



teaf



Research Education and Analytical Services

The Trace Evidence Analysis Facility (TEAF) is a recharge facility under the direction of Professor Almirall in the Department of Chemistry and Biochemistry and the International Forensic Research Institute. The facility contains instrumentation that can be used for research, education and service and is available for a fee to the university community and, in some cases, may be available to the scientific community outside the university.

The instrumentation in the facility includes an Elan DRC+ quadrupole ICP-MS, a Thermo Element 2 magnetic sector high resolution ICP-MS, several automated liquid sample introduction systems, a CETAC 500+ 266 nm laser ablation system and a NewWave Research 213 nm laser ablation system. The facility also contains a Philips XL30 Scanning Electron Microscope with an EDAX and a XRF beam, low and high vacuum capabilities and a gold sputtering coating system.

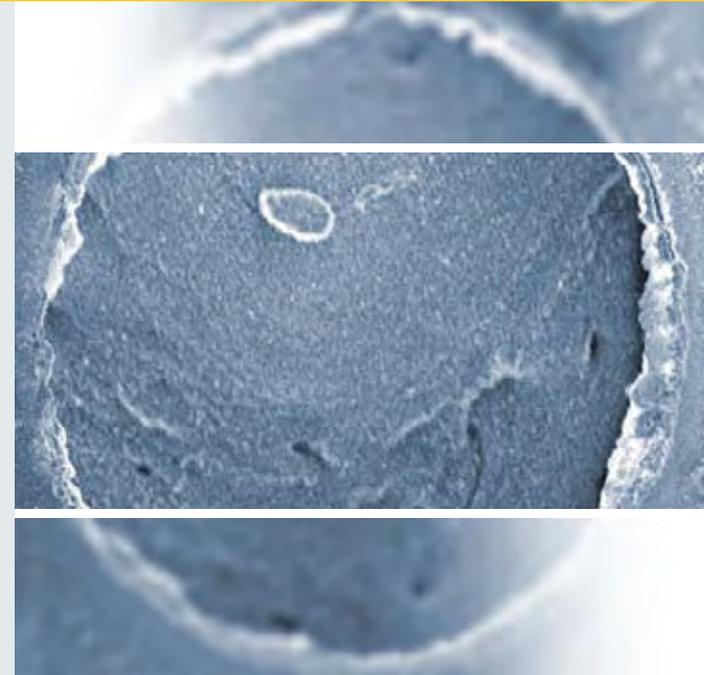
Activities in the facility include research support for faculty and students, laboratory instruction, workshop support and casework analyses.

The TEAF advisory board consists of Professor Ken Furton, Professor Yong Cai, Tatiana Trejos (Facility Manager) and Professor Jose Almirall (Facility Director).

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Trace Evidence Analysis Facility



Facility Instrumentation

The TEAF facility has state of the art instrumentation to conduct elemental analysis at different sensitivities according to the customer requirements, including:

Elan DRC+ quadrupole ICP-MS (available on standard mode and Dynamic Reaction Cell mode)

Thermo Element 2 magnetic sector high resolution ICP-MS (NSF Funding)

Laser Ablation systems (CETAC 500+ 266 and New Wave Research 213nm)

Philips XL30 high and low vacuum Scanning Electron Microscope with and EDAX detector and X-beam (IXRF) for XRF analysis.

Gold sputtering coating system.

Several affiliated instrumentation in Dr. Almirall's group is also available, including: FTIR system with microscope accessory, FT Raman system, Glass Refractive Index Measurement (GRIM2) System, several Ion Mobility Spectrometers, GC coupled to an Ion Trap Mass Spectrometer, HPLC with UV and Electrochemical detectors, Capillary Electrophoresis with UV and PDA detectors, several Stereomicroscopes and Polarized Light Microscopes, several LIBS systems, MicroFab Technologies Microdispensing System, High Speed Mixer Mill and Manual Press Units, Piezobalance for Particle Mass measurements and Spin Processor.

Research

Driven by the FIU and IFRI research mission, the TEAF plays a key role in assisting faculty and students to conduct relevant research with state of the art instrumentation.

The TEAF also provides technical expertise, training and services to the forensic science and more general analytical sciences communities.

Some of the research projects conducted at the TEAF under the direction of Professor Almirall are focused on the development and application of analytical chemistry tools to enhance the value of scientific evidence in forensic science.

Projects include the development of tools to characterize materials such as glass, paints and coatings, biological matrices, soils and others by the trace elemental content. LA-ICP-MS, LA-HR-ICP-MS, SEM, XRF and LIBS are used to analyze a variety of matrices of interest to forensic scientists.

The group currently collaborates with other research groups within the Chemistry and Biochemistry Department at FIU and the Earth Sciences Department at FIU. TEAF also has formal partnerships between the facility, law enforcement agencies, government laboratories, universities and corporations.

Education & Analytical Services

Analytical Services: The TEAF facility may accept contracts for analytical services from academic, industrial, and government customers. All contract request will be considered for feasibility by the facility staff and faculty.

Specific analytical services include:

High magnification imaging using an SEM of a wide variety of materials.

EDAX elemental analysis of materials.

Elemental analysis and comparisons of materials using LA-ICP-MS.

Elemental analysis of materials by ICP-MS

Forensic casework (Paint, glass, fiber and other trace evidence examination and comparisons; Fire Debris Analysis for the presence of flammable and combustible liquid residues)

Tailored workshops and short courses are offered in different areas of forensic chemistry, including on-line and on-site courses. Bilingual courses (English and Spanish) are also available upon request.

