

P22: Monitoring of benzene, toluene and xylenes from car exhaust emissions using an innovative SPME/GC/MS technique

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Abstract :

Apart from contributing to urban pollution themselves by their carcinogenic and mutagenic effects on living organisms and human, benzene, toluene, ethylbenzene, *m*-, *p*- and *o*-xylenes (commonly called BTEXs) take part in reactions promoting photochemical smog.

An analytical method capable of determining trace levels of BTEX-aromatics in the atmosphere with as high resolution as possible has been developed. The method is based on the preconcentration of air samples on solid phase microextraction (SPME) fibre at ambient temperature and thermal desorption in the injector of gas chromatography/mass spectrometry. Several SPME fiber coatings including liquid and mixed liquid-solid phase fibres were tested. The sorption kinetics were also studied using a gas standard mixture of BTEXs. As an application of the developed method, the car exhaust gas emissions were monitored following adsorption on SPME fibre and analysis by GC/MS. Some diagnostic such as benzene/toluene and ethylbenzene/xylene ratios were also evaluated and found to be good signature of auto-exhaust emissions.