



Contract testing

Thermal analysis at your service

DSC, Calorimetry, TGA, TG-DTA, TG-DSC, TMA,
Evolved gas analysis, Sorption ...



OUR APPLICATIONS LABORATORY

Perhaps you're facing the challenge of implementing new characterization tests using techniques that you don't master, or that aren't available in your laboratory? Our laboratory and our experts are here to meet your needs.

What we offer:

A laboratory and a team of experts for a complete characterization of a material over a wide range of temperatures (-196°C to 2400°C)*, pressures (primary vacuum to 1000 bar)* and atmospheres (inert, oxidizing and reducing):

- **Thermogravimetric analysis (TGA)**
- **Differential thermal analysis (DTA)**
- **Differential scanning calorimetry 2D (DSC)**
- **Differential scanning calorimetry 3D (DSC)**
- **Thermomechanical analysis (TMA)**
- **Simultaneous thermal analysis (TG-DTA or TG-DSC)**

**Subject to availability of matching accessories.*

CONTRACT TESTING

Save time by outsourcing your tests to focus on your other daily challenges.

EVALUATIONS

Outsource your testing until you're sure you're making the right investment in analytical equipment, and reduce your financial risk.

TRAININGS

Access new techniques to support and develop your research or control capabilities.

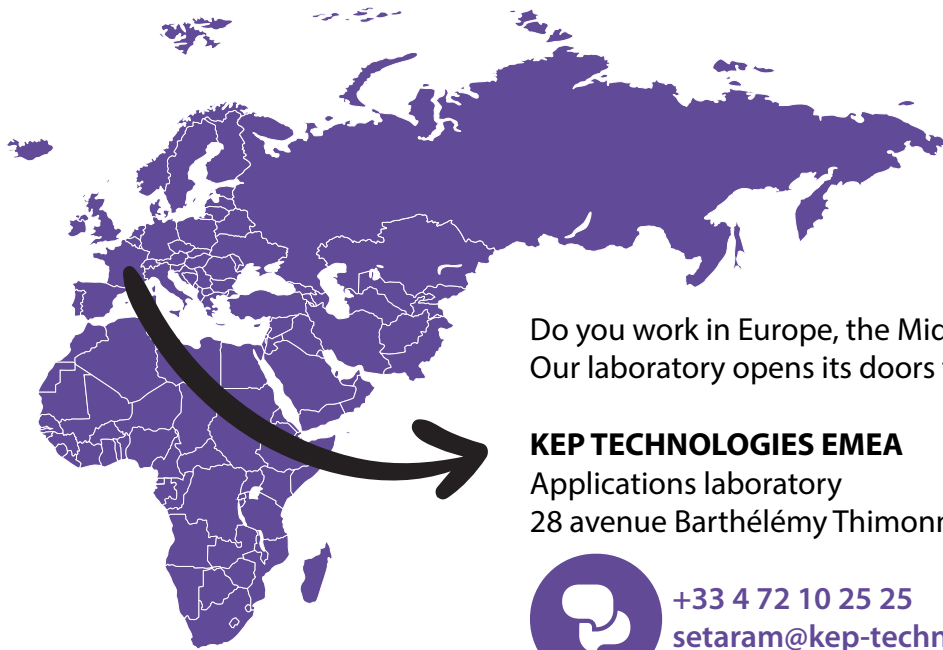
EXPERTISE & ADVICE

Benefit from the qualification provided by an independent laboratory with local and international references.

Rely on an expert laboratory with over 70 years' experience in thermal analysis, thermogravimetric analysis, calorimetry and much more.



Where to find us ?



Do you work in Europe, the Middle East or Africa?
Our laboratory opens its doors for you:

KEP TECHNOLOGIES EMEA

Applications laboratory
28 avenue Barthélémy Thimonnier, 69300 Caluire, France



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setaram@kep-technologies.com

Our experts :



Sandra SEGONDY
Scientific applications
support



Mireille THIMON
Application technician



Marwin CLARAC
Laboratory manager

Our fields of application :

With the wide range of techniques and solutions available in our laboratory, we address a variety of sectors and applications. Here is a sample of the sectors in which we can help you:



Energy & Environment

- Catalysts & adsorbents
- Carbon capture & sequestration
- Hydrogen
- Batteries
- Biomass
- Gas hydrates
- Energy storage
- Nuclear
- Fossil energy

Inorganic materials

- Metals & alloys
- Ceramics, cermets, composites
- Glasses
- Building materials
- Nanomaterials
- Minerals



Life sciences

- Biosystems
- Food
- Pharmaceuticals
- Living organisms
- Agrochemicals

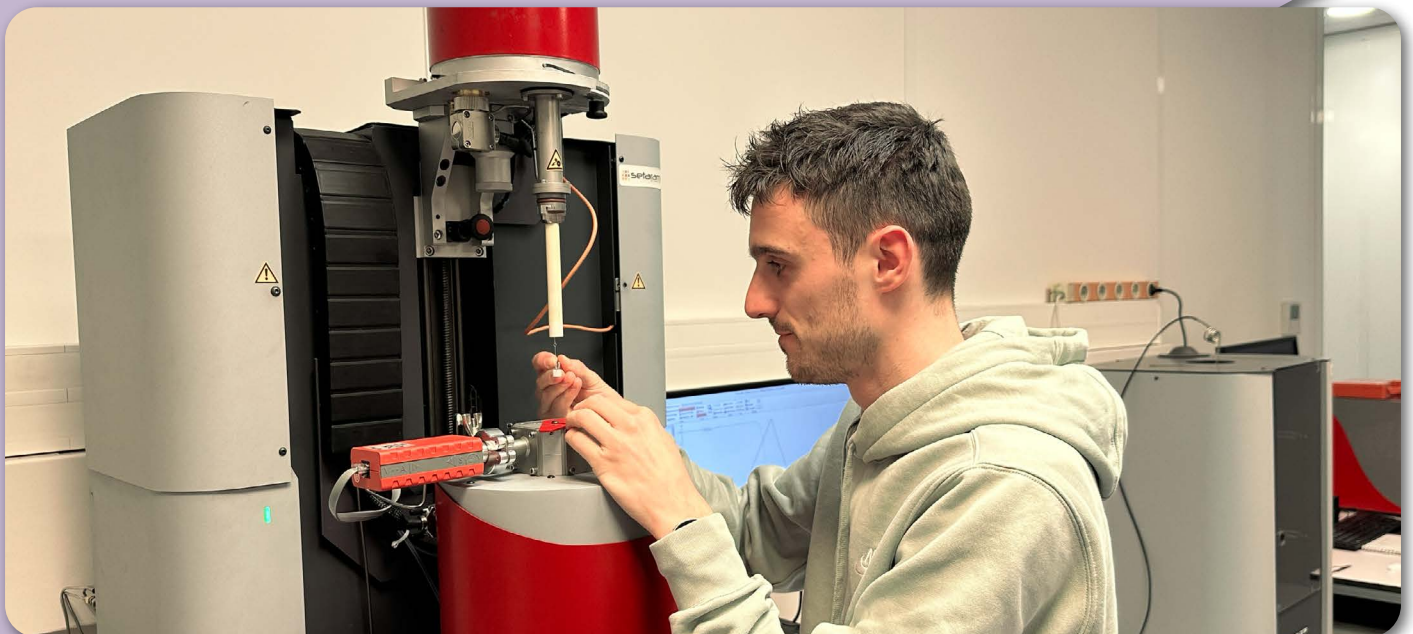
Organic materials

- Polymers
- Plastics
- Elastomers
- Recycling of polymers & plastics



Process safety and energetics

- Chemical processes
- Energetic materials



THERMOGRAVIMETRIC ANALYSIS

Thanks to **thermogravimetric analysis (TGA)**, we can accurately measure changes in the mass of a material (subjected to temperature variation in a controlled atmosphere).

What we measure :

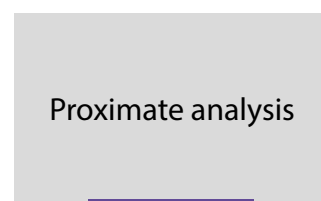
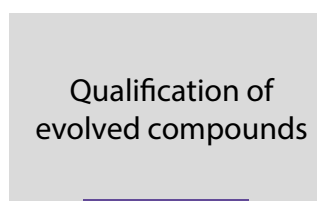
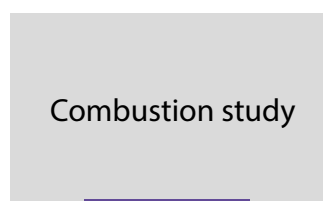
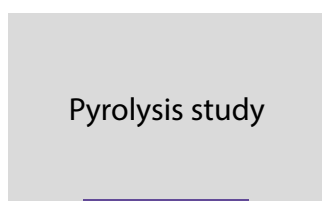
Using thermogravimetric analysis (TGA), we offer services to characterize the following phenomena:



OUR +

Our SETARAM balances are specially designed for thermogravimetric measurement, making them highly stable and extremely accurate.

Our services :



For more information on thermogravimetric analysis and its applications, visit our website by clicking [here](#).

Interested in this service?

CONTACT US

After a first contact, we'll ask you to fill in an analysis request form; download it [here](#).



OUR +

SETARAM offers the widest temperature range of DTA thermo-analyzers: from -150°C to 2400°C using high-precision tri-coupled sensors.

DIFFERENTIAL THERMAL ANALYSIS

Differential Thermal Analysis (DTA) measures the temperature difference between a sample and a reference material (subjected to the same temperature variation in a controlled atmosphere). DTA can be used to monitor the temperature of thermal events in any category of material.

What we measure :

Using differential thermal analysis (DTA), we offer services to characterize the following phenomena:

- ✓ Phase changes
- ✓ Glass transition
- ✓ Melting
- ✓ Evaporation
- ✓ Crystallization
- ✓ Pyrolysis
- ✓ And much more...

Our services :

Temperature and heat crystallization

Curie point temperature

Temperature and heat of phase transition

Temperature and heat melting



For more information on differential thermal analysis and its applications, visit our website by clicking [here](#).

Interested in this service?

CONTACT US

After a first contact, we'll ask you to fill in an analysis request form; download it [here](#).

DIFFERENTIAL SCANNING CALORIMETRY 2D

OUR +

Differential Scanning Calorimetry (DSC 2D) measures the heat flow difference between a sample and a reference material (subjected to the same temperature variation in a controlled atmosphere). DSC determines the temperature and heat of a thermal event.

SETARAM offers a complete range of DSCs: from quality control systems to the highest sensitivity DSCs.

What we measure :

Using differential scanning calorimetry (DSC 2D), we offer services to characterize the following phenomena:

- ✓ Phase changes
- ✓ Crystallization
- ✓ Polymerization
- ✓ Glass transition
- ✓ Pyrolysis
- ✓ Compatibility
- ✓ Melting
- ✓ Evaporation
- ✓ And much more...

Our services :

Melting heat

Solid Fat Index (SFI)

Wax appearance temperature (WAT)

Induction time to oxydation

Glass transition heat

Crystallinity rate

For more information on differential scanning calorimetry and its applications, visit our website by clicking [here](#).

Interested in this service?

CONTACT US

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DIFFERENTIAL SCANNING CALORIMETRY 3D

Unlike DSC 2D, Differential Scanning Calorimetry (DSC 3D) features 3D sensors that enable heat to be measured in all directions, giving ultra-precise results.

What we measure :

Using differential scanning calorimetry (DSC 3D), we offer services to characterize the following phenomena:



Our services :

Mass heat capacity

Denaturation heat

Heat of reaction/
mixture

OUR +

SETARAM's 3D sensors are far more precise than those of the competitors.



For more information on differential scanning calorimetry and its applications, visit our website by clicking [here](#).

Interested in this service?

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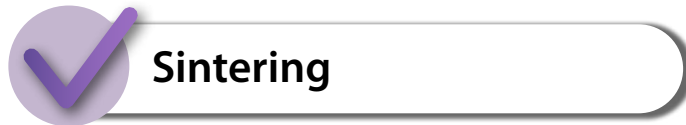
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THERMOMECHANICAL ANALYSIS

Thanks to **thermomechanical analysis (TMA)**, we can measure the dimensional changes of a sample subjected to non-oscillatory stress as a function of time or temperature during a thermal profile.

What we measure :

Using thermomechanical analysis (TMA), we offer services to characterize the following phenomena:



OUR +

The vertical design of SETARAM's TMA analyzers enables them to work with a very low load on the sample in order to limit mechanical stress.

Our services :

Coefficient of thermal expansion

Sintering study

Softening temperature

For more information on thermomechanical analysis and its applications, visit our website by clicking [here](#).

Interested in this service?

CONTACT US

After a first contact, we'll ask you to fill in an analysis request form; download it [here](#).



EVOLVED GAS ANALYSIS

Interpreting a thermogram is far from easy, and **evolved gas analysis** can be a great help.

Tracking the emission of gases can help understand the thermal degradation of a sample, and monitor the emission of certain desired gases (e.g.: chemically recoverable gases) or undesired gases (e.g.: toxic gases whose emission must be avoided).

OUR +

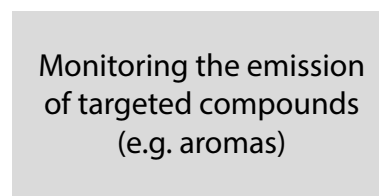
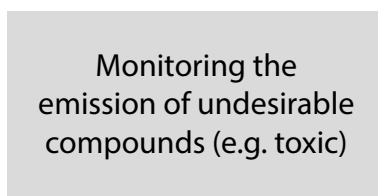
SETARAM instruments can be coupled with any FTIR, MS and GCMS instruments

What we measure :

Coupling techniques, also known as evolved gas analysis (EGA), are particularly useful for characterizing :



Nos services :



For more information on evolved gas analysis and its applications, visit our website by clicking [here](#).

Interested in this service?

CONTACT US

After a first contact, we'll ask you to fill in an analysis request form; download it [here](#).

CONTRACT TESTING SUMMARY

Our resources and experience enable us to characterize all the thermal properties of your materials. We can also combine techniques with **simultaneous thermal analysis (TG-DTA or TG-DSC)** to qualify and quantify thermal exchanges associated with mass variations for optimum analysis.

TECHNIQUES	INFORMATION	°C RANGE	PRESSURE/ ATMOSPHERE	CRUCIBLE NACELLE - CELL
TGA	Mass variation, decomposition, oxydation	RT to 2400°C	Primary vacuum at atmospheric pressure 1750°C : Inert, oxydizing, reducing 2400°C : Inert	130µL to 2500µL
(TG)-DTA	Melting, crystallization, phase transition	RT to 2400°C	Primary vacuum at atmospheric pressure 1750°C : Inert, oxydizing, reducing 2400°C : Inert	20µL to 100µL
(TG)-DSC	Melting, crystallization, phase transition	-170°C to 1750°C	Primary vacuum to 500bars Inert, oxydizing, reducing	30µL to 380µL
Calorimetry	Denaturation, mixing, dissolution, Cp, sorption	-196°C to 600°C	Primary vacuum to 1000bars -	0.1mL to 12.5mL
TMA	Expansion, sintering, phase transition	RT to 2400°C	Primary vacuum at atmospheric pressure 1750°C : Inert, oxydizing, reducing 2400°C : Inert	Max. diameter : 10mm Max. height : 20mm
EGA	Qualification of a gas mixture, monitoring of evolved compounds	RT to 2400°C	Atmospheric pressure 1750°C : Inert, oxydizing, reducing 2400°C : Inert	20µL to 2500µL
Gaz sorption	Porosity, sorption capacity, sorption kinetics	-260°C to 500°C	Primary vacuum to 200bars All gas types	5mL to 1200mL

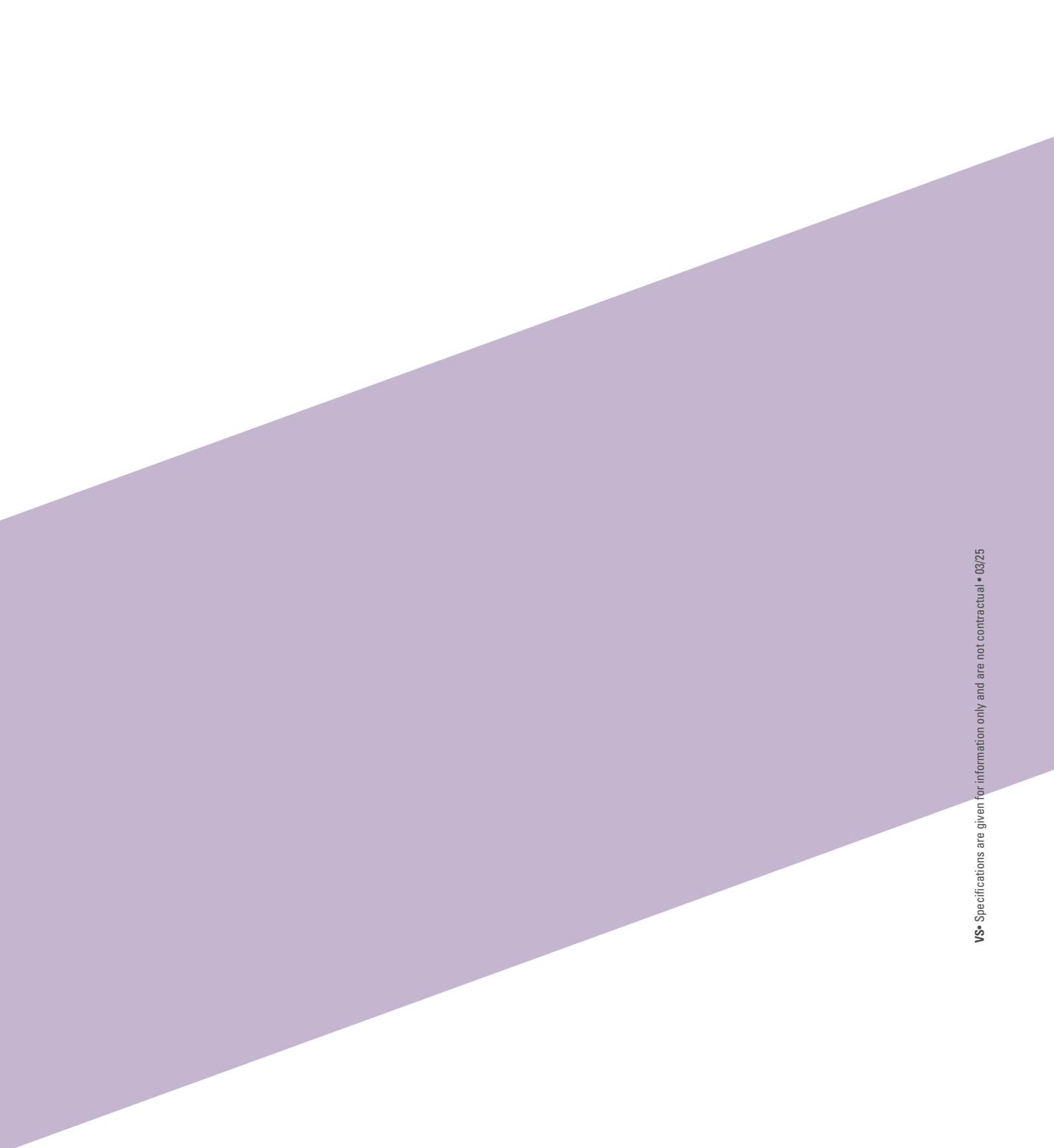
This table is not exhaustive. Contact us to describe your needs.

Need help with a project?

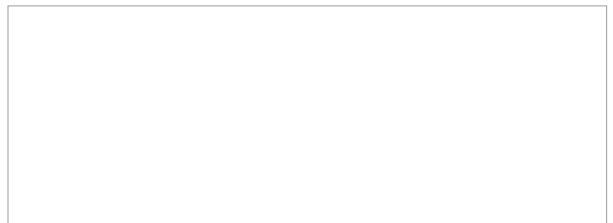
Contact our laboratory and our team of experts will answer your questions and guide you to services tailored to your needs.



Call our team on +33 4 72 10 25 25
or write us [here](#).



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