

DECAP at the heart of your projects

DECAP is involved in a variety of collaborative projects (conception, development, characterization and valorization) obtained on regional and national financing, labelled by the DREAM competitiveness cluster.

DECAP provides services for implementing the sensors, analyzing and depolluting waters, as well as conducting studies :

- **Multi-scales:** from the milliliter up to several liters,
- **Multi-contaminants:** metals, médicinal residus, pesticides, HAP...
- **Aqueous Multi-matrix:** groundwater, river water, water-treatment plants, industrial waters,
- **Multi-methods:** electro-chemical and optical sensors, CHEMFET field effect transistors, pollutant elimination processes by advanced oxidation (ozonation, Fenton), plasma, electro-chemical.

They rely on us

- ANR, Centre-Val de Loire Region
- DSA technologies, Ethypharm, Aqualter, JACOBI
- French geological survey (BRGM), Water Agency of Loire-Bretagne
- DREAM Competitiveness cluster

L'ICMN (Interface, Confinement, Materials and Nanostructures) and the GREMI (Research Group on the Energy Aspect of Ionized Media) are research units of the CNRS and the University of Orléans. L'ICMN conducts studies relative to nano-structured and confined systems and to the development of functional carbon materials. Work conducted by GREMI concern plasma and/or laser processes. Research conducted by this laboratory come under a variety of applications that notably belong to the domains of metrology and of environment.

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PIVOTS

www.plateformes-pivots.eu

PIVOTS is a coordinated set of experimental and analytical platforms dedicated to the development of environmental engineering and metrology for activities with a high consumption of natural resources. Along the entire value chain, it brings together public and private-sector actors in monitoring the quality of the environment and the sustainable management of natural resources (soil, subsurface, surface water, groundwater, sediment, air).



With the support of:



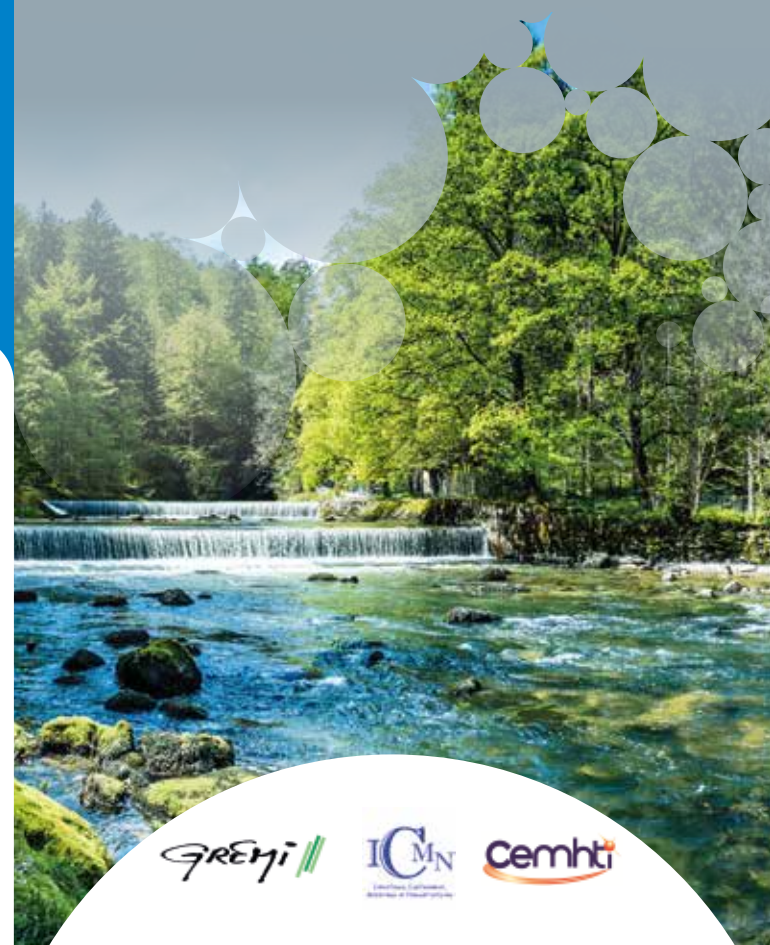
This operation is co-financed by the European Union. Europe is committed to the Center-Val de Loire region with the European Regional Development Fund.



Development of environmental sensors and pollutant removal processes in waters

Innovative ecological and economic solutions for detecting, monitoring and eliminating priority and/or emergent micro-pollutants in waters.

Design: Kalankaa - oz 38 82 14 16 • PIVOTS 09/2018



Expertise of support laboratories and cutting-edge experimental equipment serving water monitoring

DECAP is a transversal platform sustained by two laboratories of the CNRS and the University of Orléans: the ICMN and the GREMI. DECAP is devoted to design sensors for the environment and to develop processes pollutant elimination. It ensures the link between the innovations regarding new materials and processes and their application to new methods for monitoring the environment.

The platform is equipped with means enabling it to design and characterize new sensors adapted to various aqueous environments and to demonstrate their pertinence (proof of concept). DECAP is likewise oriented towards the elimination of pollutants in waters by means of plasma processes (GREMI) or via electro-chemical and ozonation processes integrating carbon materials (ICMN).



Electro-chemical apparatus for designing sensors and analyzing pollutants



Interfacing equipment for micro-sensor/ Nano-, micro-, macro-scope measurement devices

Applications of DECAP Sensors

- An original implementation and study of the receptor material of the sensors: serigraphy, inkjet, ...
- Solutions that allow the selectivity to be oriented towards the targeted micropollutants-: chemical, electro-chemical or plasma functionalization...
- Devices and methods for sensitive and selective analyses of high-priority or emergent micro-pollutants.

Elimination of pollutants

- Development of materials that are innovative and regenerable, based on porous carbons, for a selective or wide spectrum elimination of micro-pollutants in water,
- Development of processes by electro-chemical, or by ozonation, based on the adsorption/degradation coupling of pollutants,
- Liquid effluent processing by plasma and analysis of the degradation of organic compounds.

Available means of study

- **AFM** : control and monitoring of sensitive receptors and of material developed for the sensors and the elimination processes of the pollutants,
- **Portable electro-chemical apparatus**, with integrated low current and impedance: possibility of on-site analyses,
- **Quartz crystal micro-balance**: understanding, monitoring and optimization of the growth of sensitive layers overlying active materials of the developed sensors,
- **Automatic silkscreen printer, inkjet printer**: production of sensors by printing homemade inks,
- **Total Organic Carbon (TOC) measuring device**: monitoring the degradation of organic compounds,
- **Micro/macro sensor adapters**,
- **Electric temperature measurement system**: control of detection effectiveness,
- A team of research personnel that can be mobilized starting with the design of the sensors and of the de-pollution processes on down to their on-site validation.