CTTC: Centre de Transfert de Technologies Ceramiques

@CTTC_limoges

CTTC

Center for Technology Transfers in Ceramics

Key figures

Research & Technology Organisation specialised in
Technical Ceramics

28 People
with 90% technical staff

Budget
2.8
millions euros

Each year
80
private research contracts

Legal statut
Non-profit Association

Founded in
1984

Ensure missions of
Technology transfer

On average
5
collaborative projects per year

afaq ISO 9001 Qualité AFNOR CERTIFICATION 2007 / 29116

Field of applications of Ceramics

Automotive

Diesel particulate filters
Catalytic converters components
Sensors
Thermal batteries
Batteries

Fuel Cell electrolyte
Photovoltaic components
Nuclear fuel
Refracories for nuclear energy
UHT Turbines elements

Radomes antennas substrates
Communications suites
Ballistic armors
Spark plugs

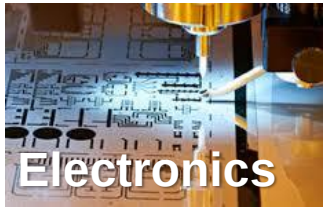
Watchmaking
Jewellery
Cosmetic additives

Filtration membranes
Waste treatment components
Raw materials
Catalysts supports
Petrochemistry catalysts

Ceramic Matrix Composites
Turbine blade coatings
Foundery cores
Spark plugs

Antennas supports
Propulsion system components
Framework structure

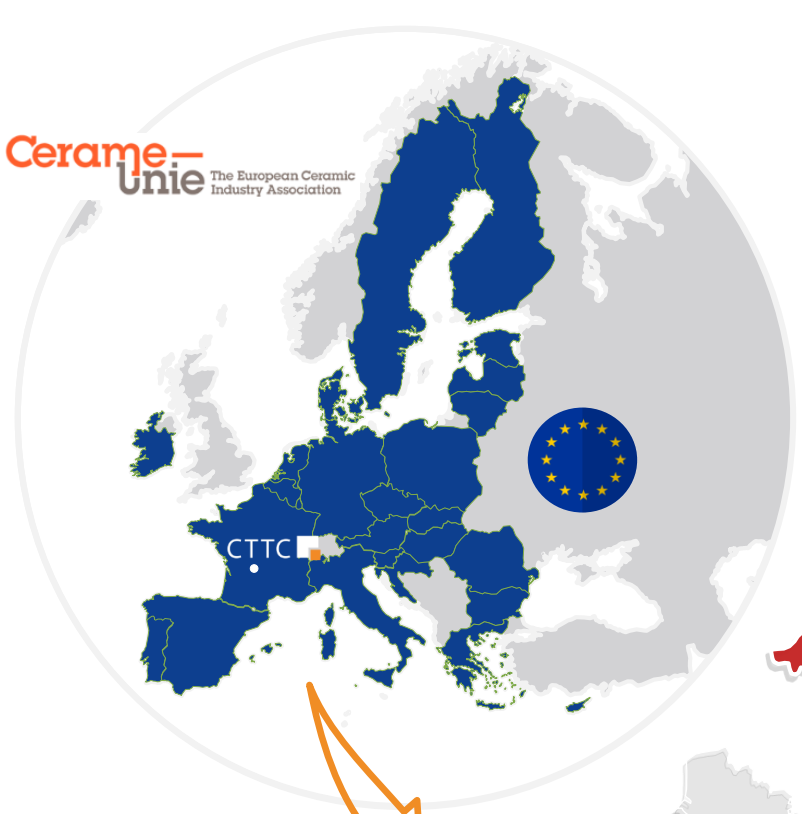
Medical implants
Dental prostheses
Medical devices

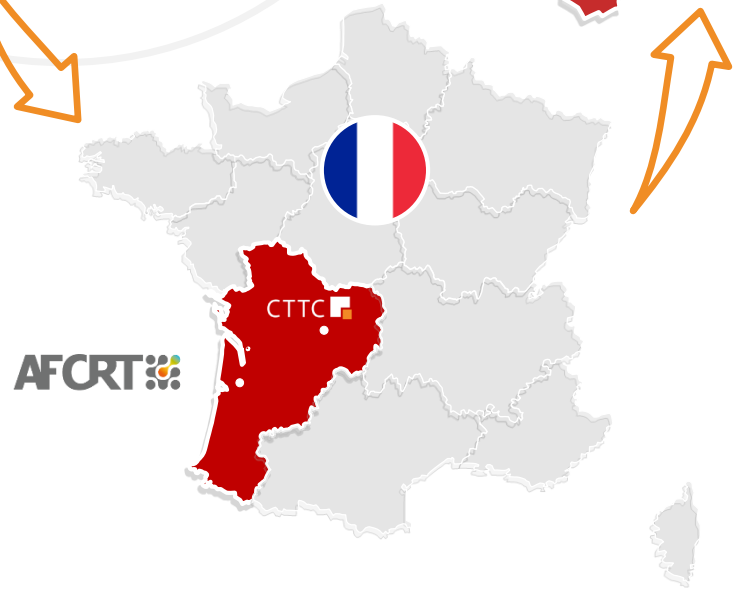


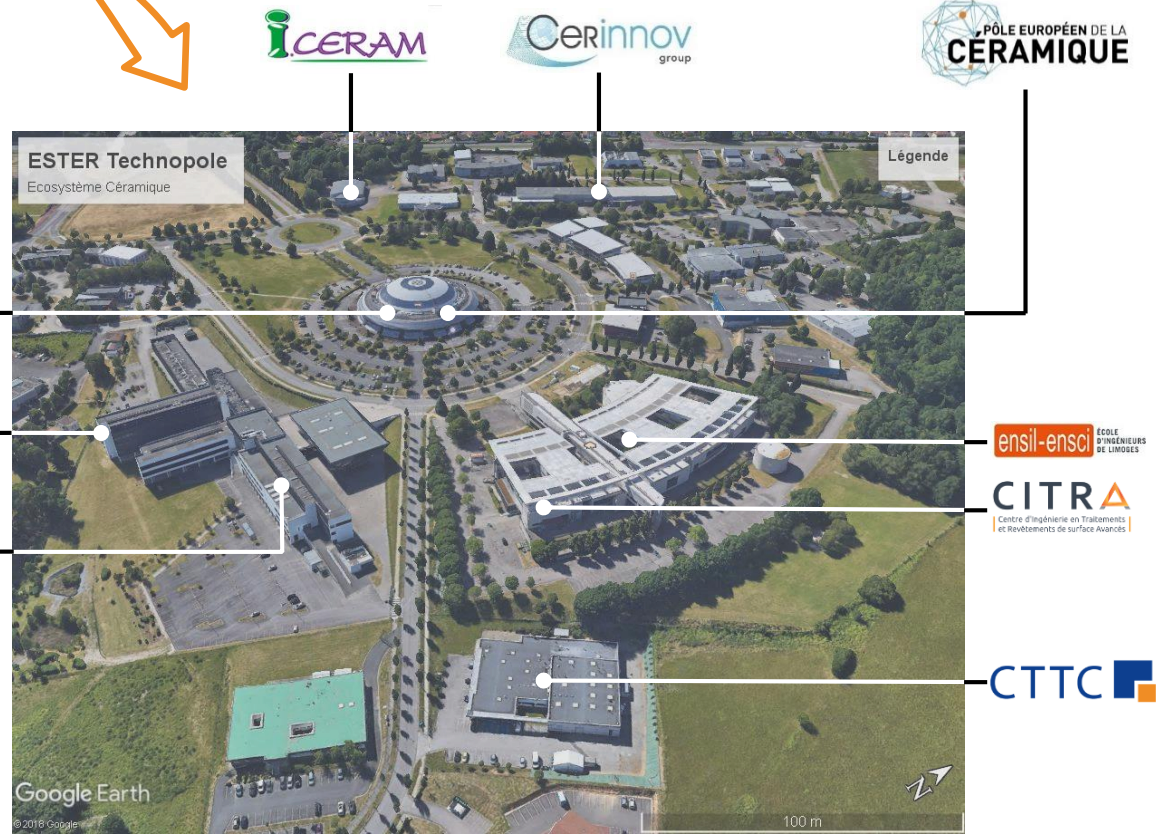
Printed electronic components
Sensors
Dielectric materials for antennas

Porcelain
Refractories
Insulation

Limoges city: a full ecosystem on ceramics

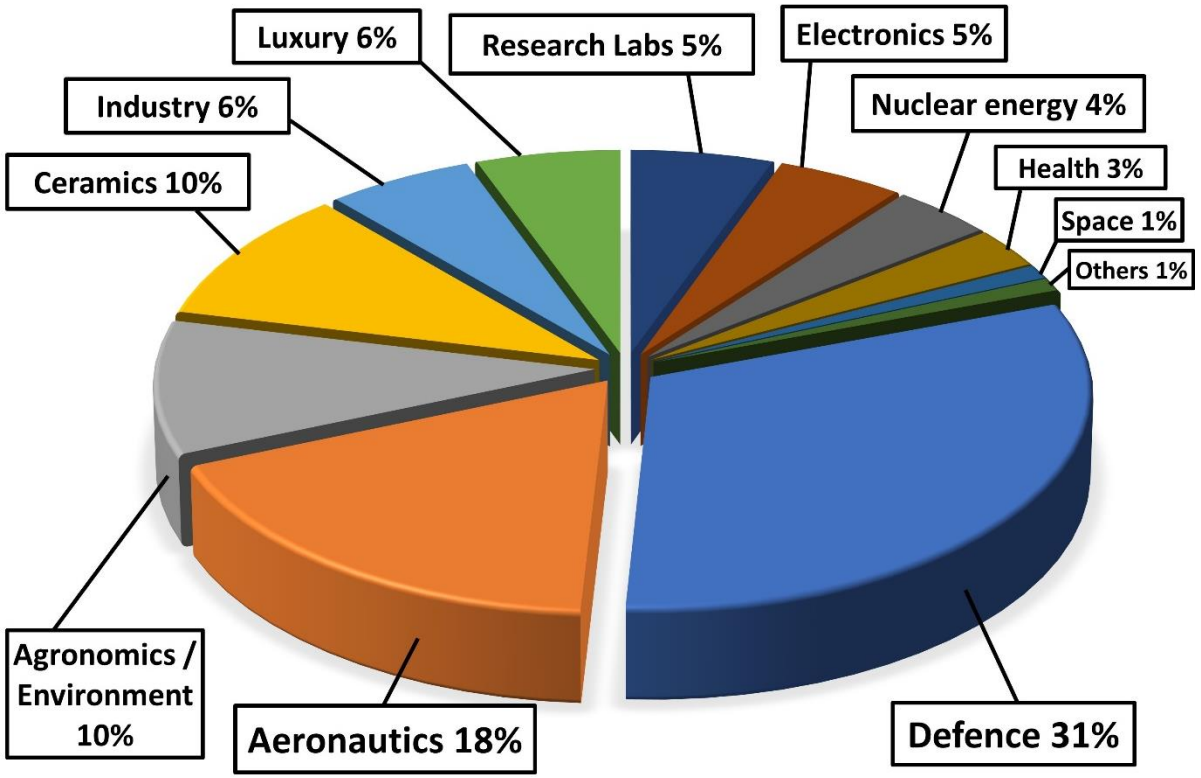


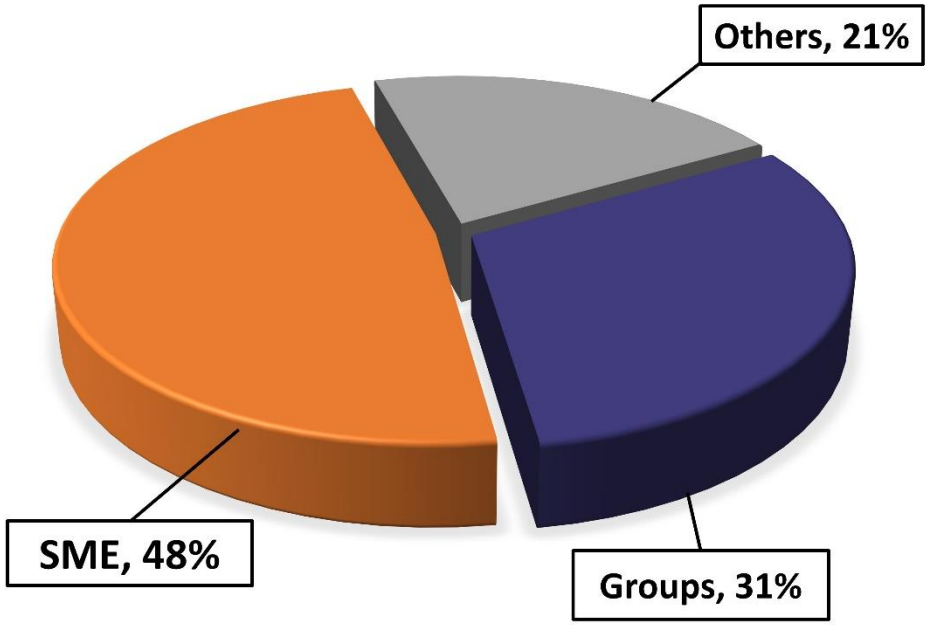




Un écosystème complet, de la recherche à l'industrie, en passant par la formation et le transfert

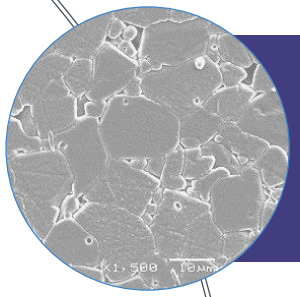
Turnover distribution, year 2023





Some references…

Expertise

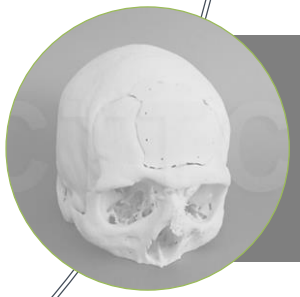


Technical ceramic materials

- Raw materials, formulations, mixtures, reinforcements, composites
- Intrinsic properties, properties combination
- Desired applications

Ceramic manufacturing processes

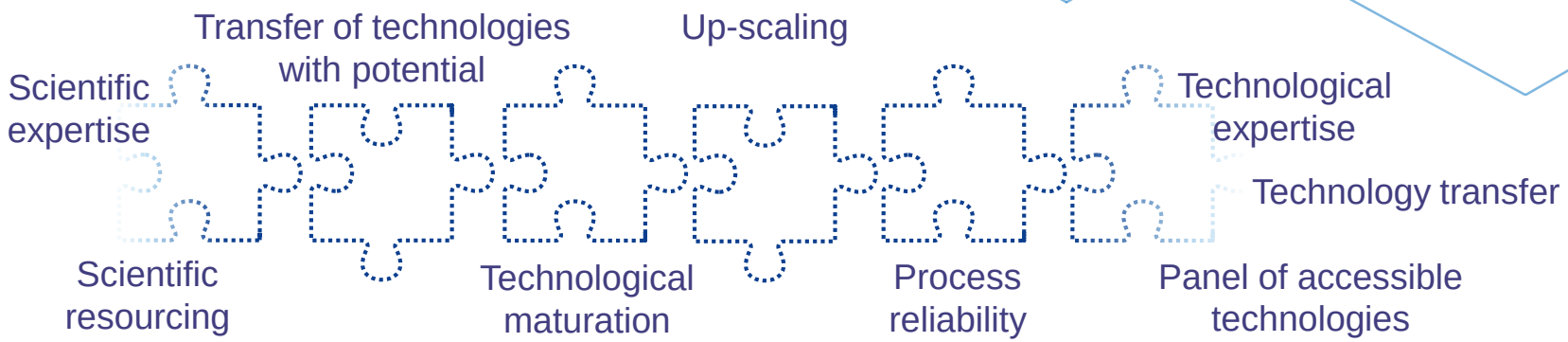
- Conventional technologies (pressing, casting, extrusion, injection, machining, …)
- Advanced technologies (tape-casting, dip-coating, Direct Coagulation Casting, …)

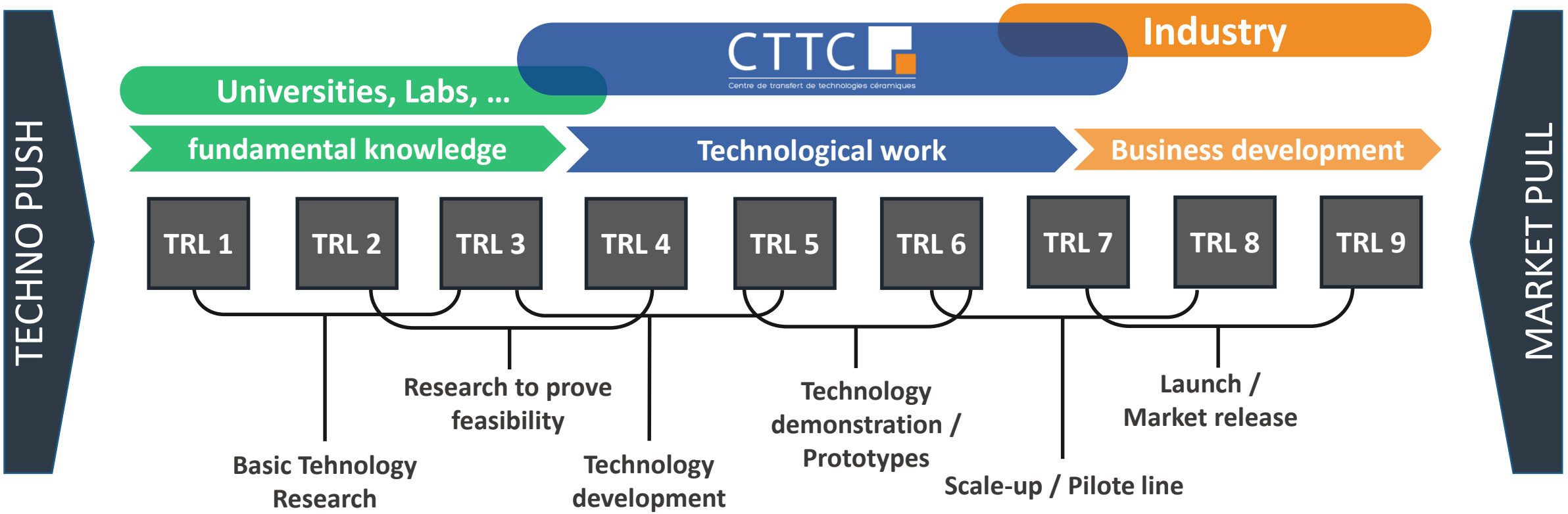


Additive Manufacturing of Ceramics and multi-materials

- Oxides ceramics, non-oxides ceramics, Ceramic Matrix Composites
- Layer-by-layer processes
- Direct writing processes (metallic, polymers, ceramic inks)

Core business





Organisation

Olivier DURAND

Direction

Commercial

Jérôme CLAUS

Studies & Projects

Laurence BOYER

Research & Development
Methods & Manufacturing
Collaborative Research
Training

EXALYSES by CTTC

Christine FARGEAS

Testing & Analyses
Collaborative Research

Design Office

Simon GAL

Methods & Manufacturing
Collaborative Research
Training
FabLab

Services

Research & Development

- Feasibility
- Materials development
- Processes development
- Proof of Concept
- Prototyping
- Expertise / Consulting

Methods & Manufacturing

- Scale-up
- Industrialisation
- Process qualification
- Prototype machines
- Small / medium series
- Technology transfer

Collaborative Research

- Regional, National and international projects
- TRL 3 up to 7
- Consortium agreements
- Sharing IP

Testing & Analyses

- Materials analyses
- Testing
- Quality controls
- Development of protocoles
- Expertise / Consulting

ISO, NF, and NF-EN standards

Training

- Catalogue courses
- Tailor-made courses
- Practical work
- On-site or at the customer's plant

FabLab

- Available to individuals, students, artists, craftsmen, …
- Agreements with educational institutions
- Carrying out workshops

easyceram by CTTC

Means \ CERATECH Platform

--- 1 ---

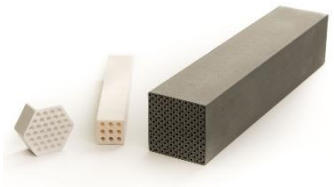
POWDER SYNTHESIS

FEEDSTOCKS PREPARATION

--- 2 ---

--- 3 ---

SHAPING



THERMAL TREATMENT

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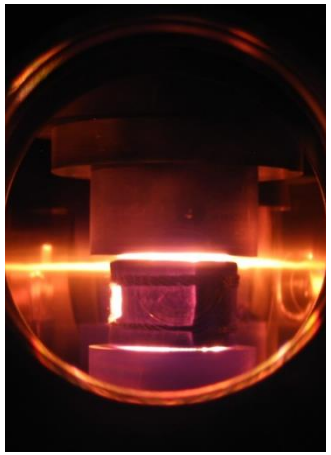

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FINISHING

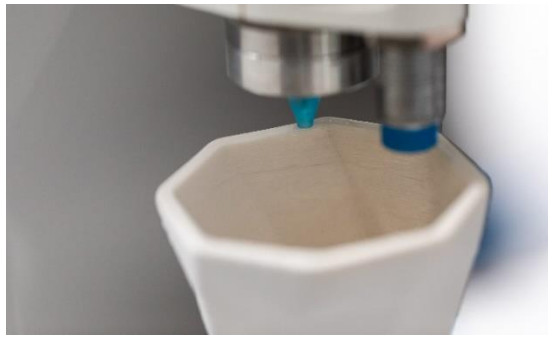
*A technological platform gathering **90+ equipment** over **1000m² dedicated** to ceramics manufacturing*

Means \ ALTERINOV Platform

ALTERINOV by CTTC

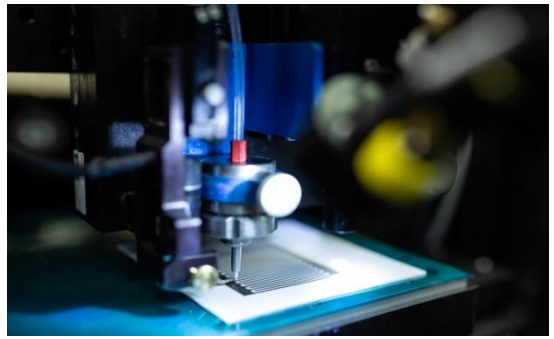
STEREOLITHOGRAPHY

ROBOCASTING

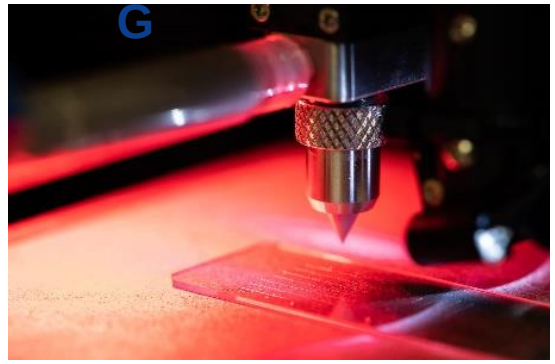


INK-JET PRINTING

AEROSOL JET PRINTING



MICRODISPENSING



BINDER JETTING

*A platform to explore the potential of **ceramics AM** and the development of multi-materials components*

Means \ Characterisation Lab

A full laboratory for analyses, characterisation, and control of materials and processes, according to standards (ISO, NF and NF-EN)

Physico-chemical, thermal, mechanical and microstructural characterization

Means \ Fablab

A dedicated aera for rapid prototyping and training to numerical design and manufacturing
Equipment dedicated to project promoters, start-up companies, students, …

Training space

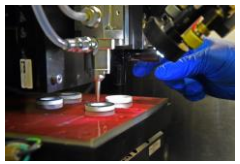
Co-working space

Workshop area

Lines of development

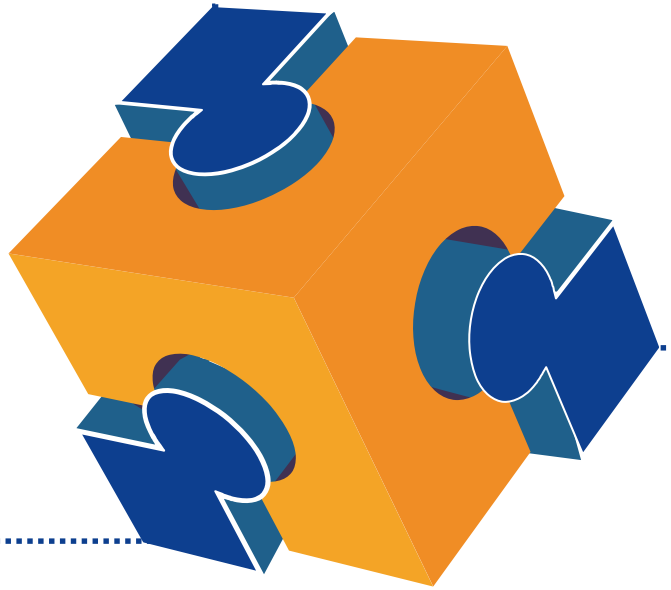
ADDICERAM

Additive Manufacturing of Ceramics



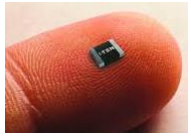
With the financial support of

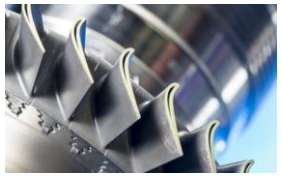
RÉGION Nouvelle-Aquitaine

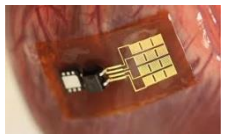


CERACOAT

Innovative ceramic coatings







CERATECH

Advanced Ceramics

Projects \ Fragrances

CTTC

irCer institut de recherche sur les céramiques

Marion Technologie Nanomatériaux Matériaux Nanostructurés & Poudres Céramiques

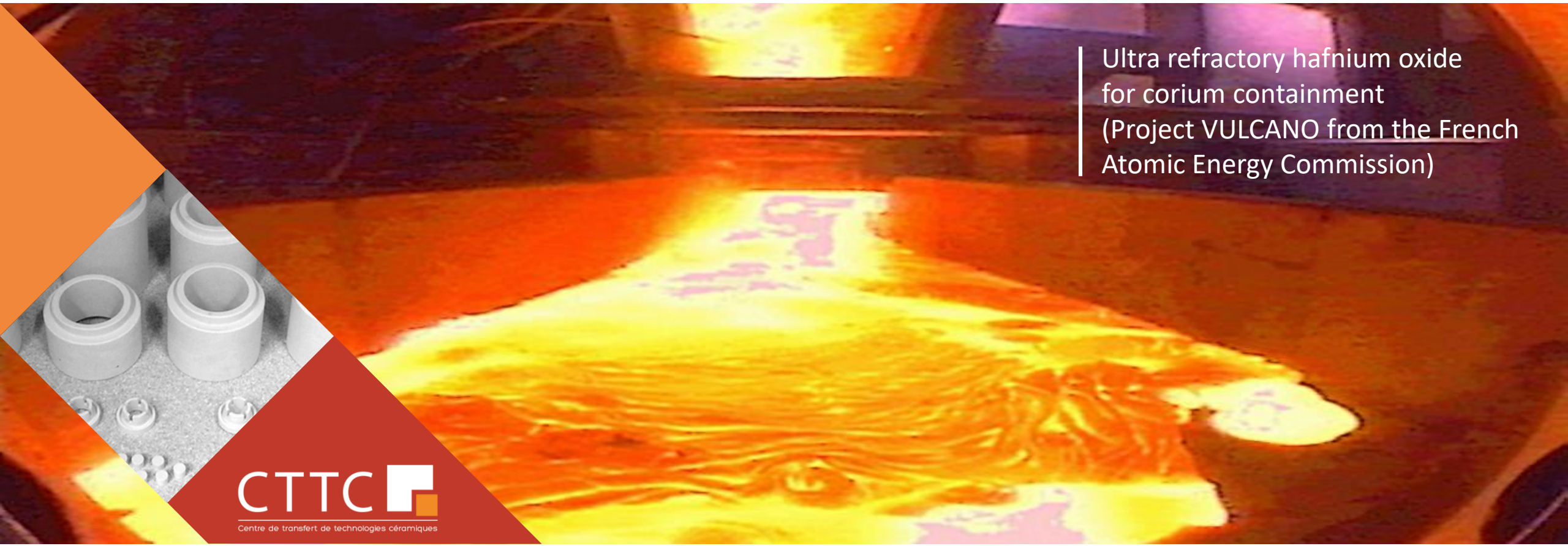
AGENCE INNOVATION DÉFENSE

DGA DIRECTION GÉNÉRALE DE L'ARMEMENT

Ceramic armor in boron carbide
(Nanonoxcera Project)

Filters and antennas, microwave resonators for telecommunications (in collaboration with XLIM Lab, CNES, and THALES)

Projects \ Nuclear industry



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aeva
GERARD PERRIER INDUSTRIE

Pilot production line for the manufacturing of spark plug ceramics

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Thank you for your attention!

7 rue Soyouz
87068 Limoges, France
+33 (0)555 426 150
cttc@cttc.fr