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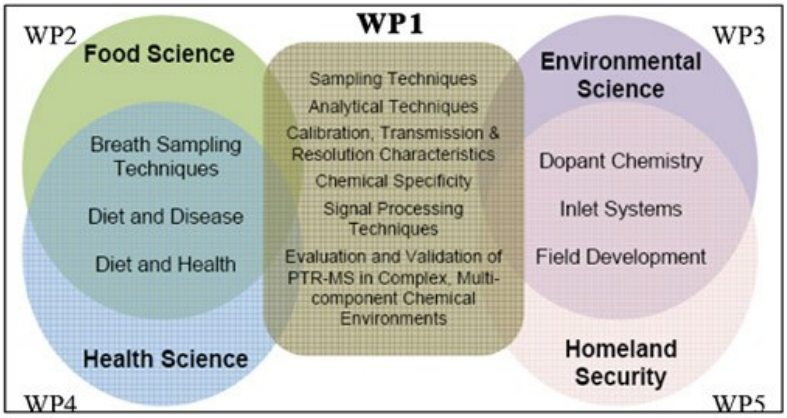
Project overview

The need for quantitative, real-time and rapid detection of chemical compounds in the vapour phase at ultra low concentrations, and in particular Volatile Organic Compounds (VOCs), is prevalent across a wide range of disparate disciplines and provide significant challenges to modern analytical chemistry. The overall goal of PIMMS is to train a new generation of analytical scientists in the skills necessary for the use, development and adoption of (primarily) Proton Transfer Reaction Mass Spectrometry (PTR-MS) for the detection of trace gaseous compounds, with the vision of enhancing our understanding of the crucial role these chemicals play in many complex environments and to provide the underpinning science needed to develop PTR-MS in order to address the analytical challenges for their detection.

To provide a broad training experience, ESRs will also gain experience in a wide-range of other more commonly used analytical techniques (e.g. GC-MS and IMS). However, the focus will be on the relatively new analytical methodology of PTR-MS, because of its broad-based analytical applicability. PTR-MS can perform real-time and rapid measurements with high sensitivity (ppqv), and high selectivity without sample preparation. Accordingly PTR-MS is fast becoming the technology of choice for use in many analytical areas and sectors.

PIMMS will provide coherent interdisciplinary training across various research disciplines in an intersectoral network combining private, governmental, health and academic sectors to address a number of topical analytical issues. To realise the goals of this ITN and to provide an interdisciplinary and intersectoral approach, research will be delivered and organised through five interlinking work packages (WPs) each containing research projects at the forefront of analytical science particularly concentrating on newly emerging fields that are inherently supradisciplinary in nature: viz. WP1: Fundamental Research and Development; WP2: Food Sciences; WP3: Environmental Sciences; WP4: Health Sciences; and WP5: Homeland Security.



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