



PHYSICO-CHEMICAL ANALYSIS

Challenges & Markets

The detection of pollutants, even in slight traces, is a current sanitary and environmental issue in our society. In this context, the development of techniques enabling us to heighten the detection limits while improving the quality of the data has become indispensable for any industrialist requiring a subtle and highly defined chemical characterization of a product. These considerations apply most significantly to the fields of research concerning:

- the environment (analyses of aqueous effluents / waste, trace analyses...),
- the nuclear industry (analysis of un-irradiated fuels, of radioactive or slightly radioactive samples...)

**Couplage traitement
thermique/ ICP-MS**

Value added offer

The DEN analysis laboratory (L.A.R.C.) offers industrialists the technical competence in physico-chemical characterization requiring a detailed analysis of traces and/or ultra-traces. After the development of methods on its own equipment, the laboratory, calling on its experts, offers assistance and a training session in physico-chemical characterization, in its analysis and the interpretation of the results. This assistance, provided by a dedicated and highly qualified staff at the LARC, is possible during the implementation of client's analytical protocols. Advisory assistance is also offered for the optimization of the experiments and analysis of the samples.

The objective of the DEN analysis laboratory in CADARACHE (L.A.R.C.) is to meet the needs expressed by industrialists in terms of:

- analyses services on specific issues demanding further development,
- licensing of a precise technology (Patents & Know-how),
- creation of new collaborations.

PHYSICO-CHEMICAL ANALYSIS

Patents

CEA – Cadarache has 7 families of transferable patents in this particular area of research:

FR2909179B1 (expires in 2026)

FR2940469B1, FR2940470B1, FR2934409B1 (expire in 2028)

FFR2918752B1, FR2922030B1 (expire in 2027)

as well as one patent pending since the end of 2011

Technical offers

The development of tools and analysis methods of mineral or organic compounds in liquid, solid or gaseous phase.

Process control,

The characterization of substances and materials, Experimental studies, interpretation and modeling of physico-chemical processes that govern the laws of radionuclide behavior or materials in their environment.

Expertise

The physico-chemistry of the materials,
Physico-chemical analyses: the perfecting and development of tools and analysis methods of compounds in any medium,
Chemistry in solution: structure, coordination chemistry and speciation, reactivity of the species, radiolytical mechanisms...
Assistance in sampling.

The Cadarache Analysis Laboratory (L.A.R.C.) has efficient and proven analytical means adapted to the detection and characterization of traces:

- Mass Spectrometry (ICP/ MS quadripôle or multi- collection, LC/MS),
- Atomic Emission Spectrometry (ICP/AES), Chromatography in liquid phase coupled to mass spectrometry through les interfaces Electrospray interfaces and APCI, ion chromatography,
- Radiometry techniques (Bêta emitter measurements through liquid scintillation, gamma spectrometry, X, alpha)
- ...

Our strong point:

Almost 50 years of experience!

Key figures:

- Manpower
22 research engineers/
Technicians
- Accreditations/network
 - Certification ISO 9001
 - CETAMA-BNEN
(French or international standards)

They have entrusted us with their work:

AREVA, EDF, ANDRA

Contact :

Alain DODI, CEA expert in physico-chemical analyses / alain.dodi@cea.fr Tel: + 33 (0) 4.42.25.40.96.