Learning Objective:
Following the completion of this workshop the participants will be familiar with theoretical and practical aspects of different techniques for the elemental analysis of forensic matrices such as XRF, SEM-EDS, ICP-MS, LA-ICP-MS and LIBS. The participants will be able to conduct a critical evaluation of the limitations and capabilities of these techniques, including sampling procedures, sample preparation methods, quality control, data analysis and interpretation of results.

Contact us with any questions
José R. Almirall, Ph.D - Facility Director
Associate Professor of Chemistry, co-Director of IFRI
PH: 305 348 3917 (office)
email: almirall@fiu.edu

Tatiana Trejos, MSc. – Facility Manager
Coordinator of Research Programs / Laboratory Manager
PH: 305 348 0001 (office) / 305 348 0102 (lab)
email: trejost@fiu.edu

http://teaf.fiu.edu

Workshop fee $1000
Includes workshop dinner and all lunch and parking
Download the registration form at http://teaf.fiu.edu

Location:
Trace Evidence Analysis Facility
11200 SW 8th Street, OE 109
University Park, Miami, FL 33199

Elemental Analysis of Forensic Evidence
“Hands-on” Workshop
Dec. 10-14, 2007

International Forensic Research Institute
Department of Chemistry and Biochemistry
Monday – December 10th, 2007

8.30 – 9.00am Registration and Coffee
9.00 – 9.15am Welcome and Introduction
9.15 – 9.45am Variation of trace elements in nature and industrial processes.
9.45 -10.15am Introduction to SEM-EDS and X-Ray Fluorescence (XRF)
10.15 -10.30 am Coffee/Tea Break
10.30 -11:00am Introduction to Laser Induced Breakdown Spectroscopy (LIBS)
11:00-12:00pm Introduction to Elemental Analysis by Inductively Coupled Plasma Spectrometry (ICP-MS) and Laser Ablation (LA) Sampling for ICP-MS
12.00 -1.15 pm Lunch Break
1.15 -2.15 pm Trace Elemental Analysis of Glass - A Model Matrix
2.15 -3.00 pm Trace Elemental Analysis of Paint and Soils
3.00 -3.30 pm Trace Elemental Analysis of Biological Matrices (ie. Bone, Plants)
3.30 -3:45 pm Coffee/Tea Break
3.45 – 4:15 pm Instrumentation Considerations in XRF, LIBS, ICP-MS and LA-ICP-MS
4.15 – 5.00 pm Data Analysis Tools and Introduction to Multivariate Statistics
6:30 pm Workshop Dinner

Tuesday, Dec. 11th – Thursday, Dec. 13th, 2007

Laboratory Exercises
The class will be divided into 3 groups of 4 students in each group (Group A, Group B and Group C) to conduct 5 hands-on exercises during 3 days. Each group will participate in all five laboratory exercises and then all 3 groups will participate together on the last day in the data analysis and data presentation exercises.

Distribution of group practices

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<td><strong>Group A</strong></td>
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<td>Lab 2</td>
<td>LIBS (8am - 12 noon)</td>
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<td>Lab 3</td>
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<td>LA-ICPMS</td>
<td>Glass/Solution (1pm - 5pm)</td>
<td>SEM-EDS and XRF (8am - 5pm)</td>
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<td>Lab 3</td>
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LAB 1: LIBS and Digestion ICP-MS
1b. Analysis of solid matrices by a custom built double pulsed LIBS system using a NewWave 1064 nm and a NewWave 266 nm lasers coupled to a Photon Machines laser delivery module and an Andor ICCD spectrometer.

LAB 2: Laser ablation ICP-MS
2. Laser Ablation Sample Preparation for Glass Analysis, Laser Ablation of Glass using the NITECRIME protocol with the CETAC 266 nm LA system and a Perkin Elmer SCIEX DRCII ICP-MS and a Thermo Element 2 HR-ICP-MS.

LAB 3: SEM-EDS and XRF
3a. SEM-EDS analysis including surface mapping using a Philips XL30 high and low vacuum Scanning Electron Microscope with and EDAX detector.
3b. XRF analysis of materials using a X-Beam (IXRF)

Friday, December 14th, 2007

8:30 A.M. Data analysis exercises using SYSTAT and Excel and data presentation by all groups. Report writing and testimony on elemental analysis of forensic samples
12:30 Class ends