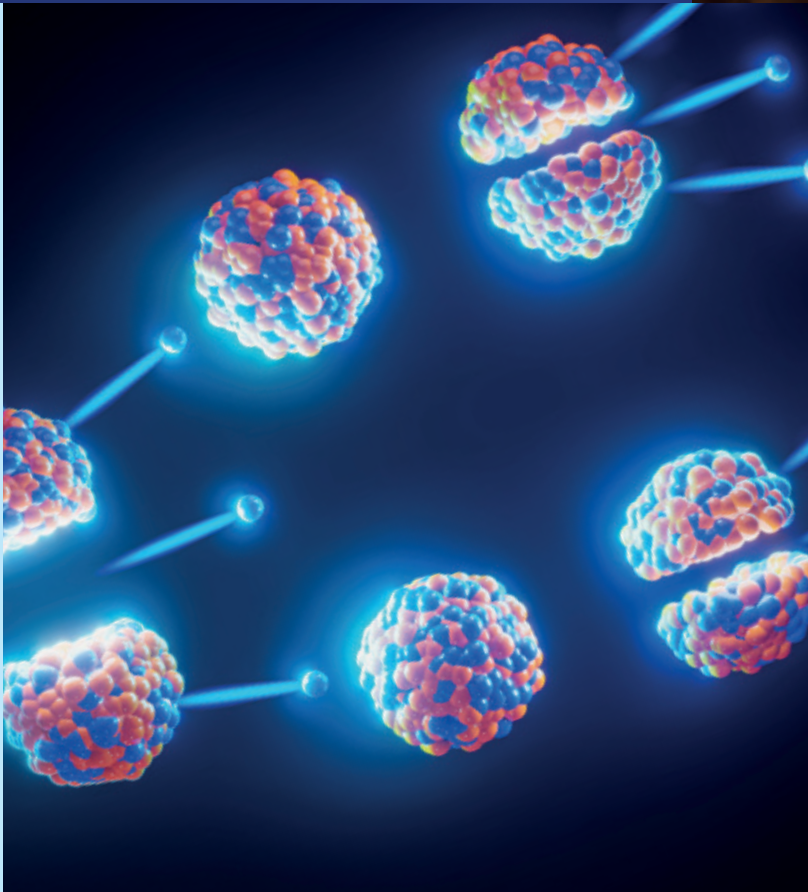


ISFIN



To develop a European hub of excellence for research and training in nuclear fusion, fission and instrumentation

The transition to low-carbon energy sources represents a crucial challenge in the face of climate change. Nuclear fission energy, and soon fusion energy, the energy of the stars, is one of the keys to this transition. Our institute is fully committed to research and training in instrumentation for major nuclear facilities, characterisation of materials and structures, and fusion science. Our interdisciplinary approach incorporates the societal dimension, which is fundamental to the success of this transition.

Over the next decade, our ambition is to make Aix-Marseille a leading European hub for research and training in these areas, by establishing solid partnerships with major local players such as CEA, ITER, IRSN and EDF.

Forming a community

10 research units

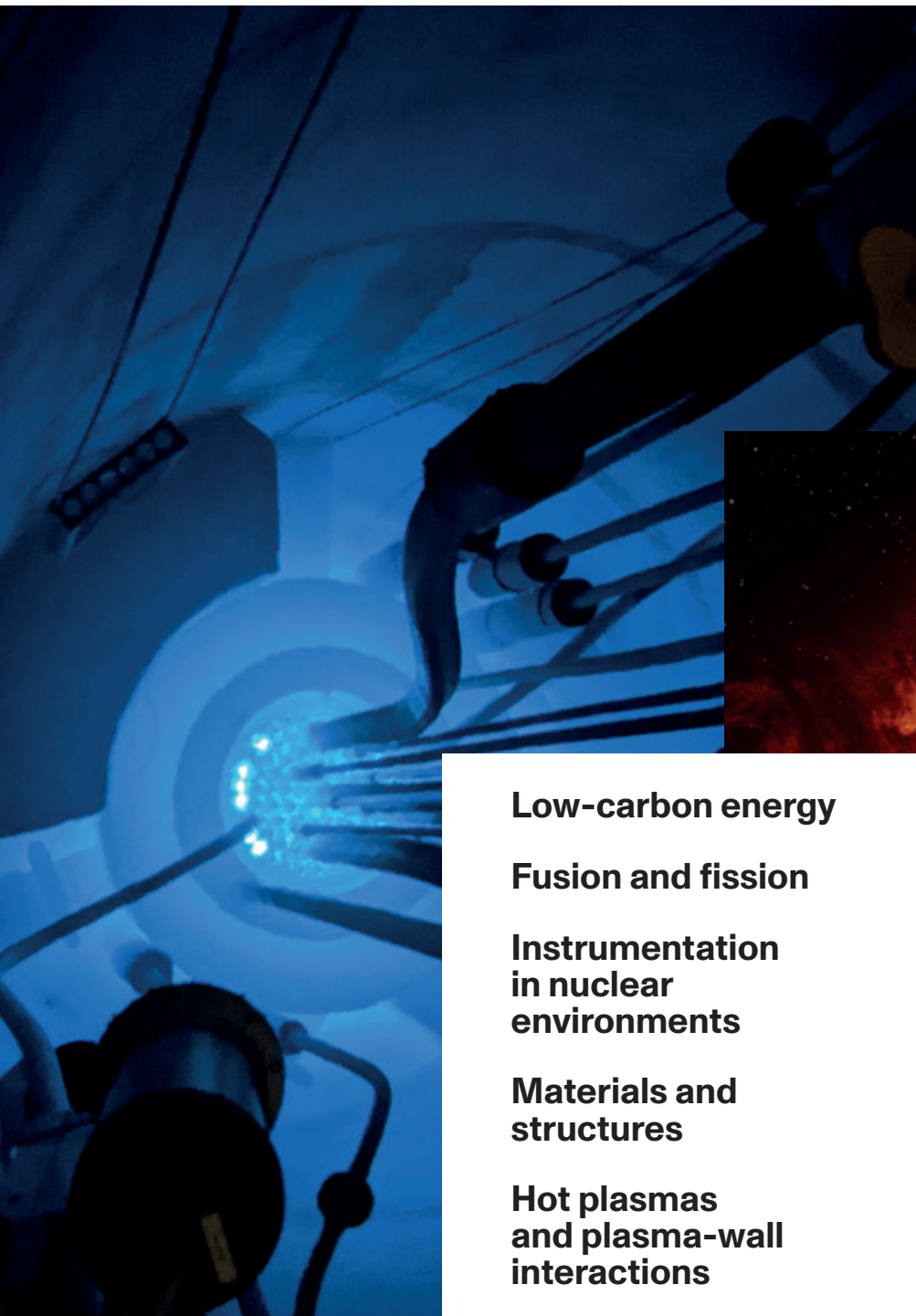
**2 joint
laboratories**

3 doctoral schools

1 faculty

**more than
100 staff**

**more than 240
students (master
and PhD)**



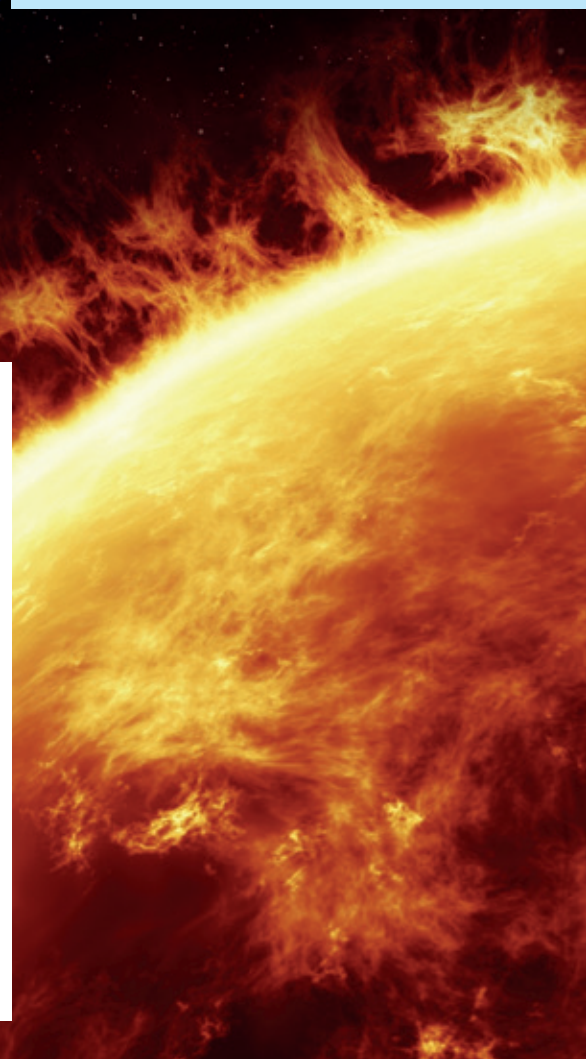
Low-carbon energy

Fusion and fission

**Instrumentation
in nuclear
environments**

**Materials and
structures**

**Hot plasmas
and plasma-wall
interactions**



Bringing disciplines closer together

Physics

Instrumentation

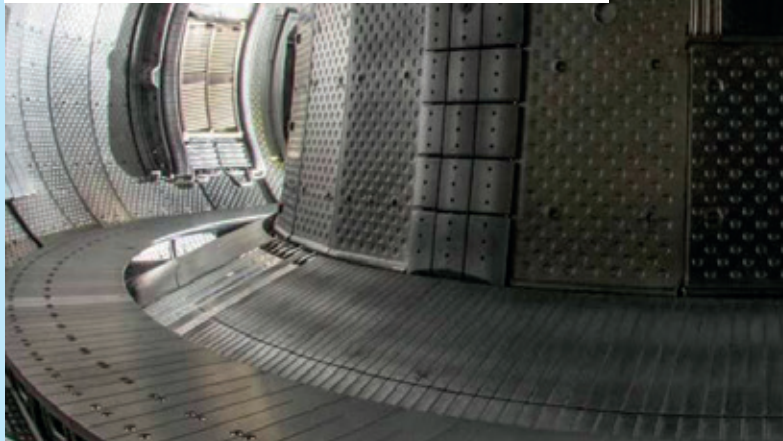
Mathematics

Social sciences

Shared facilities

Incentive calls for projects

Theme days



Training through and for research

PLATINUM platform for prototyping, virtual reality and remote access to nuclear facilities

Development of an interdisciplinary PhD programme

Immersion research projects on major nuclear facilities



Acting internationally

International mobility of PhD and master's students

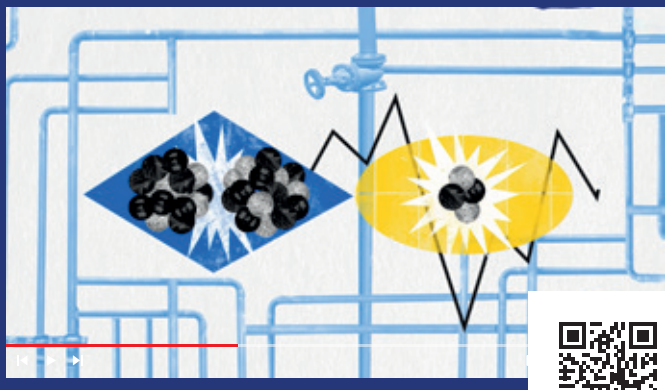
International Master's courses (IMSci-Nu and Fusion EP)

Conferences and seasonal schools (ANIMMA, ITER School, EFMMIN, IMSci-Nu School)

Strengthening partnerships

- CNRS
- Centrale Méditerranée
- CEA
- ITER IO
- ASNR
- EDF
- CAPENERGIES

Videos



Watch the institute's animated film



The institute as seen by its members

Our executive office

The entire governance team: <https://institut-isfin.univ-amu.fr/en/governance>



Director:
Yannick Marandet



Deputy director for research
and socio-economic
partnerships:
Christelle Reynard-Carette



Deputy training
director:
Gilles Cartry



Operations manager:
Sara Ploquin-Donzenac

Focus on the institute's cross-sectoral dialogue and societal dimension

The interdisciplinary nature of the institute fosters collaboration between physicists, mathematicians, thermal engineers and mechanical engineers to bring its projects to fruition. It also promotes cross-sectoral dialogue by integrating the human sciences, particularly involving the research area of "Nuclear and Society". This approach is specifically based on the organisation of a scientific programme centred around regular events such as conferences, visits to nuclear sites and discussions on scientific publications. This enables researchers from different disciplines to engage in dialogue and question their practices in the light of societal issues.

Contact

Director:
Yannick Marandet

Operations manager:
Sara Ploquin-Donzenac

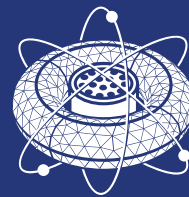
isfin-direction@univ-amu.fr

<https://institut-isfin.univ-amu.fr>



Institut - ISFIN

Training at ISFIN



*Training for, through and in research, with
continuity from master's to doctorate level*



Our training ecosystem

**more than 200
master's students***

1 partner faculty

Faculty of sciences (FS)

**3 partner doctoral
schools**

Marseille mathematics and
computer sciences (ED 184)

Physics and science of
matter (ED 352)

Engineering sciences (ED 353)

**Around 40 PhD
students***

5 key masters

Instrumentation and Measurement
Science for Major Nuclear
Research Facilities (IMSci-Nu)

Instrumentation of Test
Facilities (IME)

Industrial Instrumentation
Engineering (3I)

Physics (FunPhys)

European Master of Science
in Nuclear Fusion and
Engineering Physics, Erasmus
Mundus (Fusion EP)

**Four associated
Master's specialisations**

Nuclear process engineering

Mechanical engineering

Health engineering:
NewDEAL and PRINT

Polytech engineering degree:
Nuclear ventilation

**1 interdisciplinary
PhD programme**

* These figures include students enrolled in master's specialisations affiliated with the institute and PhD students enrolled in our partner doctoral schools.

Explore our
full range of
training offers:





Our key actions since 2020

Study tours (ITER, CEA Cadarache, Jules Horowitz reactor, CABRI reactor)

Research and training platform (PLATINUM platform for prototyping, virtual reality and remote access to nuclear fission and fusion facilities) in partnership with the Instrumentation Division

Seasonal schools (EFMMIN, ITER School, IMSci-Nu school)

Study grants for Master's students

Master's projects in laboratories (amU laboratories, CEA Cadarache platforms and laboratories)

5 annual study tours

3 seasonal schools

9 study grants per year

more than 100 working master's students per year

110 laboratory master's projects per year

more than 100 laboratory master's internships per year

Contact

Deputy training director:
Gilles Cartry

isfin-direction@univ-amu.fr

<https://institut-isfin.univ-amu.fr>

« Thanks to an ISFIN scholarship, I was able to take part in the prestigious Erasmus Mundus programme, Fusion EP. I've had an exciting academic year at Aix Marseille Université. The ISFIN grant was a springboard for my academic career, as I subsequently obtained an IAEA grant and am now pursuing my dream of a career in nuclear fusion. »



Bojana Stefanoska
(Northern Macedonia)
Alumni Master Erasmus
Mundus Fusion EP

Our international training initiatives

CIVIS alliance
[European civic university](#)

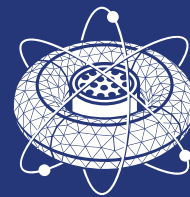
An international Master's specialisation with 23 supporting organisations, including 17 international organisations

An Erasmus Mundus master's degree co-accredited by 8 European universities

20 nationalities represented among our students

International mobilities on 5 continents for PhD and master's students

Research at ISFIN



Bringing together the strengths in nuclear science of the Aix-Marseille site to consolidate our international scientific position



Our research ecosystem

10 research units

Energy

Comparative and European international law (DICE)

Fresnel institute (FRESNEL)

University institute for industrial thermal systems (IUSTI)

Mechanics and acoustics laboratory (LMA)

Mediterranean centre for sociology, political science and history (MESOPOLHIS)

Joint laboratory for Modeling, Inspection and characterization of materials and STRuctures for Advanced Low carbon energies (MISTRAL)

Advanced science and technology

Centre for theoretical physics (CPT)

Marseille institute for mathematics (I2M)

Provence institute for microelectronics and nanosciences (IM2NP)

Joint laboratory for instrumentation and measurement in extreme environments (LIMMEX)

Mechanics, modelling and clean processes laboratory (M2P2)

Physics of the interactions of ions and molecules (PIIM)

2 joint laboratories with the CEA

more than 100 staff

Aix Marseille Université

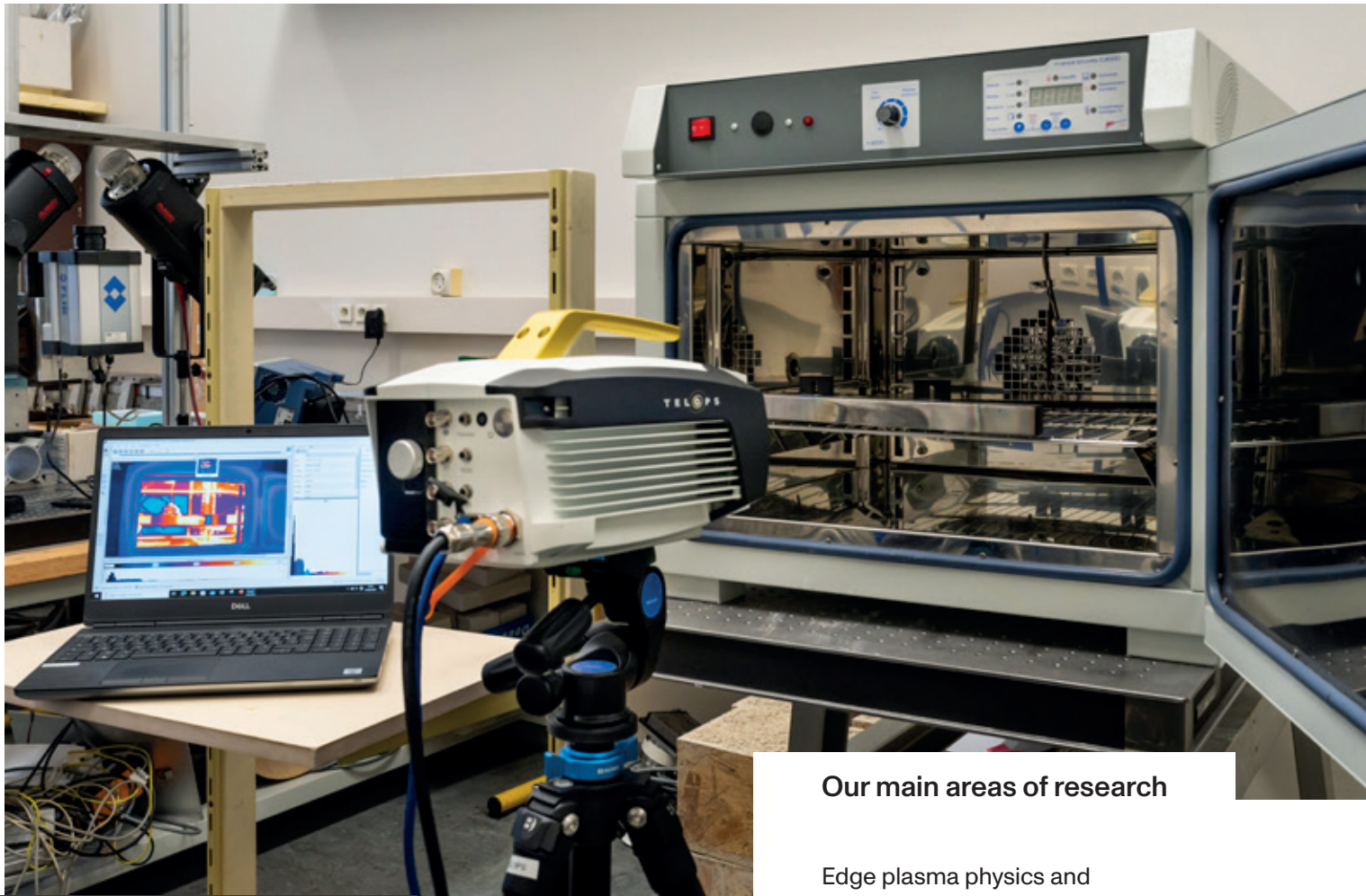
CNRS

Centrale Méditerranée

150 CEA employees

IRESNE

IRFM



Our key actions since 2020

Structuring research in partnership
 – 3 calls for projects to jointly fund theses (10 awardees)

Stimulation of inter-laboratory work
 – 5 calls for projects
 – more than €400 thousand invested in pooled facilities

Developing interdisciplinarity
 – 1 call for projects
 – €420 thousand invested in 2 awardee projects

Involvement in the organisation of international conferences and workshops such as ANIMMA and PSI

PLATINUM platform for conducting on-site and online experimental and digital research with international partners

4 calls for international mobility projects for doctoral students
 – 15 long-term mobility projects on 3 continents

Our main areas of research

Edge plasma physics and plasma-wall interactions

Magnetised plasma confinement physics

Nuclear instrumentation and detection: sensors, rugged electronics

Materials and structures: characterisation and modelling

Thermal diagnostics and thermodynamic characterisation

Nuclear science and society

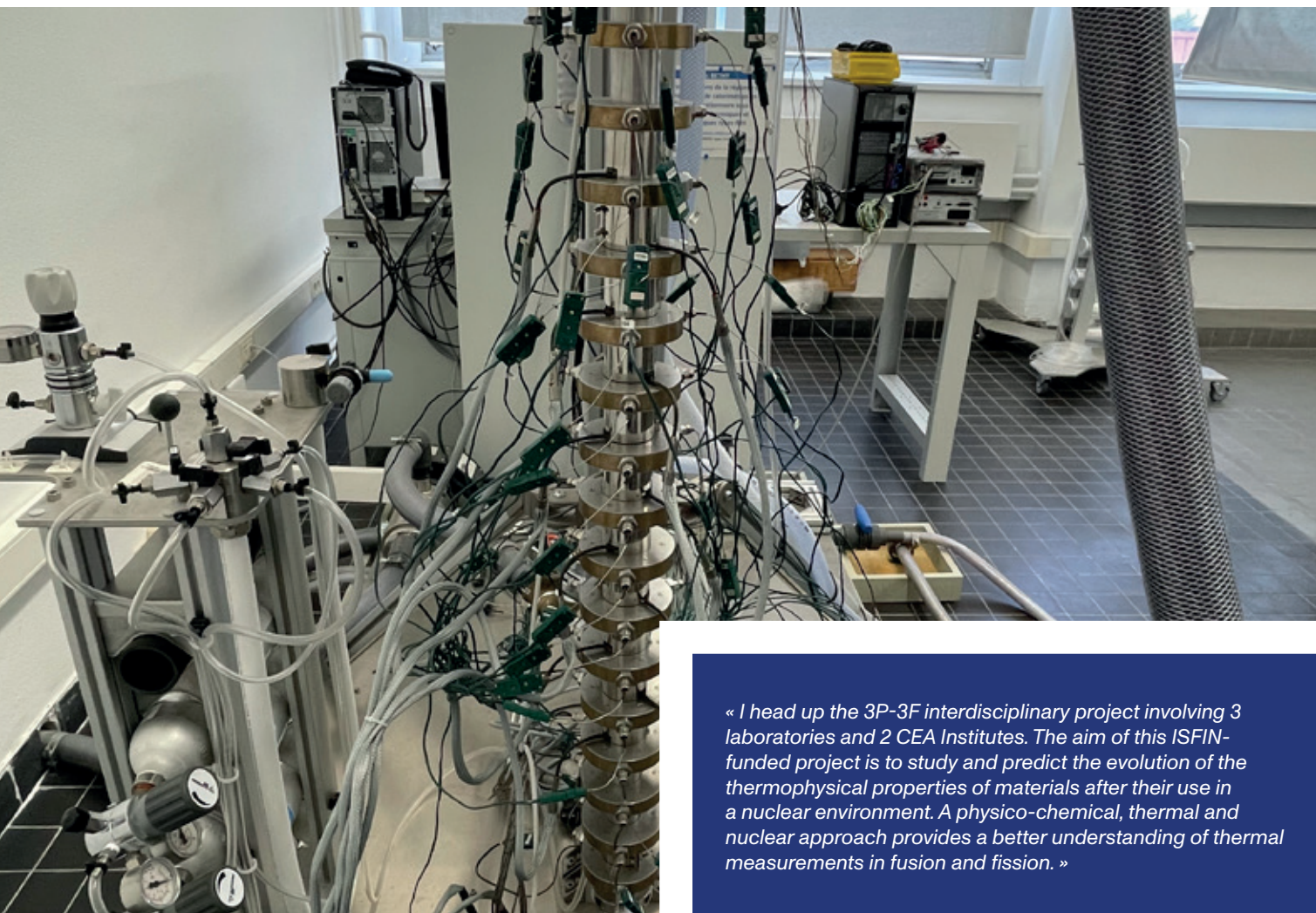
Contact

Deputy director for research and socio-economic partnerships:
 Christelle Reynard-Carette

isfin-direction@univ-amu.fr

<https://institut-isfin.univ-amu.fr>

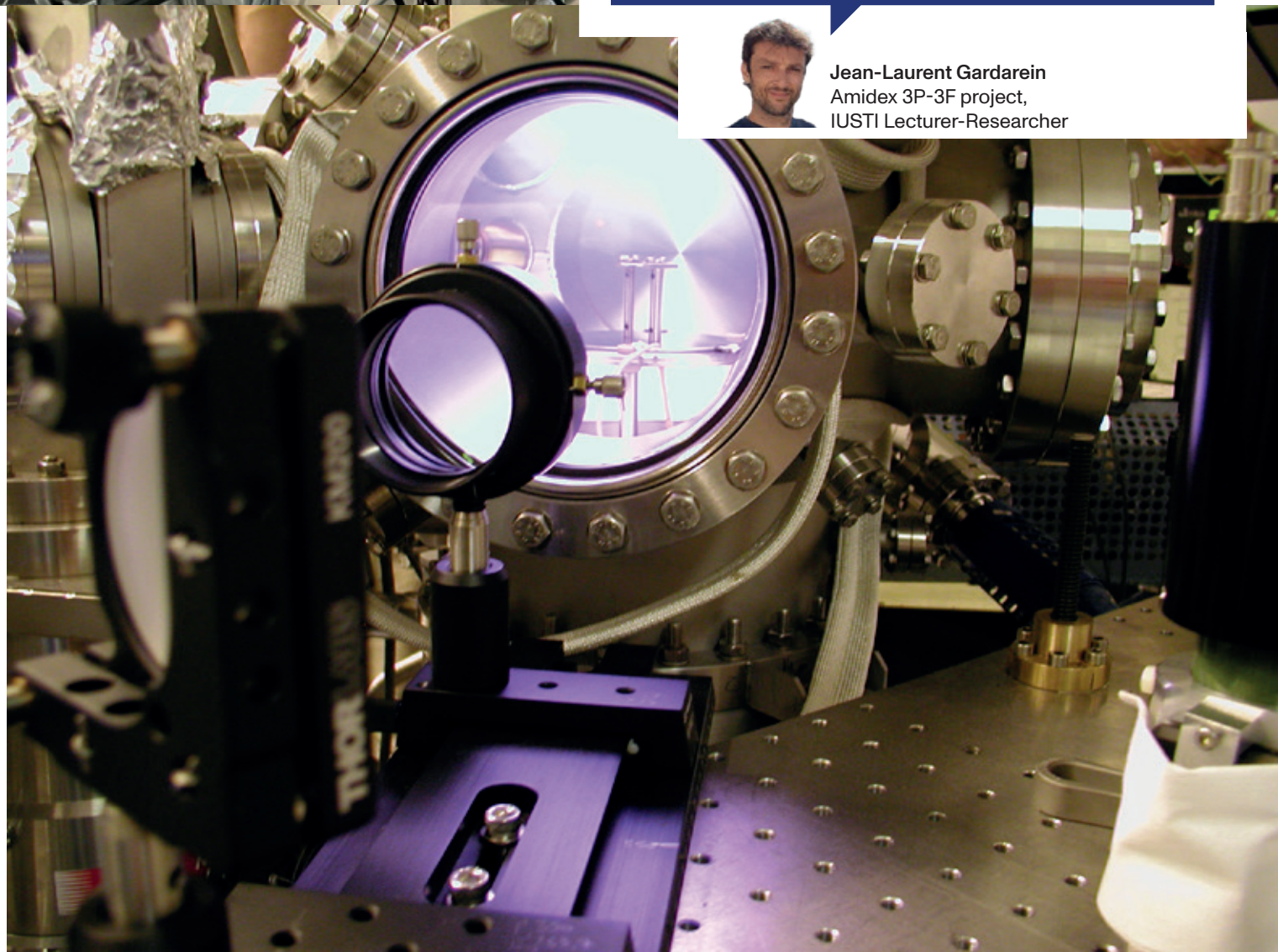




« I head up the 3P-3F interdisciplinary project involving 3 laboratories and 2 CEA Institutes. The aim of this ISFIN-funded project is to study and predict the evolution of the thermophysical properties of materials after their use in a nuclear environment. A physico-chemical, thermal and nuclear approach provides a better understanding of thermal measurements in fusion and fission. »



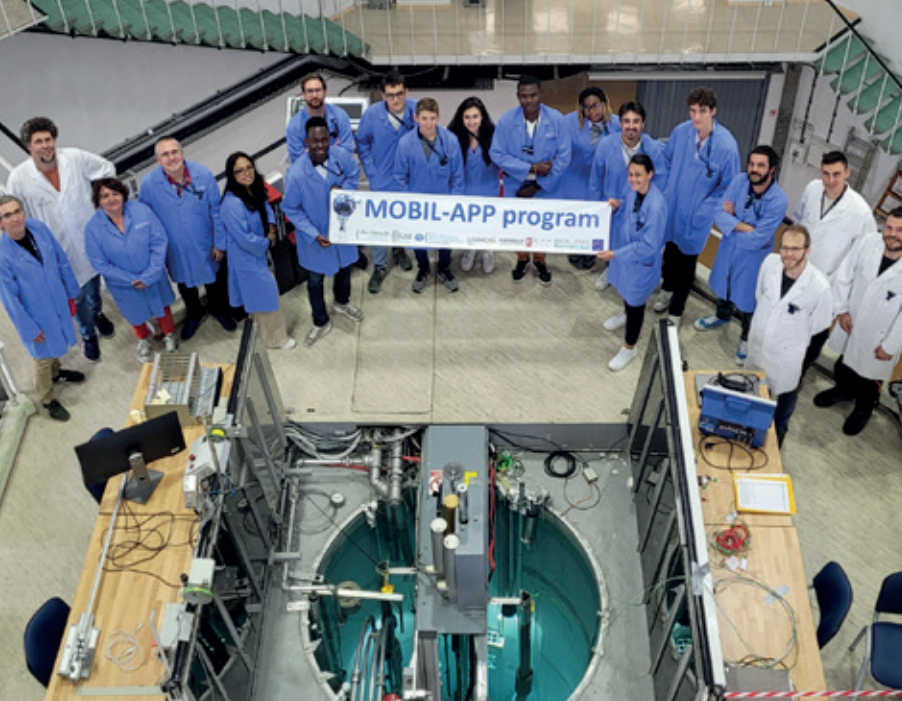
Jean-Laurent Gardarein
Amidex 3P-3F project,
IUSTI Lecturer-Researcher



ISFIN partnerships



*Strengthening and developing special links with
academic and institutional players and the
socio-economic and cultural world*



Our key actions since 2020

Thesis co-funding programme with
key partners (CEA, ITER, IRSN)

Joint organisation of season
schools

- > ITER School: 170 participants
- > EFMMIN: 65 participants
- > IMSci-Nu School

Joint organisation of international
conferences

- > ANIMMA: 400 participants
- > ICPIG: 400 participants
- > PSIN: 450 participants

Organisation of 3 theme days a year

Innovative nuclear reactors day
with 8 start-ups, 340 participants



Our key partners include

Internationally

- Nuclear Reactor Laboratory (MIT)
- Fusion-EP and IMSci-Nu master's partners
- Jožef Stefan Institute (JSI)
- Morocco Nuclear Centre (CNESTEN)
- University of Lancaster
- Laboratories in the European EUROfusion programme
- Belgian Nuclear Centre (SCK-CEN)

In France

- CNRS
- University of Nuclear Professions
- Magnetic Confinement Fusion Research Federation (FR-FCM)

In the Aix-Marseille area

- CEA Cadarache
- ITER-IO
- ASNR (French authority for nuclear safety and radiation protection)
- EDF
- Centrale Méditerranée
- Capénergies competitiveness cluster
- Campus of Professions and Qualifications for Excellence - Industrie du futur Sud - Provence-Alpes-Côte-d'Azur

« We collaborate with ISFIN by conducting joint research projects, co-piloting Master's courses and jointly organising international scientific events. This lets us pool our skills to initiate cross-disciplinary fission-fusion initiatives, particularly in nuclear instrumentation and measurement for innovative solutions for the Cadarache centre's major experimental facilities. »



Abdallah Lyoussi
Research director at CEA, IRESNE

Contact

Directrice adjointe Recherche
et Relations avec le MSE :
Christelle Reynard-Carette

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The ISFIN institute brings together teams on 7 university and scientific sites

Cadarache site



Jas de Bouffan site



Château-Gombert site



Saint-Charles site



Schuman site



Main site: Saint-Jérôme site



Luminy site



The Aix Marseille Université institutes are coordinated by the Amidex foundation

amidex Aix Marseille Université



Aix Marseille Université institutes: facilitators to strengthen the research-training link, interaction with the economic and cultural world, interdisciplinarity and internationalisation around twenty or so strategic fields of research. Their core unifying role: training a new generation of academics to meet the scientific and societal challenges of our time!

The Aix-Marseille Excellence Initiative, a consortium between Aix Marseille Université and 8 partners

amU Aix Marseille Université



Inserm



Centrale Méditerranée

sciencespo.aix

Hôpitaux Universitaires de Marseille

ap-hm INSTITUT PAOLI-CALMETTES **unCancer Marseille**