

NOVEL MS TECHNIQUES FOR THE ANALYSIS OF FOOD AND FOOD CONTACT MATERIALS

Christian Klampfl^{1*}

¹ Johannes Kepler University, Linz, Austria

*Corresponding author - E-mail: christian.klampfl@jku.at , Phone: ++4373224688722

Mass spectrometry (MS) either as stand alone technique or in combination with separation sciences is one of the fastest developing techniques in instrumental analytical chemistry. Within the wide field of applications of MS, food related topics (analysis of foods, beverages or feeds) as well as any type of food contact materials (materials for processing or packaging) play an eminent role. MS is a perfect tool for the evaluation of food quality (using specific marker substances) but also for food adulteration or contamination. In this presentation an overview of recent developments in the fields of MS with respect to the analysis of foods and food related materials will be given. A special emphasis will also be set on the analysis of plastic materials commonly used in food packaging [1]. Two different strategies will be compared namely direct analysis by MS with only minimum sample preparation and the use of MS as a detector for separation techniques involving chromatographic separation and in many cases also other sample pre-treatment steps prior to MS analysis. Whereby the first approach seems the perfect tool for fast screening of large batches of samples it often can only provide qualitative to semi-quantitative results. When it comes to accurate quantitative analysis, sample pre treatment and in many cases chromatographic separation is unavoidable. MS techniques dealt with will include several representatives of the relatively young field of ambient MS such as direct analysis in real time (DART) and desorption electrospray (DESI) as well as the even younger direct spray methods such as thin layer chromatography (TLC) spray [2] a technique just recently developed by our group. Besides these, also the more traditional use of MS as a detector for (particularly) liquid phase separations will be discussed. Thereby a special emphasis will be given to the different ionization techniques and their strong- and weak points. Within this issue a number of selected application in combination with the analysis of foods and food related materials will be provided. [1] C.W. Klampfl, TRAC Trend in Anal. Chem. 50 (2013) 53-64 [2] M. Himmelsbach, M. Waser, C.W. Klampfl, submitted

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