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## APPLICATION OF IMAGINE ANALYSIS TECHNIQUE IN TLC – OFFICE CHROMATOGRAPHY

Thin-layer chromatography (TLC) is a rapid and low cost technique for quantitative analysis. However, compared with high-performance liquid chromatography (HPLC), this technique is less efficient, sensitive and precise. Nowadays, densitometry system is commonly used for the quantitative determination by means of TLC, but the equipment does not cost less than that of HPLC. Therefore, the application of TLC to quantitative analysis is limited.

A new approach, called “*The office chromatography*”,<sup>i</sup> uses a simplified system assembled from ordinary consumer scanners, computer and image analysis software. Using of easily available, commercial office equipment and some image analysis software (TLSee® program), which replaced expensive densitometer, considerable reduced the cost of analysis.<sup>ii,iii</sup>

A very simple image analysis procedure based on the color and area of spots in the image were effectively used for determination of sulfide, 3-cyclohexene-1-carboxaldehyde and metal dithiocarbamates. The principle of the presented methods is based on the use of prechromatographic or postchromatographic derivatization reaction and conversion spots into chromatogram by use of TLSee software. In order to obtain lower limits of detection and determination of metal dithiocarbamates and 3-cyclohexene-1-carboxaldehyde the iodine-azide reaction as a detection system was used. The area under the peak corresponding to the compounds spot is integrated and used for quantitative determination. All methods were validated. The detection limits for 3-cyclohexene-1-carboxaldehyde, dithiocarbamates and sulfide were as low as  $\mu\text{mol}$  and  $\text{pmol}$  per spot.

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<sup>i</sup> Morlock, G.E.; Oellig, C.; Bezuidenhout, L.W.; Brett, M. J.; Schack, W. *Analytical Chemistry*, **2010**, vol. 82, 2940.

<sup>ii</sup> Zakrzewski, R.; Ciesielski, W. *Encyclopedia of Chromatography, 3rd Edition*, **2010**, 1226.

<sup>iii</sup> Ciesielski, W.; Dyńska-Kukulska, K.; Zakrzewski, R.; Hekner, A. *Journal of Planar Chromatograph*, **2010**, vol. 23, 343.