Axis 5

Hyphenated techniques

The coupling of mass spectrometry with separation methods such as liquid chromatography or capillary electrophoresis allows to tackle complex molecular systems by increasing the peak capacity and limiting ionization suppression effects. Among different works, the group demonstrated recently the combination of Hydrophilic interaction chromatography (HILIC) combined with ion mobility mass spectrometry and of thin layer chromatography with DESI-MS and MALDI-TOF mass spectrometry.

Saxitoxins analysis

Identification and quantification of compounds in complex mixtures can require three-dimensional coupling of LC-IM-MS (**Figure 1**).

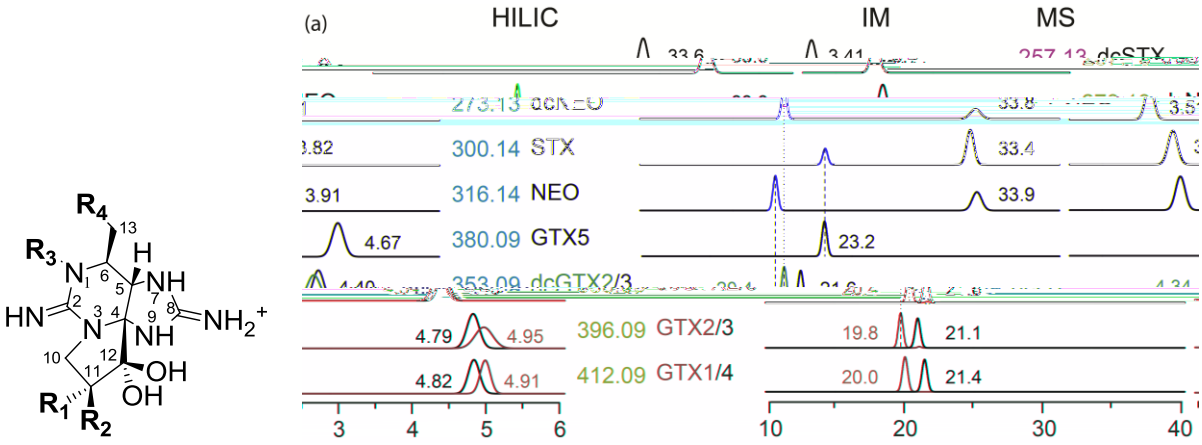

Figure 1. Neurotoxins such as saxitoxin analogues could be differentiated by combination of LC-IM-MS ⇒ complementarity of LC and IM is demonstrated
Poyer, S. ; Loutelier-Bourhis, C. ; Coadou, G. ; Mondeguer, F. ; Enche, J. ; Bossee, A. ; Hess, P. ; Afonso, C. *J. Mass Spectrom.* 2015, 50, 175-181

Dendrimer characterization

The grafting of dendritic polymer PAMAM G1 with glycine was monitored by both capillary electrophoresis (CE) and IM-MS using *electrospray* ionization (ESI) (**Figure 2**).

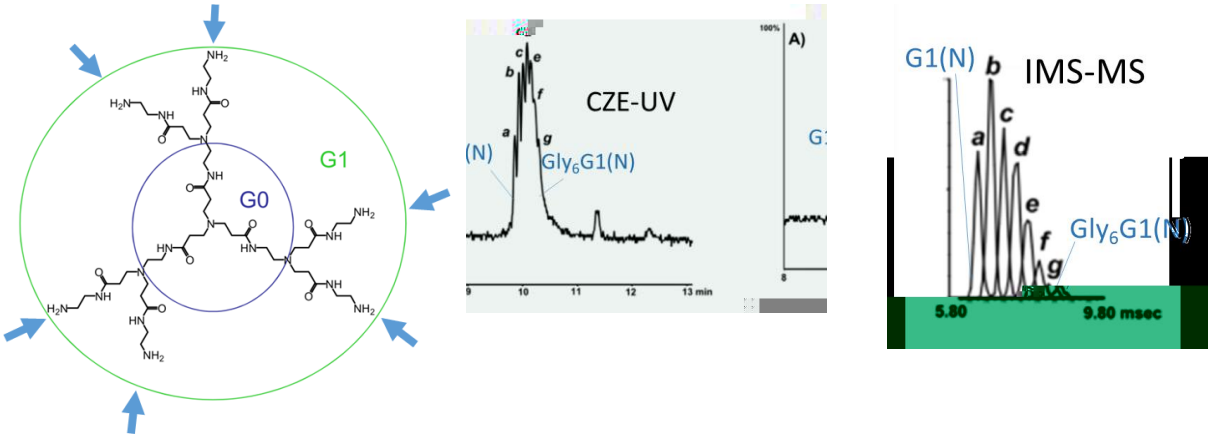

Figure 2. CE (A) *vs* IMS (B) showing glycine-grafted PAMAM distribution (peaks a to g) Leriche, E-D.; Afonso, C.; Lange, C. M.; Grossel, M. C.; Truong, L.; Coadou, G.; Oulyadi, H.; Loutelier-Bourhis, C., *RSC Advances* **2014**, 4(4), 1744-1753.

TLC/MALDI coupling

This coupling is also developed by the MS group, for instance for monitoring the synthesis and chemical modifications of G1 PAMAM, allowing to show the presence of dendrimer defective structures (**Figure 3**).

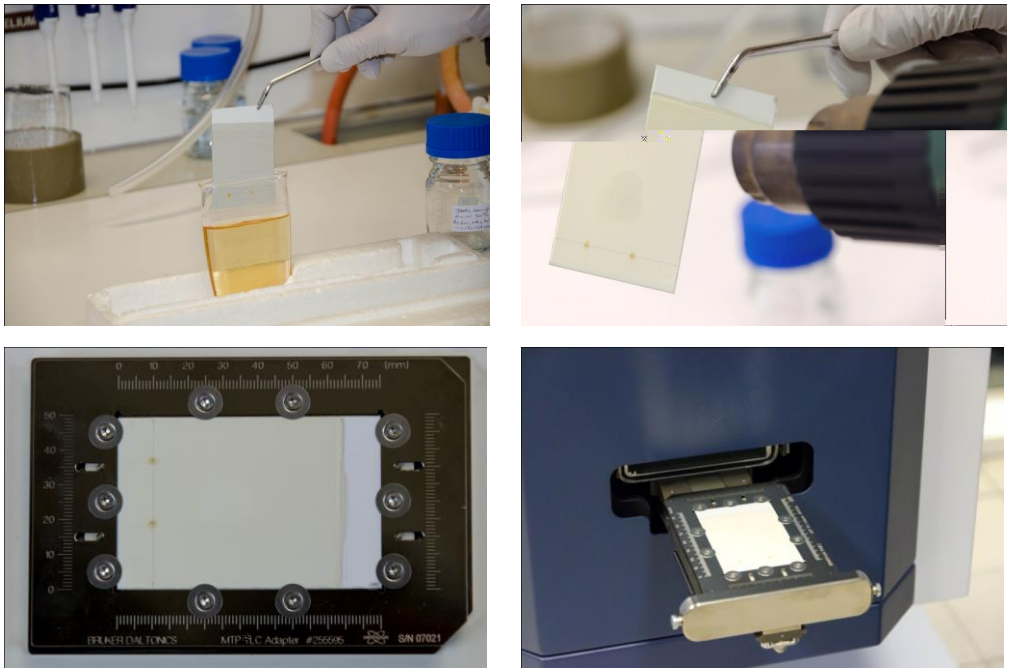

Figure 3. Preparation of a TLC plate for MALDI-TOF analysis by direct application of 2,5 DHB matrix.

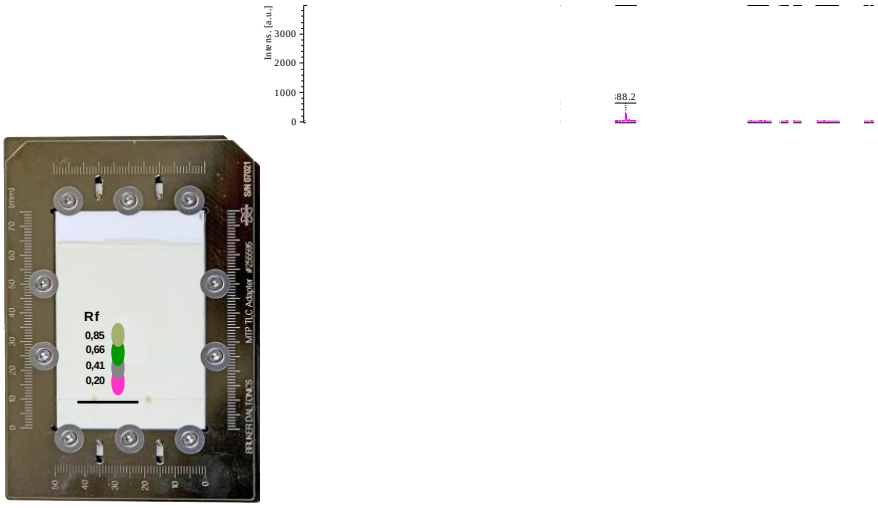

Figure 4. MALDI spectra recorded directly on the TLC plate for ideal unmodified G1(N) and

Leriche, E-D.; Hubert-Roux, M.; Grossel, M. C. ; Lange[1], C.M.[2] ; Afonso, C.[3] and Loutelier-Bourhis, C., *Analytica Chimica Acta*, **2014**, 808, 144-150.