

Research evaluation

FINAL RESUME ON THE RESEARCH UNIT: Lyon High-Field NMR Center – CRMN

Under the supervision of the following institutions and research bodies: Université Claude Bernard Lyon 1 – UCBL ENS de Lyon

Centre national de la recherche scientifique - CNRS

EVALUATION CAMPAIGN 2019-2020 GROUP A

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In the name of Hcéres¹:

Nelly Dupin, Acting President In the name of the experts committee²:

Stéphane Viel, Chairman of the committee

Under the decree No.2014-1365 dated 14 November 2014,

¹ The president of Hcéres "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5);

² The evaluation reports "are signed by the chairman of the experts committee". (Article 11, paragraph 2).



Tables in this document were filled with data submitted by the supervising body on behalf the unit.

UNIT PRESENTATION

Unit name: Lyon High-Field NMR Center Unit acronym: CRMN Current label and N°: FRE 2034 ID RNSR: 201922960D Application type: Renewal Head of the unit (2019-2020): Mr Guido Pintacuda Project leader (2021-2025): Mr Guido Pintacuda

EXPERTS COMMITEE MEMBERS

Chair:	Mr Stéphane Viel, Aix-Marseille Université
Experts:	Ms Muriel Delepierre, Émérite CNRS Mr Christian Fernandez, Université de Caen Normandie (representative of CNU) Mr Arnaud Marquette, CNRS Strasbourg (representative of CoNRS / supporting personnel) Ms Carine Van Heijenoort, CNRS Gif-sur-Yvette

HCÉRES REPRESENTATIVE

Mr François Guillaume

REPRESENTATIVES OF SUPERVISING BODIES

Mr Philippe Cassagnau, Université Claude Bernard Lyon 1

Mr Thierry Dauxois, ENS Lyon

Ms Claire-Marie Pradier, CNRS



INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The Very-High-Field NMR Centre (CRMN, FRE 2034) is a research unit involving CNRS, Université Claude Bernard (UCBL, Lyon 1), and École Normale Supérieure de Lyon (ENS-Lyon). It is located at the border of the scientific campus of La Doua and is part of the "Cité Lyonnaise de l'Environnement et de l'Analyse" (CLEA) together with the "Institut des Sciences Analytiques" (ISA) and the "Institut national de Recherche en Sciences et Technologies pour l'Environnement et l'Agriculture" (IRSTEA). Back in 2003, the Ministère de la Jeunesse, de l'Éducation Nationale et de la Recherche decided to set up a very high-field NMR laboratory in Lyon revolving around the realisation and installation of the first 1 GHz Nuclear Magnetic Resonance (NMR) spectrometer in the world. This spectrometer was installed in 2009 in a new building specifically designed to host this unique instrument as well as a full range of other complementary high-field NMR spectrometers. The resulting unit (already referred to as CRMN) was originally managed by Pierre Toulhoat and hosted the research team led by Prof. Lyndon Emsley. In 2011, the CRMN merged with the "Laboratoire de Sciences Analytiques" (LSA) and the "Service Central d'Analyses" (SCA) to create the "Institut des Sciences Analytiques" (ISA). From 2011 to the end of 2017, the ISA management progressively established a new organisation that led to the creation of five main scientific areas gathering eighteen distinct research teams. In 2018, the CRMN staff scientists wished to separate from the ISA to establish an independent research unit. Both an external advisory board and the governing bodies positively assessed this choice, which led to the creation of the CRMN (FRE 2034) on January 1st 2019.

The CRMN is affiliated to the CNRS, UCBL and ENS-Lyon. The CRMN is also a member of the "Institut de Chimie de Lyon" (ICL, FR 3023) and belongs to the Science and Humanities perimeter of the presently under construction "université cible" within the Idex Lyon initiative. The CRMN members have also developed collaborative projects within the labex Imust and the labex ECOFECT. In addition, the CRMN benefits from the Lyon/Saint-Etienne SATT (PULSALYS) in terms of patent coordination in order to promote the transfer of innovation from public and academic research to socioeconomic partners. Last but not least, the CRMN members were at the forefront of the creation of the successful NMR National Research Infrastructure (IR RMN, FR 3050), in the framework of which they presently operate three high-field NMR spectrometers and host about 100 visitors annually (for a total of 300 access days per year).

Management team

The management team of CRMN is composed of Dr. Guido Pintacuda and Dr. Sami Jannin as director and deputy director, respectively.

HCÉRES NOMENCLATURE

ST4: Chemistry.

THEMATICS

Research activities at CRMN are internationally recognised and focus essentially on the development of innovative methodologies and cutting-edge applications in magnetic resonance for the fields of Chemistry & Materials sciences as well as Health & Life sciences. The underlying driving force of the CRMN activities is to focus primarily on challenges that cannot be tackled by any other technique. CRMN research strongly benefits from the access to an outstanding NMR platform in terms of equipment and scientific support.

UNIT WORKFORCE

Lyon High-Field NMR Center (CRMN)			
Active staff	Number 06/30/2019	Number 01/01/2021	
Full professors and similar positions	1	1	
Assistant professors and similar positions	1	1	
Full-time research directors (Directeurs de recherche) and similar positions	1	1	

Full-time research associates (Chargés de recherche) and similar positions	2	2
Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.")	0	
High school teachers	0	
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	8	8
Permanent staff	13	13
Non-permanent professors and associate professors, including emeritus		
Non-permanent full-time scientists, including emeritus, postdocs (except PhD students)	8	
PhD students	11	
Non-permanent supporting personnel	1	
Non-permanent staff	20	
Total	33	13

In January 2014, the CRMN hosted nine permanent scientists and technical staff (1PR, 2 DR, 4 IR, 1 MC, 1 T), organised in four independent research teams led by specific Principal Investigators (PIs). The NMR axis in ISA included three additional research groups. Between 2014 and 2019, three of the original CRMN PIs and one technical staff member have left the CRMN. Meanwhile, two new PIs as well as two technical engineers have been recruited. In parallel, one team from ISA decided to join the CRMN. As of June 2019, the CRMN workforce is composed of thirteen permanent researchers and technical staff. The CRMN can count on the support of two half-time administrative staff shared with the laboratory of chemistry of ENS Lyon and with ISA. Finally, in order to support the kick-off and the set-up of the new unit, a project manager has been appointed in January 2019 on the unit's research grants, and a number of administrative (1 IE and 1 T) and technical (1 IE) personnel of the ISA have been mutualised.

GLOBAL ASSESSMENT OF THE UNIT

The scientific activities of the CRMN are outstanding both qualitatively and quantitatively, with seminal contributions related to NMR spectroscopy that span a large variety of fields from chemistry and biology to material sciences and physics. The scientific outreach and recognition of the CRMN are equally outstanding and place its principal investigators (PIs) at the forefront of international research in their respective fields, contributing to the high attractiveness of the unit that has resulted in the recruitment of many excellent permanent and non-permanent researchers over the last few years. The CRMN PIs have also demonstrated their proficiency in attracting significant funding including from the most prestigious sources at the European level. In addition to high-quality fundamental research, the CRMN also leads more application-oriented research in close collaboration with socioeconomic partners, which has shaped into strategic partnerships involving key industrials or joint research laboratories gathering complementary socioeconomic and academic institutions. The CRMN involvement in training through research is also excellent, with a large number of doctoral students who display high scientific productivity during their graduate studies giving them the opportunity to insert into working life at high-level professional positions. One of the keys to the success of the CRMN is undoubtedly a plethoric NMR platform composed of many state-of-theart NMR spectrometers that are, for some of them, accessorised with unique pieces of equipment. This allows CRMN unrivalled technological means to tackle complex challenges but also requires high levels of funding to finance operational and maintenance costs as well as to sustain the associated infrastructure. Three of these spectrometers are made available to the national community through the NMR National Research Infrastructure (IR-NMR, FR 3050), which in turn contributes to the visibility of the CRMN and helps to initiate relevant collaborations. The organisation of the CRMN is flexible and provides a stimulating environment where discussions are encouraged. The scientific project of the CRMN is a highly ambitious initiative that targets high-risk/high-gain research by relying on the expertise of its PIs who lead their own groups quite independently from one another, with enormous potential that could lead to highly innovative instrumental and scientific developments and highly valuable applications if synergistic internal interactions are capitalised upon.

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