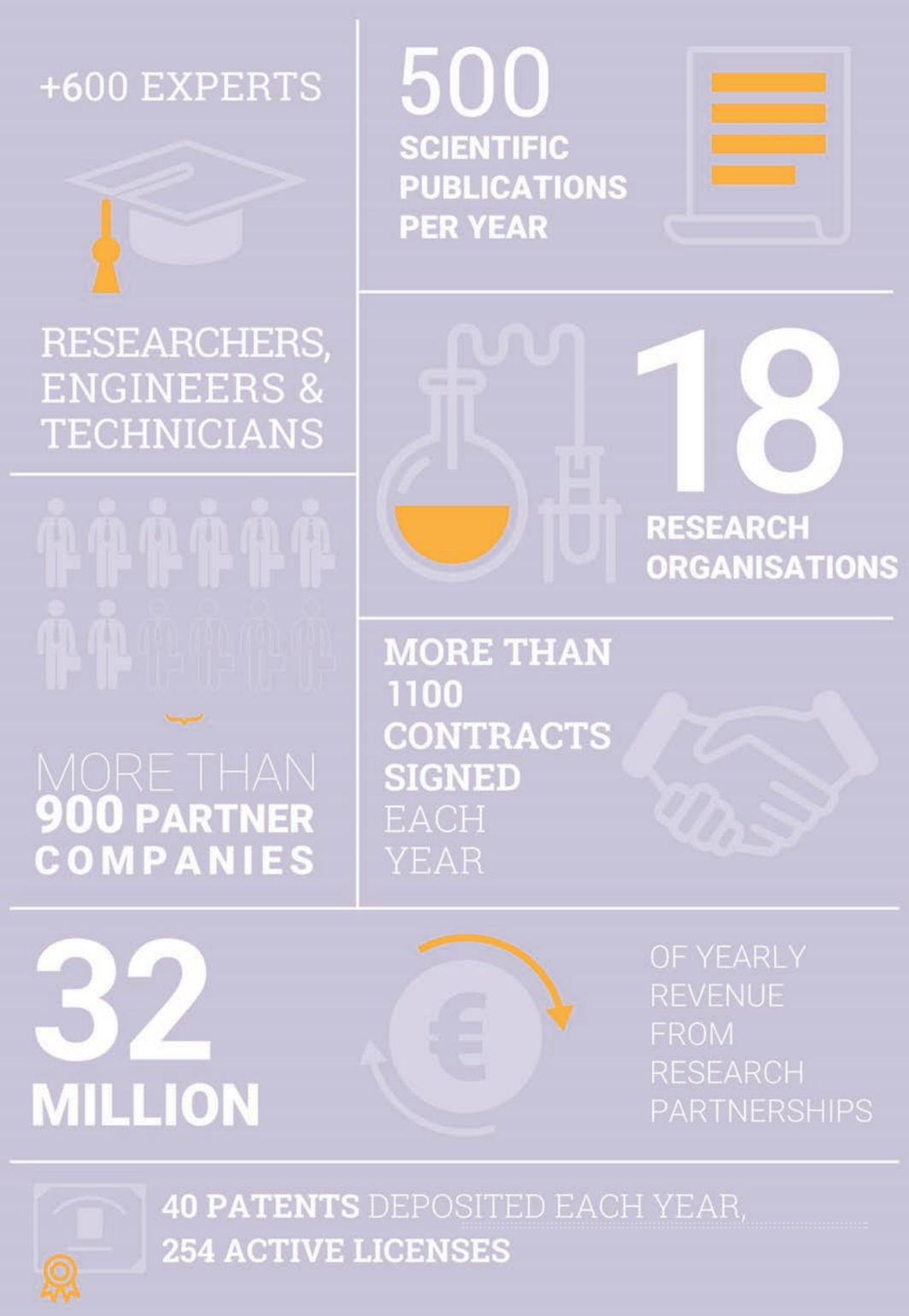
BOOST YOUR R&D PROJECTS

MICA, CREATOR OF INNOVATIVE MATERIALS »

INSTITUT CARNOT MICA

MICA,
A KEY PLAYER IN FUNCTIONAL MATERIALS, SURFACES, AND INTERFACES AND ASSOCIATED PROCESSES



WHO ARE WE?

Carnot MICA is a public research organisation that supports companies in developing their R&D projects.

MICA stands for expertise in functional materials, surfaces, and interfaces and associated processes, **ranging from fundamental research to industrial applications**.

The Institute is composed of **18 members**: 9 research structures and 9 technical centers (CRT/CTI).This structure of excellence enables more than **900 companies each year to benefit from partnerships with the best laboratories** and their high-technology platforms.

OUR MISSION

MICA's mission is to boost your **innovation and transformation** projects by proposing customised solutions:

- Collaborative R&D projects
- Service provision
- Expertise and advices
- Technology transfer
- Customised initial and continuous training programs

Each year, multinationals, intermediate-sized companies and SMEs benefit from projects carried-on in partnership with MICA's research teams.
By supporting companies, ranging from fundamental research to practical applications, MICA contributes to enhance competitiveness and improve the economic and industrial sectors in France.

R&D projects **support**

Anticipate your needs with our innovative R&D solutions

900 partner companies

MICA participates **in increasing companies' competitiveness**

OUR BUSINESS SECTORS

Carnot MICA offers **multi-sector** services and develops multimarket projects:

- Automobile, nautical and aerospace
- Fashion & Luxury goods and services
- Energy
- Environment
- Sport & Well-being
- Industry 4.0
- Building
- Health & cosmetics

OUR SERVICES

MICA helps companies in developing the **Research and Development process**, thanks to a complete and unique service in:

- **Materials, surfaces, and interfaces and associated processes**
- **Multi-scale characterisations**
- **Durability and performance**
- **Technology transfer**

OUR ADDED VALUE

- An access to scientific and **technological innovation**
- 18 connected structures for a comprehensive support and a single interlocutor
- The most **advanced equipments** and **high technology platforms**
- International experts in materials, surfaces, interfaces and related processes
- ISO 9001 certification for coordination and **project management**
- **A single contact person to support you all along your project**

OUR SOLUTIONS FOR

TRANSPORT

Since 20 years, **MICA has successfully supported large-scale projects** in the transport sector: material design for comfort, **safety**, environment, decontamination, **functionalisation and surface treatment**, additive manufacturing… More than 300 companies benefited of the knowledge of our research teams.

CORROSION AND CONDUCTIVE PAINT

ULTRA-HYDROPHOBIC COATING

STORAGE SYSTEMS

LIGHTENED AND STRENGTHENED STRUCTURES

ANTI-WEAR BRAKES

ADHESION / WEAR

ASSEMBLY / REPAIR

IMPROVED DRAG EFFECT

ANTIMICROBIAL AND ANTIBACTERIAL COATING

VOC ANTI-LAGGING TREATMENT

ADVANCED COMPOSITES

QUALITY AND CONTROL

RECYCLABILITY

PASSENGER COMFORT

OUR SOLUTIONS FOR
COMPANIES
AND THEIR ENVIRONMENT

Construction, rehabilitation, and interior layout, **optimisation of** traditional **materials**, safety, comfort and durability, **improvement of energy performance**... MICA offers customized solutions to help your business to reach the challenges of the future, to answer to environment issues and to program an efficient and sustainable development.

ADSORPTION AND DEGRADATION OF CHEMICALS IN AIR

ADSORPTION AND DEGRADATION OF CHEMICALS IN WATER

AGEING TESTS

NUCLEAR

ENERGY PRODUCTION AND STORAGE SYSTEMS

GREEN CHEMISTRY PROCESSES

SUSTAINABLE DEVELOPMENT

CONTROLLED RELEASE OF AGRICULTURAL FERTILIZERS

MICROBIOLOGICAL QUALITY EVALUATION OF SOILS

RECYCLING OF WASTE MATERIALS FROM POLYMER MATERIALS

OUR SOLUTIONS FOR

PEOPLE

From health to the textile industry or even the luxury sector, **MICA supports companies in their R&D projects**, providing a wide selection of **testing equipment for material design and in-vivo testing** for implantable medical devices, and the expertise of the best material and biomaterial scientists.

RELEASE OF ACTIVE COSMETIC INGREDIENTS

CONNECTED GLASSES

ECO-DESIGNED CLOTHING

VISUAL EFFECTS: IRIDESCENCE, ELECTRO-LUMINESCENCE, THERMOCHROMIC AND MECHANOCHROMIC, TEXTURISATION

HEATED, ULTRA-HYDROPHOBIC AND STAIN-PROOF FABRICS

MARKING, ANTI-COUNTERFEITING MARKING, AND DECORATION

ANTIBACTERIAL COATINGS

ARTIFICIAL HIP JOINTS

SHARK SKIN EFFECT

BARRIER FABRICS TO ELECTROMAGNETIC WAVES

ASSEMBLY, MICRO CUTTING / MACHINING / DRILLING

MECHANICAL PERFORMANCES

OUR SKILLS

MICA SUPPORTS YOUR R&D PROJECTS IN INNOVATION AND TRANSFORMATION STRATEGIES USING ITS UNIQUE SKILLS.

SURFACE FUNCTIONALISATION for creating functional materials

- Materials and surfaces for controlled properties
  - Functionalisation of surfaces, treatments, coatings, and thin films
  - Nano, micro and macro structuring of surfaces
- By innovative technologies
  - Plasma polymerisation
  - Laser structuring
  - Unconventional optical lithography
  - Chemical grafting
  - Customised polymer development

MANUFACTURING OF 3D AND 4D OBJECTS across the entire value chain

- Four platforms of additive manufacturing
  - Metal
  - Polymer
  - Ceramic
  - Composite

ACTIVE AND SMART MATERIALS that react and adapt to the environment

- Smart surfaces
- Connected textiles
- Micro chemical sensors
- Properties:
  - Water and air pollution control
  - Antibacterial surfaces
  - Controlled release
  - Catalysis
- Stimuli
  - Temperature
  - Mechanical traction
  - Presence of a target agent
  - Friction
  - Electrical impulse

LIGHTENED AND REINFORCED STRUCTURES composites, textiles and foams

- Customisation and addition of properties by functionalisation
  - Production of 2D and 3D reinforcement structures
  - Development of resins through eco-innovative processes (LED photopolymerisation)
  - Optimisation of interfaces by chemical, physical and mechanical routes
  - Manufacture of localised reinforced composites by fibre placement technology
- Performance tests, ageing, durability
- Recycling

ECO-INNOVATION

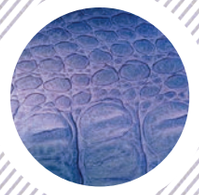
- Eco-innovation methodology and tools
- Development of materials with low environmental impact
- Wastes and by-products recovery

MULTI-SCALE CHARACTERISATION AND METROLOGY for the development of innovative materials

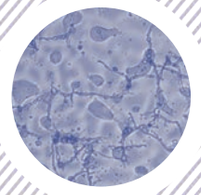
- Characterisation of materials, surfaces, and interfaces
- Metrology by quick optical methods
- Performance tests, ageing, and durability in real and extreme conditions
- X-ray tomography
- Virtual reality platform

OUR FLAGSHIP INNOVATIONS

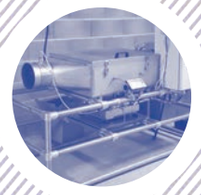
MICA IS CONTRIBUTING TO THE SUCCESS OF HIGH VALUE-ADDED PROJECTS BY INCREASING THE COMPETITIVENESS OF THE INDUSTRIAL PARTNERS.



LASER TEXTURING, used on metal parts to create patterns inspired by the nature fot the luxury industry



AN INNOVATIVE anti-inflammatory and antimicrobial coating to combat inflammation and infections associated with implant placement



A NEW CONCEPT OF THERMOCHEMICAL STORAGE of heat for balancing the temporal incongruity of energy supply and demand

PHOTOPOLYMERISATION OF RESINS BY LED using new photocatalysts, a fast, environmentally friendly and inexpensive process

PERFORMANCE TESTS, and prosthesis wear tests done by custom-made 4 axis and multi-station simulator

THERMOSAÏC® AND THERMOPRIME® TECHNOLOGIES for the development of new composite materials by waste recovery

ADDITIVE MANUFACTURING is process based on automated placement of uninterrupted fibre for production of large, complex, light and performant pieces

900 partner companies

THE UNIQUE SYNERGY OF 18 MEMBERS FOR A GLOBAL OFFER

9 RESEARCH LABORATORIES

9 TECHNICAL RESEARCH CENTRES AND INDUSTRIAL TECHNICAL CENTRES

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