Medical applications of ion mobility spectrometry

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The last issue 2011 deals with medical applications of ion mobility spectrometers. In eight papers applications of IMS at the Lung Clinic Hemer, the Ruhrlandklinik at the University Essen, the Saarland University Hospital Homburg and the University Hospital Marburg (all Germany) are reported. In addition, the Washington State University Pullman, USA; 3QBD, Israel, as well as KIST Europe Saarbrücken and B&S Analytik Dortmund, both Germany, are involved. The papers present recent results in the fields of Statistical and Bioinformatical Methods to Differentiate Chronic Obstructive Pulmonary Disease (COPD) including Lung Cancer from Healthy Control by Breath Analysis; Metabolic differences among melanoma and two prostate cancer cell lines by electrospray ion mobility mass spectrometry; Significant different volatile biomarker during bronchoscopic ion mobility spectrometry investigation of patients suffering lung carcinoma; Characterization of Propofol in human breath of patients undergoing anesthesia; MCC/IMS as potential noninvasive technique in the diagnosis of patients with COPD with and without alpha 1-antitrypsin deficiency; Detection of infectious agents in the airways by ion mobility spectrometry of exhaled breath; Correlation analysis on data sets to detect infectious agents in the airways by ion mobility spectrometry of exhaled breath and Clearance of biogenic

amines from saliva following the consumption of tuna in water and oil.

Here, the variety of applications of the method ion mobility spectrometry as well as the need of integration of modern statistical and bioinformatical methods is demonstrated. One aim of the special issue is to show, that instrumental development should cover the need of the potential applications from the sampling to the interpretation of the data obtained. Personally, I'm satisfied, that applications of conventional IMS becomes successful on the way to specific applications in life sciences and towards medical applications. I hope, that in the future methodological R&D in combination to instrumental oriented companies like 3QBD and B&S Analytik—among others—will establish new applications fields besides the traditional fields for IMS dealing with the detection of traces of explosives, illegal drugs and chemical warfare agents. Hopefully, the use of volatile metabolites will help to establish ion mobility spectrometry as non-invasive method for fast clinical applications. Here fundamental research at universities and research institutes will be transferred to market. I greatly appreciate the contributions and hope to see more papers in that field in the next year.

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