



ABSTRACT FORM
(Deadline for submission: June 30, 2007)

Submit by e-mail to:

ima2007@iceht.forth.gr

Please type in capital letters:

Abstract Title: EMERGING HYPHENATED AND COMPREHENSIVE MULTI-DIMENSIONAL TECHNIQUES FOR THE MEASUREMENT OF PERSISTENT ORGANIC POLLUTANTS (POPS)

Presenting Author: Jef FOCANT

Author's Title: Professor

Institution: University of Liège, Center of Analysis in Trace (CART)

Department: Chemistry

Address : Organic and Biological Analytical Chemistry, Allée du 6 aout, Sart-Tilman

City: Liège, Belgium

Zip Code: B-4000

Telephone: +32 495 92 95 64

Fax: +32 4 366 43 87

(please include country and city codes)

E-mail : JF.Focant@ulg.ac.be

Preferred Type of Presentation (underline only one):

Keynote arranged with Th Christopoulos

Topic / Category: Separation Techniques Mass-Spectrometry Hyphenated
Techniques (HPLC-MS, GC-MS, ICP-MS etc.) Environmental Analysis Sample
Preparation

Date: 28/08/2007

IMA 2007 Secretariat
Department of Chemistry
University of Patras
Patras, Greece 26500

Tel : +30 2610 996022
Fax: +30 2610 997118
E-mail: ima2007@iceht.forth.gr
<http://ima07.iceht.forth.gr/>

EMERGING HYPHENATED AND COMPREHENSIVE MULTI-DIMENSIONAL TECHNIQUES FOR THE MEASUREMENT OF PERSISTENT ORGANIC POLLUTANTS (POPS)

Jef Focant, Gauthier Eppe* and Edwin De Pauw*

^aDepartment of Chemistry, Center for Analysis of Residue in Trace (CART), University of Liège, Liège, Belgium, B-4000.

E-mail: JF.Focant@ulg.ac.be

Because a rather selective bio-accumulation of Persistent Organic Pollutants (POPs) occurs in biological samples, their analysis is usually less demanding in terms of separation power than for environmental samples that can virtually contain all compounds. Nevertheless, the measurement of POPs in biological samples is challenging and concern dozens of analytes. Hyphenated and comprehensive multi-dimensional techniques find here a stimulating area of application.

We report on latest developments in the coupling and hyphenation of sample preparation techniques as well as separation and detection techniques for the measurement of selected POPs in foodstuffs of animal origin. Target analytes consist in polychlorinated dibenzo-*p*-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), and polybrominated diphenyl ethers (PBDEs).

Emphasis is given on the use of automated parallel pressurized liquid extraction (PLE) coupled to preparative multi-column low pressure liquid chromatography for sample preparation. This new approach matches the high sample throughput demand of routine laboratories while reducing human input at affordable cost. The use and comparison of various hyphenated gas chromatography (GC) and mass spectrometric (MS) techniques will be discussed. GC coupled to quadrupole ion storage MS (QISTMS), comprehensive two-dimensional gas chromatography (GCxGC) coupled to time-of-flight MS (TOFMS) are the more promising tools challenging the reference GC high resolution MS (HRMS) based on sector instruments.

Data obtained using those emerging hyphenated multi-dimensional techniques demonstrate the power of such instrumentation for target compound analysis as well as for comprehensive screening of biological samples under stringent QA/QC requirements.