**LA SCIENCE
AU CŒUR
DE L'ENVIRONNEMENT**

Research Fellow in Chemometrics
Montpellier (Occitanie, 34)

Research area : applied mathematics, modeling

Recruitment

Type of recruitment: open competitive exam (state civil service)
Terms: Position open to candidates with a Phd
(In some cases and under certain conditions, applicants may request for recognition of equivalence of diplomas that are not in the list of qualifications required for this examination, diplomas issued or recognized by a Member State of the European Union or the States Parties to the agreement of the European Economic Area, or the professional qualification obtained).

Job's description

Irstea is the National Research Institute of Science and Technology for Environment and Agriculture. Its four main scientific research areas are: **Risks**: Natural, health and environmental risks, **Bioeconomy and circular economy** of bio-resources and effluents: from technologies to actors, **Adaptive resource management** in territories constrained by global change and **Biodiversity**: Dynamics and management of ecosystems and ecosystem services. Having become a key player in both French and European research, the Institute carries out research in support of public policies and in partnership with industry. It employs 1,200 people across nine regional centers in France. As an ISO 9001 certified institution, Irstea has also received the French CARNOT label, which acknowledges its long-standing research partnerships with socioeconomic actors, within both the private and the public sector. Since 1st January 2020, Irstea will pursue its research activities under a new organisation following the merger with National Institute for Agronomic Research (Inra).

The position is located in the ITAP Joint Research Unit within the COMiC team (Optical Sensors for Complex Media). This team develops optical measurement systems associated with data processing methods to characterize objects or environments that are at the heart of agricultural and environmental processes. The research conducted by this multidisciplinary team is based mainly on UV, visible and near-infrared spectrometry, and digital and hyperspectral imaging technologies. The team is equipped with a state-of-the-art optical laboratory (several UV-Visible and near infrared spectrophotometers, several hyperspectral cameras, various sources including supercontinum lasers, ...), essential support for its research. The environments to which the team is addressed are optically and chemically complex (vegetation, agricultural products, soil, waste, outdoor scenes, etc.).

The COMiC team has developed know-how in the use and development of chemometric techniques for analyzing spectral data, for data exploration (PCR, MCR) for calibration (PLS, variable selection), or for discrimination (PLS-DA). It is very active in the chemometrics community at the national and international levels. To deal with more and more complex problems, it has recently been involved in multi-block analysis techniques, allowing the signals of several sensors to be processed in the same model. This know-how has recently resulted in the setting up of a project aimed at the development of chemometrics at the national level: ChemHouse. This project aims to bring together the national chemometric community around a common laboratory, hosting the forge of a MOOC (Chemoocs) and free software (ChemFlow) and to conduct original research in chemometrics dedicated to digital agriculture, in partnership with #DigitAg.

In this context, you will be responsible for:

. Developing methods adapted to the processing of spectral data from the sensors used or developed in the COMiC team and in collaboration with the teams involved in ChemHouse

. Maintaining a scientific watch in the field of chemometrics, in particular applied to spectrometry

. Assisting other team members in analyzing their data. At this level, you will be especially asked to animate the data processing activity to give the other team members the tools and methods adapted to their problems.

. Participating in projects specific to chemometrics already engaged

. Setting up new scientific projects related to chemometrics and spectrometry, especially at European level

. Publishing and participating in the publication of team results

. Participating in the teaching activities of the team

Required profile

Holder of a doctoral degree in chemometrics, applied mathematics or statistics, you are motivated by the operational and the experimental and the production of original methods is of particular interest to you. You are able to develop chemometrics tools in Matlab, R or Python and you like to share them with other users.

	Level required			
	Advanced	**Pre-advance**	**Intermediate**	**Beginner**
Knowledge				
Linear algebra applied to complex multivariate data	X			
Optical spectrometry		X		
Skills				
Data processing softwares	X			
Basic techniques in optical spectrometry		X		
Setting up and management of research projects		X		
English		X		
Social skills				
Autonomy		X		
Taste of teamwork, good interpersonal skills	X			
Able to work in a logic of multidisciplinarity		X		

Work conditions and environment

Access facility
Ground floor   x yes   o no
Elevator   x yes   o no
Public transport   x yes   o no
Car park   x yes   o no
Work environment
Institution catering   x yes   o no
Works council   x yes   o no
Work conditions
- ✓ Working
   time per week : 38h40 (27 days of annual paid leave and 20 days off) or 36h20 (27 days of annual paid leave et 7 days off), for a full time of calendar year.
- ✓ Remote work (depend on eligibility criteria).
- ✓
Social benefits (depend on eligibility criteria)
- ✓ Health insurance: possibility to subscribe to one of 6 referenced health and life insurance policies.
- ✓ Holiday vouchers.
- ✓ CESU (Universal Employment Services Voucher).
Training
- ✓ Support after the appointment..
- ✓ Possibility to follow training to develop professional and personal skills.

For more information

You can contact :
- ⇨ Bendoula Ryad, COMiC team leader - ryad.bendoula@irstea.fr - 04 67 16 64 63
- ⇨ Roger Jean-Michel, ChemHouse leader – Jean-Michel.roger@irstea.fr - 04 67 16 63 83
- ⇨ Sari Tewfik, Director of UMR ITAP – sari.tewfik@irstea.fr - 04 67 16 63 71

To apply

Application form can be obtained:
- on the website: www.irstea.fr link "Nous rejoindre" and then link "concours externes"
- or by contacting the recruitment centre: concours@irstea.fr - +33 140 96 60 37 or 60 91
Full application should be submitted before 00/00/2019 and sent to :

Irstea
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