

Automatic sample clean-up system

Description

The present invention relates to the field of sample preparation and analysis by purification of liquid samples by Solid Phase Extraction (SPE).

In the field of sample analysis, a clean-up step in the analytical procedure is required for the analysis of chemical compounds (analytes), especially detection of compounds at trace level. SPE is a clean-up method for the preparation of samples where a sample mixture is applied to a solid support, in order to facilitate the separation of the different components of the mixture. Conventionally, clean-up procedures use commercially available SPE cartridges. Such manual clean-up procedures suffer from a lack of reproducibility, low productivity rates and frequent operational errors due to operator's weariness.

In order to overcome such drawbacks, the present invention consists of a system that permits the loading of a liquid sample from a sample container and the collection of the resulting effluent in a systematic manner. The device has been designed to work under vacuum conditions and the solvent flow is regulated by control of vacuum through an on/off solenoid valve. The device is also equipped with a pre-collector chamber which permits accurate loading of samples and allows the bypass of the treatment column thus preventing its drying or modification. Furthermore, the pre-collector chamber has been designed to be suited to different types of solvents in order to avoid the drying of the adsorbents.

Innovative aspects and main advantages

- Flexibility and compatibility with commercially available SPE cartridges
- Easiness to implement, programme and adapt to different clean-up systems
- Reproducible solvent flow easily modifiable according to the properties of the solvent
- Higher productivity rates
- Auto-cleaning of the lines
- Automatic washing of the sample vessels
- Cost effective, especially with respect to devices that employ expensive pumping systems for the control of the solvent flow.

Areas of application

- Sample preparation and analysis

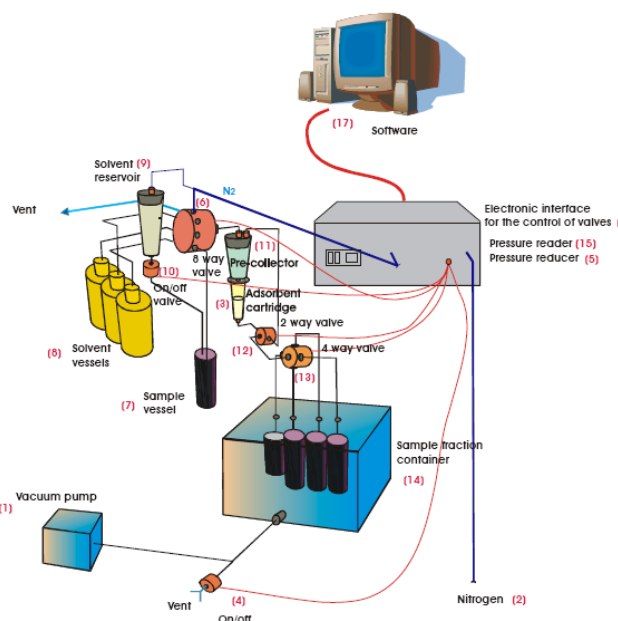


Fig: Set-up of the automatic clean-up system

Stages of development

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Patent pending EP08151085.1

A prototype is currently operating in JRC.

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