



Sharing scientific infrastructure and fostering collaboration to strengthen the European innovation potential

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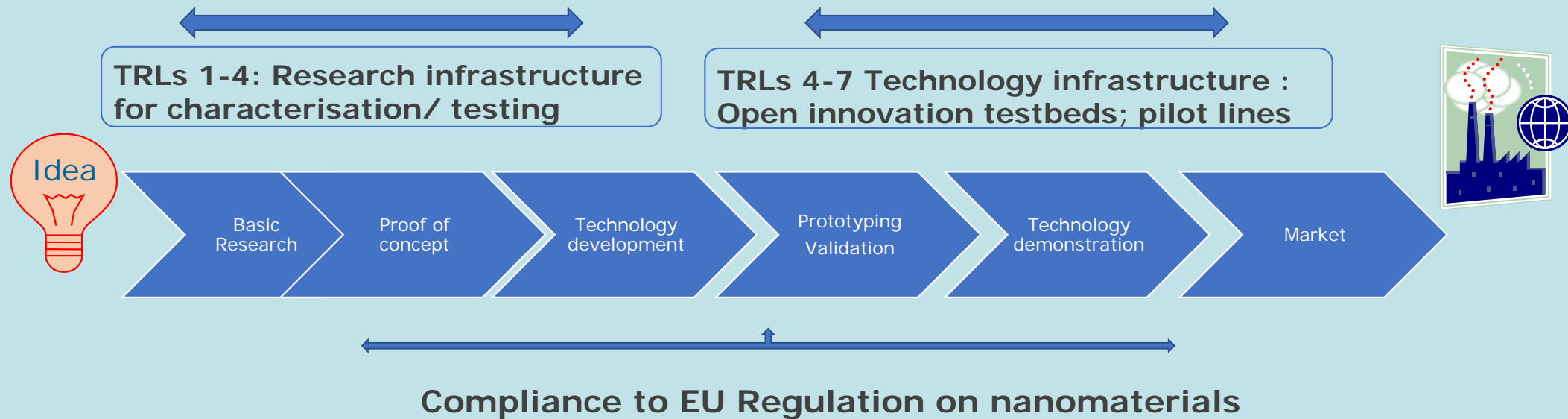
Different steps of nanotechnology innovation

Innovations can be: new devices, new products, new methods

The Technology Readiness Level (TRL) introduced into EU funded projects in 2014 spans over nine levels:

TRL 1	Basic principles
TRL 2	Technology concept formulated
TRL 3	Experimental proof of concept
TRL 4	Technology validated in laboratory
TRL 5	Technology validated in industrially relevant environment
TRL 7	System prototype demonstration in operational environment
TRL 8	System complete and qualified
TRL 9	Actual system proven in operational environment

Different steps of nanotechnology innovation



EU legislation with provisions for nanomaterials

Regulatory framework	Definition	Approval procedure	Safety assessment	Labelling	Guidance
REACH (Chemicals) Regulation 1907/2006 Amended Annexes (EU 018/1881)	✓		✓		✓
Biocidal Products Regulation 528/2012	✓	✓	✓	✓	
Cosmetic Products Regulation 1223/2009	✓	✓	✓	✓	✓
Novel Food Regulation 2015/2283		✓	✓	✓ FIC Regulation 1169/2011	✓
Food Additives Regulation 1333/2008			✓	✓*	✓
Plastic Food Contact Materials Regulation 10/2011		✓	✓		
Active & Intelligent FCM Regulation 450/2009		✓	✓		
Food Information Provision to Consumers Regulation 1169/2011	✓			✓	
Medical Devices Regulation EU/2017/745	✓	✓ (Conformity certificate)	✓		

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Main hurdles for innovation

- Early stage of development requires characterisation, analysis and testing steps
- Need of accessible Research Infrastructure
- Nanobiotechnology based innovation requires collaboration between different disciplines
- There is in general a poor knowledge of regulatory requirements
 - Does my product contain any substances of concern?
 - Are there methods available to detect and measure these substances?
 - What EU regulations apply?
 - Which authorities are involved?, e.g. National competent authorities, ECHA, EFSA, ...?

NEED of Accessible Research Infrastructures for sustainable support of Innovation

THE JRC MODEL

OPEN ACCESS
to JRC Research Infrastructures



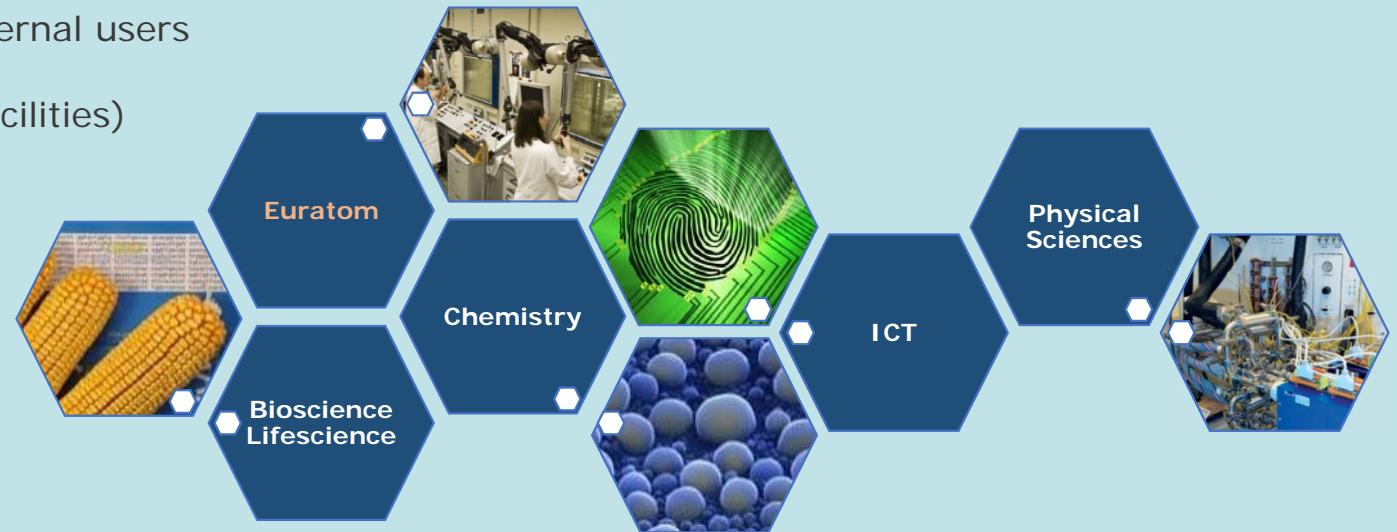
The European Commission's science and knowledge service

Joint Research Centre

Landscape of JRC Research Infrastructures

JRC hosts **38 physical research infrastructures** with a potential of opening to external users

(out of a total of 58 large scale facilities)



Access/Statistics on JRC open infrastructure

18 calls since June 2017

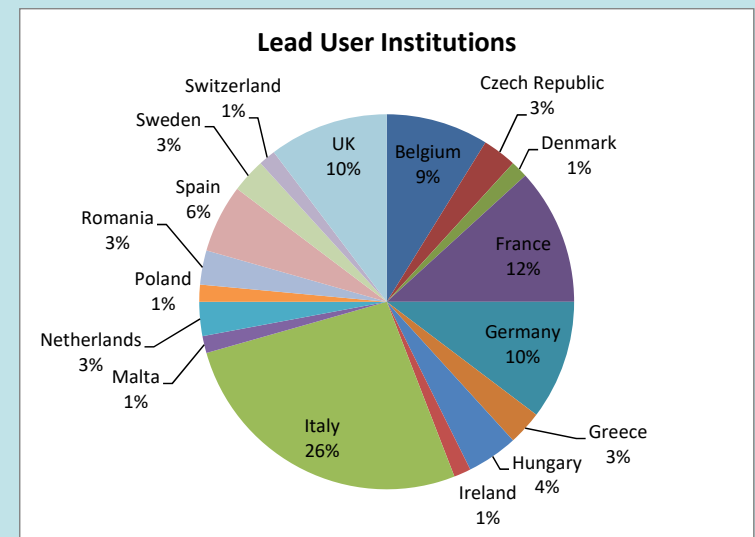
- ✓ **12** Research Infrastructures
- ✓ **69** Eligible proposals
- ✓ **58** Accepted proposals
- ✓ **24** Countries

User Selection Committees

- ✓ **6** USCs
- ✓ **26** Members Appointed
- ✓ **7** Meetings

Accepted proposals

- ✓ **87** User Institutions related to the 58 accepted projects
- ✓ **199** Individual users
- ✓ **6** Completed Projects



Other countries as User Institutions

Bulgaria, Denmark, former Yugoslav Republic of Macedonia, Greece, Poland, Portugal, Romania, Slovenia, Spain, Ukraine, CERN

Health & Consumers related activities in the JRC

Regulatory Science on Health, Consumers and Reference Materials



- Chemicals, nanomaterials, microplastics
- Food and feed (safety, quality, fraud)
- Public health (nutrition, cancer, rare diseases, medical devices)
- Reference materials

Nanotechnology/nanomaterial activities

Safety assessment of nanomaterials:

Harmonisation of test protocols and risk assessment methodologies

Analysis of nanomaterials in food and consumer products: development of methods for detection, characterisation

Micro/nanoplastic detection and identification

Method development & validation

Training and Capacity building

Support to EU regulation
Support to Innovation

Quality assurance tools

Open Access to laboratory

Offer of the JRC nanobiotechnology laboratory

Technical and scientific support to research projects from European institutions (Academia, Research Centres, SMEs) in providing :

- A wide range of facilities and cutting-edge instrumentation for interdisciplinary studies, with a special emphasis on **characterisation of nanomaterials, microplastics, nanomedicine and advanced materials**.
- Expertise in biology, material sciences, chemistry, physics, nanobiotechnology.
- Training on state of the art instrumentation.



Offer of the JRC nanobiotechnology laboratory

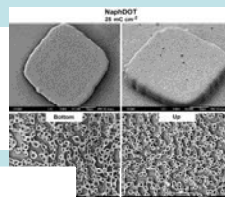
Up to now : 3 calls for proposals, 20 projects accepted, 13 projects implemented

- Topics : Nanomedicine, nanomaterial characterisation, food safety, food packaging, bone regenerative medicine, transcriptomics, development of water harvesting systems, and devices for trapping particulate matter

* 6 papers submitted and other in preparation

Templateless electropolymerization for controlled growth of polymeric nanotubes on micropatterned surfaces

Radoslaw Bombera, Gabriela Ramos Chagas, Andrea Valsesia, Pascal Colpo, Frédéric Guittard,² Thierry Darmanin,^{2,*} (Submitted with Nice University France)



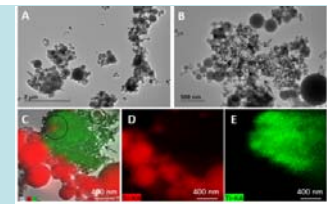
Nanoparticle characterization methods for studying protein adsorption on nano-polystyrene beads

Catia Contado^{1*}, Dora Mehn, Douglas Gilliland, Luigi Calzolari (submitted with University of Ferrara)

SUNSPACE, A Porous Material to Reduce Air Particulate Matter (PM)

Alessandra Zanoletti¹, Fabjola Bilo¹, Laura Borgese¹, Laura E. Depero¹, Ario Fahimi¹, Jessica Ponti², Andrea Valsesia², Rita La Spina², Tiziano Montini³ and Elza Bontempi^{1*}

¹ INSTM and Department of Mechanical and Industrial Engineering, University of Brescia, Brescia, Italy; ² European Commission, Directorate General Joint Research Centre, Directorate F—Health, Consumers and Reference Materials, Consumer Products Safety Unit (F.2), Ispra, Italy; ³ Department of Chemical and Pharmaceutical Sciences, CNR-ICCOM URT and INSTM Trieste Research Unit, University of Trieste, Trieste, Italy

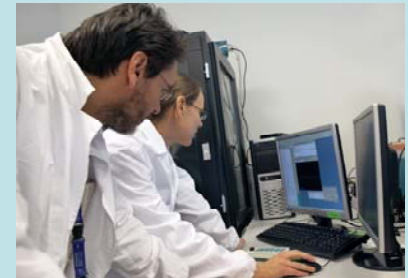


Training at JRC research infrastructure

- Addressed to groups of users from **universities, research or public institutions, or from Small-Medium-Enterprises (SME)**
- Calls opened under the **JRC Enlargement and Integration Action**
- User Institutions from **countries associated to the EU Research Program Horizon 2020**
- The JRC covers the costs of **travel and accommodation** of users

First call launched 2019 on a pilot basis at the **Nanobiotechnology laboratory**:

- Hands on training on Nanomaterials/Microplastics characterisation, surface analysis, biomolecular interactions.....



Open Access to Nanobiotechnology Laboratory

360° Virtual Tour of the Laboratory

<https://visitors-centre.jrc.ec.europa.eu/virtual-tour/nano/en/index.html>

Open Access

Standard Call (deadline 7 June):

<https://ec.europa.eu/jrc/en/research-facility/open-access/relevance-driven/2019-1-rd-nanobiotech>

Training and Capacity Building Call for H2020 Countries (deadline 3 June) :

<https://ec.europa.eu/jrc/en/research-facility/open-access/training/2019-1-tcb-nanobiotech>

Video

<https://youtu.be/HauMN49GAlq>

Thank you!



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ec.europa.eu/jrc



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