

## Simultaneous Determination of Polycyclic Aromatic Hydrocarbons by Near Infrared Spectroscopy using a Partial Least Squares Regression

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Polycyclic aromatic hydrocarbons(PAHs) are widely distributed in the environment and are often implicated as potential carcinogens. The chromatographic methods of detection and quantitative determination of PAHs in environmental samples are costly, time consuming, and do not account for all kinds of PAHs. This work describes a quantitative spectroscopic method for the analysis of mixtures of eight PAHs using multivariate calibration models for Fourier transform near infrared(FT-NIR) spectral data. The NIR spectra of mixtures of PAHs (anthracene, pyrene, 1,2-benzanthracene, perylene, chrysene, benzo(a)pyrene, 1-methylanthracene and benzo(ghi)perylene) were measured in the wavelength range from 1100 nm to 2500 nm. The spectral data were processed using a partial least squares regression. We have studied the spectral characteristics of NIR spectra of mixtures of PAHs. It was possible to determine each PAH used in this study at the environmental level(mg L<sup>-1</sup>) in the laboratory samples. Further development may lead to the rapid determination of more PAHs in typical environmental samples.