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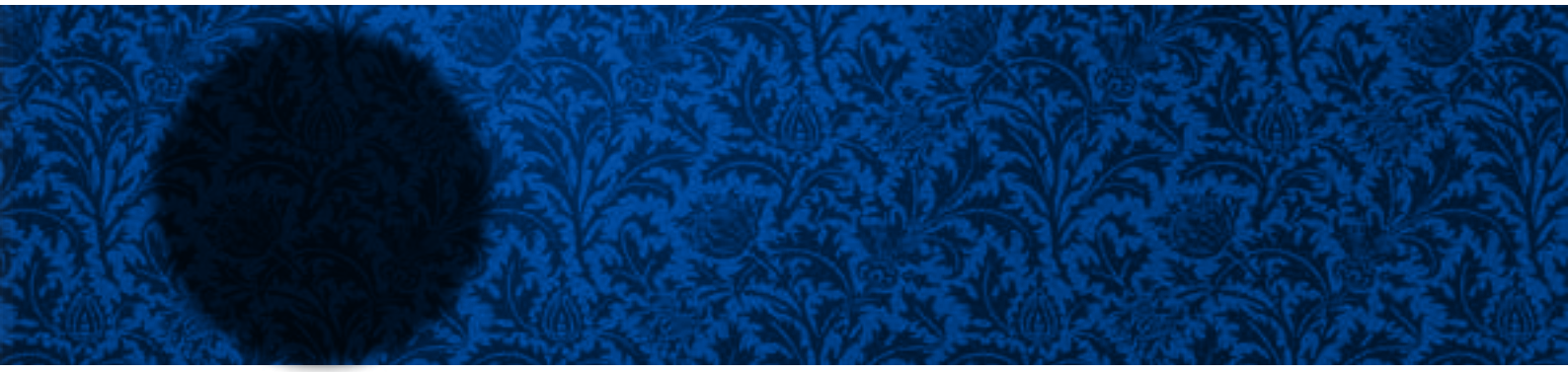

Comprehensive insights into tobacco smoke using TD-GCxGC-TOF MS with tandem ionization

The hazardous constituents of cigarette smoke have attracted considerable attention lately, especially with increasing regulation around the world limiting or banning smoking in public places and even in private cars if children are present. From an analytical perspective, however, there is much that remains to be learnt about the composition of cigarette smoke; because of its high degree of complexity-tobacco smoke is thought to contain thousands of components across multiple chemical classes and wide concentration ranges. Comprehensive two-dimensional gas chromatography (GC×GC), when coupled with time-of- ight mass spectrometry (TOF MS), has been shown to provide improved chemical ngerprinting of complex samples in areas of study as diverse as petrochemical analysis and fragrance pro ling. However, commonly-used thermal modulation devices are unable to successfully modulate the most volatile components. In this study, we use thermal desorption (TD) for collection and analysis of whole cigarette emissions, and couple it with ow-modulated GC×GC-TOF MS, to enable the constituents of whole smoke to be routinely and con dently sampled, separated and identi ed. e use of novel tandem ionization is also harnessed to increase the analytical resolutio (er)-6(il)12 ()-6 (os)5 1o(o)1y (o p)12 (r)13 (o)16(v)-3 5(in)8 b (p)-8(o)

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