device in a sandwiched format is used to hold the nanofibers sheets.
- The setup was ultimately employed for the ultra-trace analysis of some model herbicides.

Abstract

In this study, a low-cost microfluidic device from polymethyl methacrylate was fabricated by laser engraving technique. The device is consisted of a central chip unit with an aligned microchannel. Both sides of the engraved microchannel were sandwiched by two synthesized sheets from polyamide/titania (PA/TiO₂) hollow nanofibers as extractive phases. The inlet and outlet of the device were connected to the polyether ether ketone tubes while a peristaltic pump was used to deliver both sample and desorbing solvent through the microchannel. The recorded scanning electron microscopy images from the surface of the

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