

Lyon, April 14 2020

## Support letter from the EMIR&A Federation

We would like to underline the nationwide major role of GANIL/CIMAP in Caen in fundamental and applied materials research, as well as in the development of new and emerging technologies for materials under irradiation. In the following we review the role of GANIL in these various fields.

Let us first recall the origin of EMIR&A, the French national research network, gathering ion and electron accelerators for studies of the irradiation of materials and molecules and/or for their analysis by using ion beams. It was under the impulse of Serge Bouffard from CIMAP that in 2009 EMIR was founded, standing for the 'Etudes de Matériaux sous IRradiation' or the study of materials under irradiation. The idea was to join forces nationwide to promote research on materials under irradiation and to create a network of accelerators for studies of materials under irradiation. EMIR was made of six irradiation platforms, JANNuS-Saclay (CEA SRMA+SRMP), JANNuS-Orsay (IJCLab), CEMHTI-Orléans, CIMAP-Caen and LSI-Palaiseau. This network was transformed in 2014 into a CNRS federation.

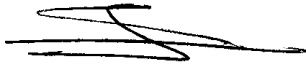
In 2019, the French Federation EMIR became EMIR&A, with the addition of A standing for 'Analyse' or analysis. It now covers two additional but complementary fields: Irradiation and radiolysis of molecules and materials in the continuation of EMIR and ion beam analysis (IBA) of materials. The EMIR&A facilities are complementary to each other, regarding the accelerated particles, the available energies and instrumentation. EMIR&A aims to provide the national and international scientific communities with access to state-of-the-art acceleration facilities. One of our primary goal is to foster links between irradiation and ion beam analysis platforms and to encourage collaborations between national and international research teams.

In this network, CIMAP laboratory as always been and remains a key actor in the structuration of the French community around the use of ion beams for material science. Through the CIRIL platform, it gives access to the GANIL ion beams (IRRSUD and Medium energy beam (SME) lines). This access is crucial to maintain our research activities at a high level of excellence and reinforce the dynamism of our community, as it is the only accelerator in France delivering swift heavy ions with energies in the GeV range. In order to explore the effect of electronic stopping power in materials that occurs in the high energy range, it is thus essential to maintain and develop the possibilities at GANIL for our users. The beam lines, IRRSUD and SME, are open to the EMIR&A call, up to 30% of the total access time. The EMIR&A beam time is allocated thanks to a call, once a year, and is evaluated by an international scientific committee. In 2019, the IRRSUD and SME beamtimes for our community represented 33 UT (time units).

At the last EMIRUM (EMIR Users Meeting), the interest for using swift heavy ions and developing the CIRIL platform was evident for all of us. In 2020, we decided to take the great opportunity of *the PIA3 call for proposals ESR EquipEx+* to enlarge the EMIR&A network. In our project, we intend to propose a new accelerator at an intermediate energy, between ARIBE and IRRSUD, and to couple it with the medium energy beam line. A complementary and original characterization in-situ RPE equipment will be also required.

In conclusion, the GANIL beamlines dedicated to material studies, which can be conducted in parallel to the emerging SPIRAL 2, are unique in France and are complementary to the other facilities present in EMIR&A. We therefore strongly support future GANIL activities related to materials studies.

Sincerely,



Nathalie Moncoffre  
Head of EMIR&A



Robin Schäublin  
President of the EMIR&A  
Scientific Committee