

[Development of a novel solid-phase extraction element for thermal desorption gas chromatography analysis](#)

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Abstract:

A novel solid-phase extraction element is developed for sorptive enrichment of dilute analytes from liquid samples with high extraction efficiencies due to its larger amounts of polydimethylsiloxane (PDMS) absorbent than the conventional syringe type of solid-phase microextraction (SPME).

The extraction element is made of titanium (Ti) open tubular tube (Full-size image (<1 K)) coated with a chemically bonded layer of PDMS (500  $\mu\text{m}$  in thickness). The extraction element combined with thermal desorption–gas chromatography–mass spectrometry using a pyrolysis–gas chromatography–mass spectrometry system was used to extract and analyze a typical herbicide, bethrodine in water samples over a concentration range from 2.5 to  $2.5 \times 10^4$  ng/l.

Thus obtained calibration curve showed good linearity for the tested whole concentration range with regression coefficient of 0.992. Detection limit of 0.5 ng/l level was achieved and the reproducibility of the measurements for bethrodine at 10 ng/l level was found to be fairly good with relative standard deviation below 7.5%.

\* Excerpted from online journal website (Click the title)

Frontier Labs products used:

Multi-functional Pyrolyzer