OFFICE CHROMATOGRAPHY IN FOOD ANALYSIS

G. Morlock and W. Schwack

University of Hohenheim, Institute of Food Chemistry, Garbenstrasse 28, 70599 Stuttgart, Germany, gmorlock@uni-hohenheim.de

Office chromatography combines office technologies of everyday life, e.g. printers and scanners, with planar chromatography. Apart from printing on paper, printing on planar stationary phases is possible which was shown for derivatization (1). However, a new challenge is the precise application of samples on nanostructured layers of about 7 µm thickness. Although it is possible to produce planar phases with variable nanostructure and film thickness using the glancing angle deposition (GLAD)-technique, and to optimize them with regard to their separation quality (2), this ultra-thin phase only tolerates a minimum of solvent. Therefore a commercially available thermal ejecting Bubble Jet printer was modified for exact application whose performance was compared to devices given. The high performance of the automatic application was evaluated by the quantification of a dyestuff mixture. The separation process on nanostructured phases parallel for many samples took less than one minute. Repeatabilities (*%RSD*, $n = 9$, ≤ 2.6 %), coefficients of determination ($R^2 \geq 0.9969$) and relative standard deviations of the calibration curves (*%RSD* ≤ 1.3 %) showed highly reliable results. The quantification with an office scanner in combination with a digital image evaluation software provides highly agreeable results. S/N ratios were ≥ 25 at 27 ng/band. Office chromatography involves several advantages such as very low reagent consumption by a clean, versatile and cheap working station. It is operated by some mouse clicks in an environment familiar to the users. Future work will focus on a fully automated chromatographic system in printer size.

References:
[1] Morlock, G., Stiefel, C. and Schwack, W. (2007) J. Liq. Chromatogr. Relat. Technol. 30, 2171-2184
[2] Bezuidenhout, L.W. and Brett, M.J. (2008) J. Chromatogr. A 1183, 179-185
[3] Morlock, G., Oellig, C., Bezuidenhout, L.W., Brett, M.J. and Schwack, W. (2009) in submission