

# Facilities Introduction

## Introduction to HORIBA FRANCE Applications Laboratory: Missions and Resources

### Alessia QUATELA

HORIBA FRANCE SAS Applications Center has its main analysis laboratory located in Palaiseau, Île de France. The principal role of this laboratory is to exhibit and demonstrate the HORIBA's scientific instruments to further increase the level of customer focus and application support. The laboratory offers application support and full access to our knowledge base and instruments. The laboratory is staffed by an experienced applications team of MSc. and Ph.D. scientists with a variety of backgrounds including Analytical Chemistry, Pharma, Semiconductors, etc.

Welcome, your applications laboratory visit starts here.



## Our Missions:

- ✓ Samples analysis for potential customers
- ✓ Paid analysis for all the systems
- ✓ Live or remote demonstrations of instruments' operations
- ✓ Support to existing customers by phone, e-mail or face-to-face meeting
- ✓ After-purchase training on customer site, scheduled training on HORIBA FRANCE site or by remote
- ✓ Development of new analytical methods and procedures for and with our customers
- ✓ Participation at scientific collaborations
- ✓ Participation at conferences and workshops with talks and posters
- ✓ Validation of new products (accessories, software...)
- ✓ Writing technical (Application Notes and Peer Reviewed Articles), commercial and marketing documents
- ✓ Customers' visits for application support with Sales Forces/Product Specialists/Product Managers

## Material Resources:

The 250 m<sup>2</sup> laboratory hosts different techniques, from elemental analysis to molecular analysis, surface analysis and particle characterization: Atomic force microscopy (AFM), micro and macro-Raman, AFM-Raman, Fluorescence, C/S analyzer, X-Ray Fluorescence (XRF), Glow Discharge Optical Emission Spectroscopy (GD-OES), Inductive Coupled Plasma Optical Emission Spectrometry (ICP-OES), Laser diffraction (Particle Characterization Analysis-PCA), Spectroscopic ellipsometry, Surface Plasmon Resonance imaging (SPRi), etc. (Figure 1).

Here the potential customers have the possibility of testing the systems before the purchase, being trained by our experts (trainings are taught in English and/or in French) on the latest hardware and software releases, analyze their samples. The laboratory has also strong relationships with industry and academia and works in many collaborative projects:



Figure 1 HORIBA FRANCE Applications Laboratory.

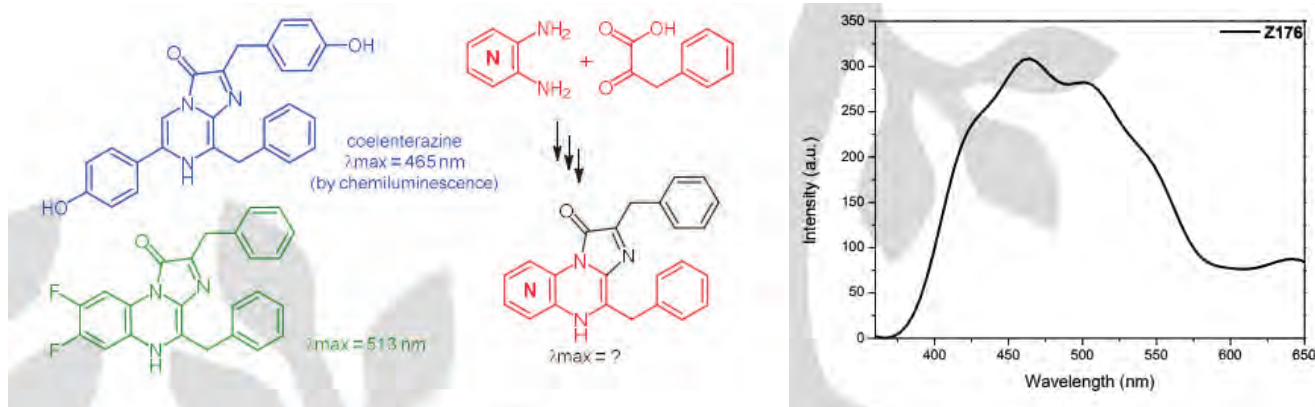


Figure 2 Chemiluminescence spectrum of an investigated compound.

- local collaborations with research centers located on the Plateau de Saclay, a new scientific and technological cluster inspired by the Silicon Valley
- regional and national collaborations with laboratories from various communities (semiconductor, H<sub>2</sub>, pharma, environment etc.)
- international collaborations as, just to mention one, the Harverstore project which received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824072.

As an example of this scientific exchange, Dr. Y. Janin from Pasteur Institute contacted the Horiba application lab as he was looking for a system sensitive enough to detect the chemiluminescence/bioluminescence from luciferins molecules in the frame of the LuLISA project (*bioluminescence as a tool for human diagnostics, from allergy to Covid19*).

This research project aims developing diagnostic tools (i.e., serological tests) for multiple infectious diseases at local, regional or nation scales.

The use of the Aqualog was crucial to detect their weak signal and characterize this kind of molecules (Figure 2).

Two articles are the results of this fruitful collaboration:

- Gagnot G, Hervin V, Coutant EP, Goyard S, Jacob Y, Rose T, Hibti FE, Quatela A, Janin YL., *Core-Modified Coelenterazine Luciferin Analogues: Synthesis and Chemiluminescence Properties*, Chemistry 2021
- Gagnot G, Legrand P, Tadros A, Ezzhara-Hibti F, Quatela A, Janin YL., *On pyridopyrazinol chemistry, synthesis of chemiluminescent substances*, Synthesis 2021 Feb

## Human Resources:

Technical support is provided by Ph. D.s, MSc.s, and Master students. Senior scientists and market/technical experts from other departments supervise and support the application team and the customers' projects (Table 1).

Table 1 Experts' background summary

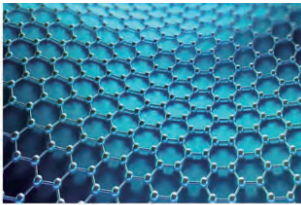
Technique	Background
AFM/Raman	Biophysics, Advanced Materials, Material Science, Pharma, Electronics/Semiconductors, Nano-optics, Nano-Science
C/S analyzer-GD	Material Science
Ellipsometry	Material Science
Fluorescence	Material Science, Biophysics, Cosmetics
ICP	Analytical Chemistry
PCA	Physics, AgroFood, Material Science
PP-TOFMS	Analytical Chemistry and Material Science
SPRi	Biology, Agro-food
XRF	Material Science

## Applications domains:

This wide background is daily employed to support our applications demand and the main applications trends (Figure 3).

The combination of our multidisciplinary experience and technical offer permits to propose to the customers a complete solution building trust, creating added value, and ensuring their satisfaction.

\*Editorial note: This content is based on HORIBA's investigation at the year of issue unless otherwise stated.



### Advanced Materials

- Energy
- Semiconductor
- Healthcare
- Quantum



### Water

- Treatment & Recycling
- Quality control
- Drinking water
- $\mu$ -plastics



### Life Sciences

- Agrofood & Botany
- Cosmetics
- Pharma
- Biology
- Medical



### Energy

- PV & Li battery
- Fuel cell
- Biofuel
- Hydrogen
- Flow &  $\mu$ -battery

Figure 3 Applications Mega Trends.



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