

ADVANCED CERAMICS-BASED SOLUTIONS COMPANY

nanoker

"MAKING THE SMALL PROFITABLE"

Nanoker Research, S.L is a technological company supplying the market with advanced ceramic-based solutions for **industrial**, **biomedical** and **big science** applications

Nanoker Research S.L. is a Spanish developer and manufacturer of advanced technical and nanocomposite ceramic products & solutions for diverse top-end applications. Through mastering of material science and cutting-edge industrial processing methods, we deliver outstanding results and service that incorporate enormous technical knowledge. We are flexible, with agile logistics, dedicated after-sales follow-up and a long trajectory in the market, always focused on excellence and satisfaction by becoming our customers' best partners.

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All our products are Manufactured in Asturias, SPAIN and thus are of EU Origin



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Products & Technology

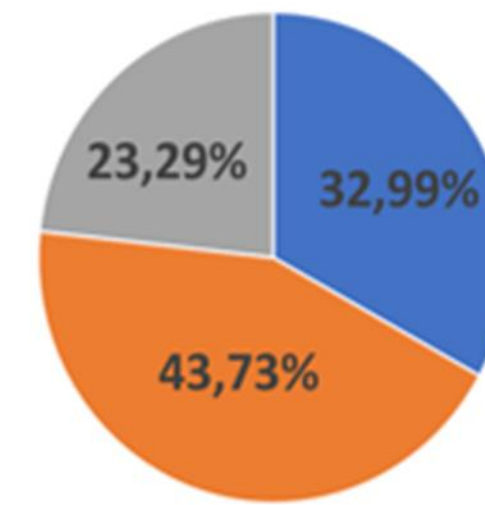
Proven track record in DIVERSIFIED deep tech & cutting-edge Advanced Ceramics applications. Development and Industrial Scale Production (Metal Forming, Medical Devices, CTE Materials - CERN partner, multiple Custom-Made)

Highly Qualified Team

Directors, Top Management and Staff from Academia Material Science, Engineering and Management Focus
Headcount: 26

Consolidated Spin-Off

Incorporated in 2011
Shareholder base fully made up of individuals
2.84 M€ equity (book value)



Revenue. Running Profit.

2.5 M€ revenue
1 M€ EBITDA, technological SME

GROWTH & ACCELERATION

Exploiting Disruptive Materials.

Highest Potential Identified in Bio-Medical

DENTAL IMPLANTOLOGY PROJECT: BREAKTHROUGH

Cap table

- Founders: 32.99% ●
- Management team: 43.73% ●
- Employees: 23.29% ●

Team

These are the people, at both strategic and tactic level, that make this business possible



Strategic Level



Prof. Ramón Torrecillas
CEO – Founder
Shareholder



Samuel Menéndez
Managing Director
Shareholder



Dr. Eng. Sergio Rivera
Product Development Manager
Shareholder



Dr. Cristina Reig
Medical Manager
Shareholder



Eng. Jesús Ferradás
Production Manager
Shareholder



Tactic Level



Dr. Eng. Lidia Goyos
Dental Division Manager
Project Coordinator



Fernando Cabo
CFO



Eng. Claudia Álvarez
Quality & Regulatory
Manager

26 employees

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Always at the Edge

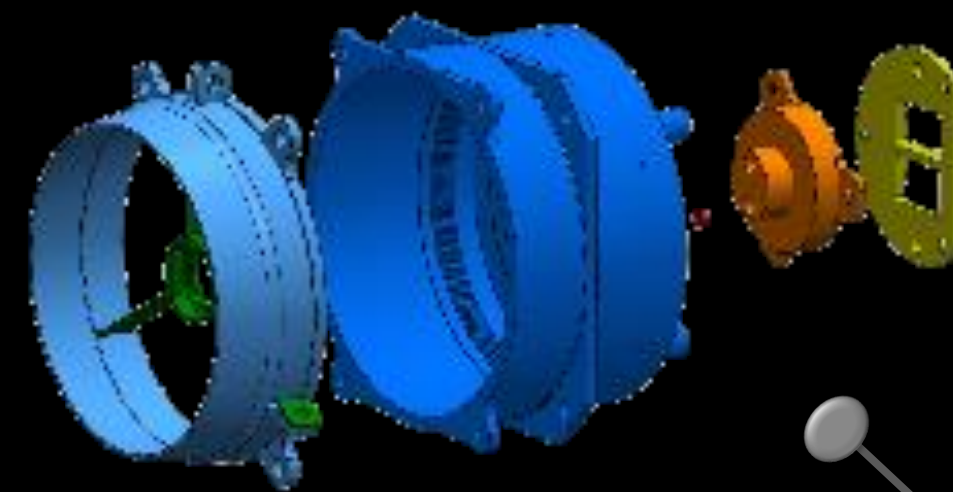
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Our developments



NC2

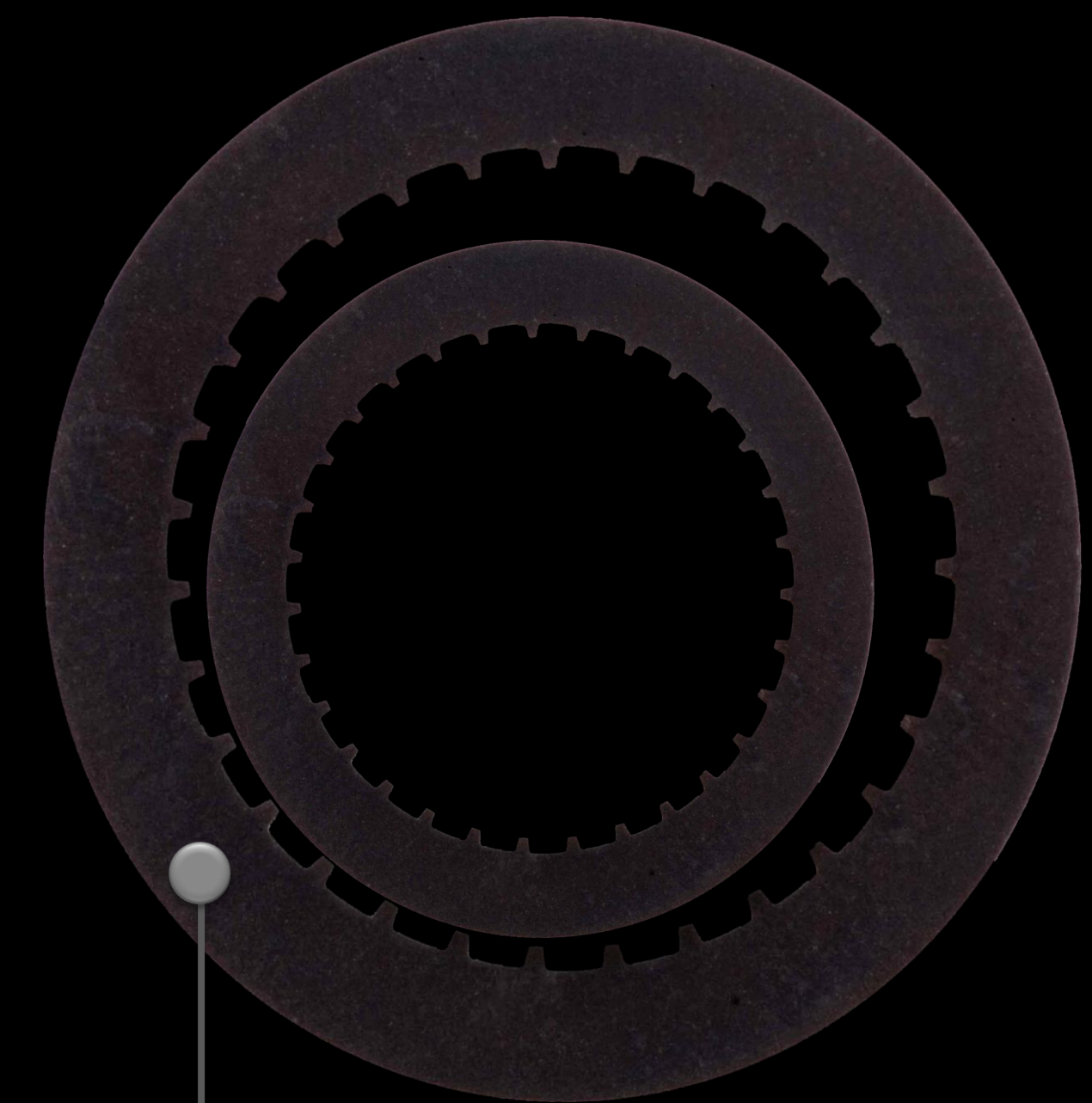
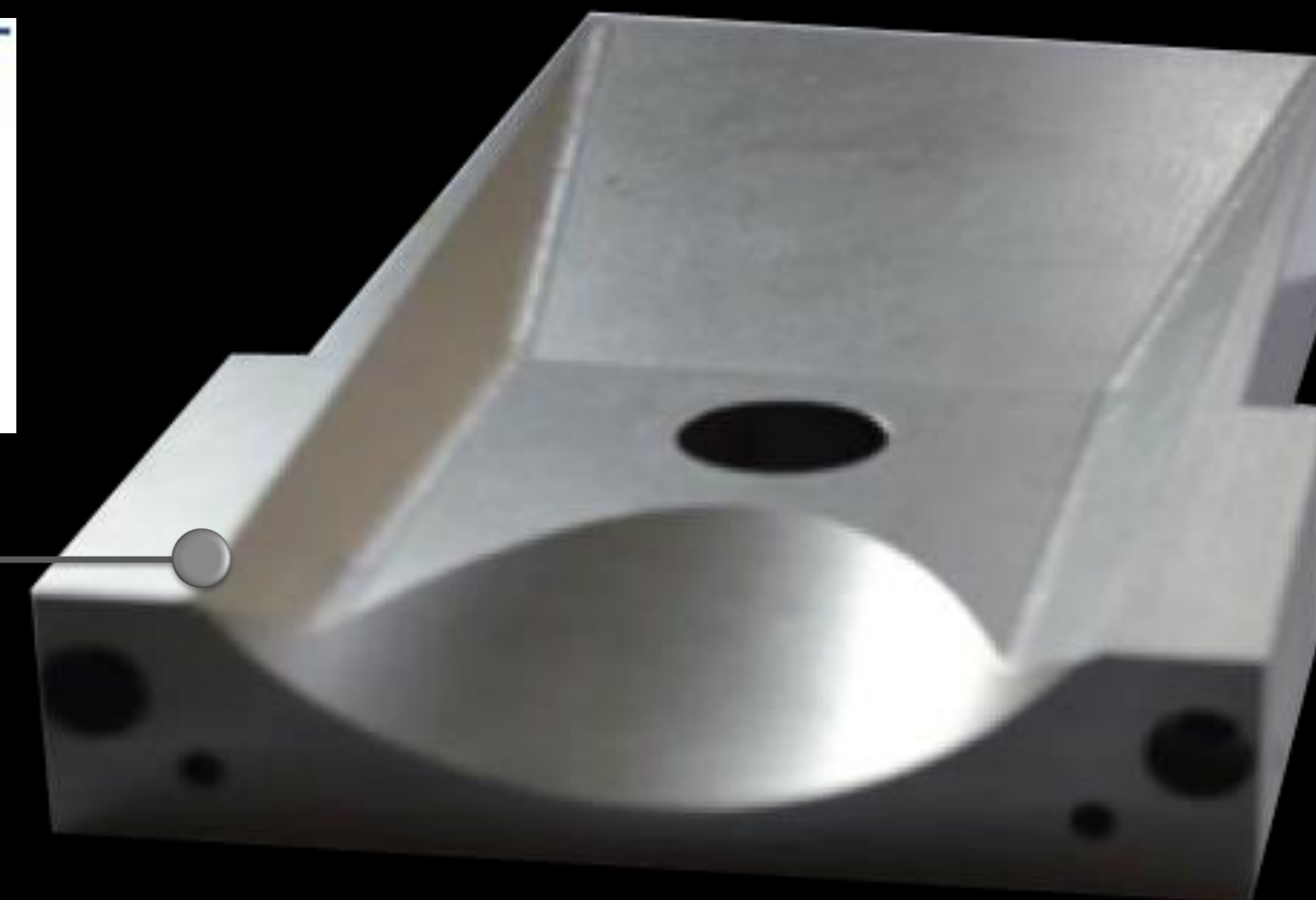
Nanocomposite



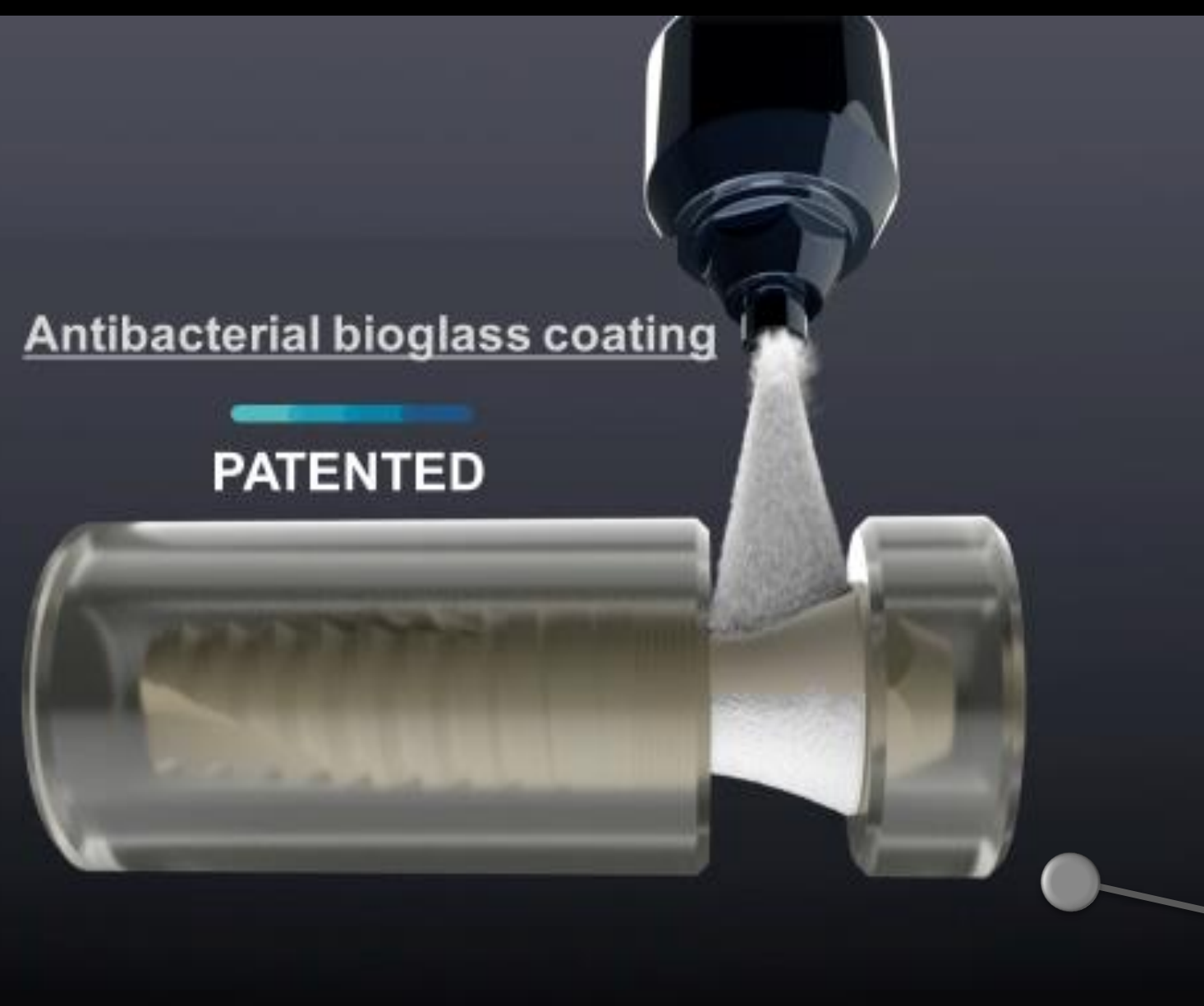
Null thermal expansion (CTE - Ultra stable nanocomposites)



Graphite-Mo



Alumina and Zirconia
Electroconductive
Ceramic Composites

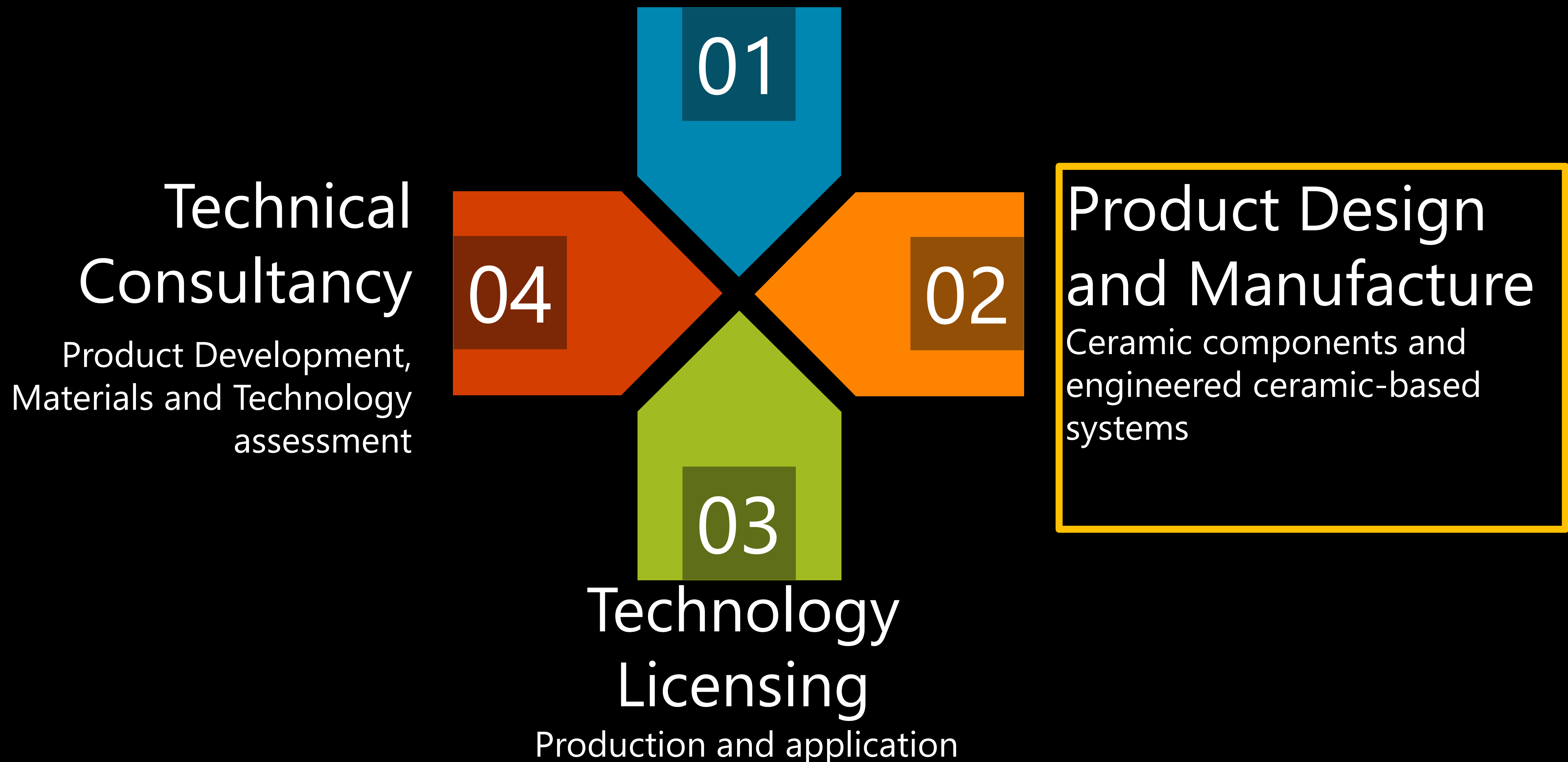


Cu-Diamond Composites

New Bioglass Generation for Surfaces and Medical Devices

Multifunctional Powders

Functional nanocomposite and glass-ceramic powders



MAIN INDUSTRIAL Business Lines

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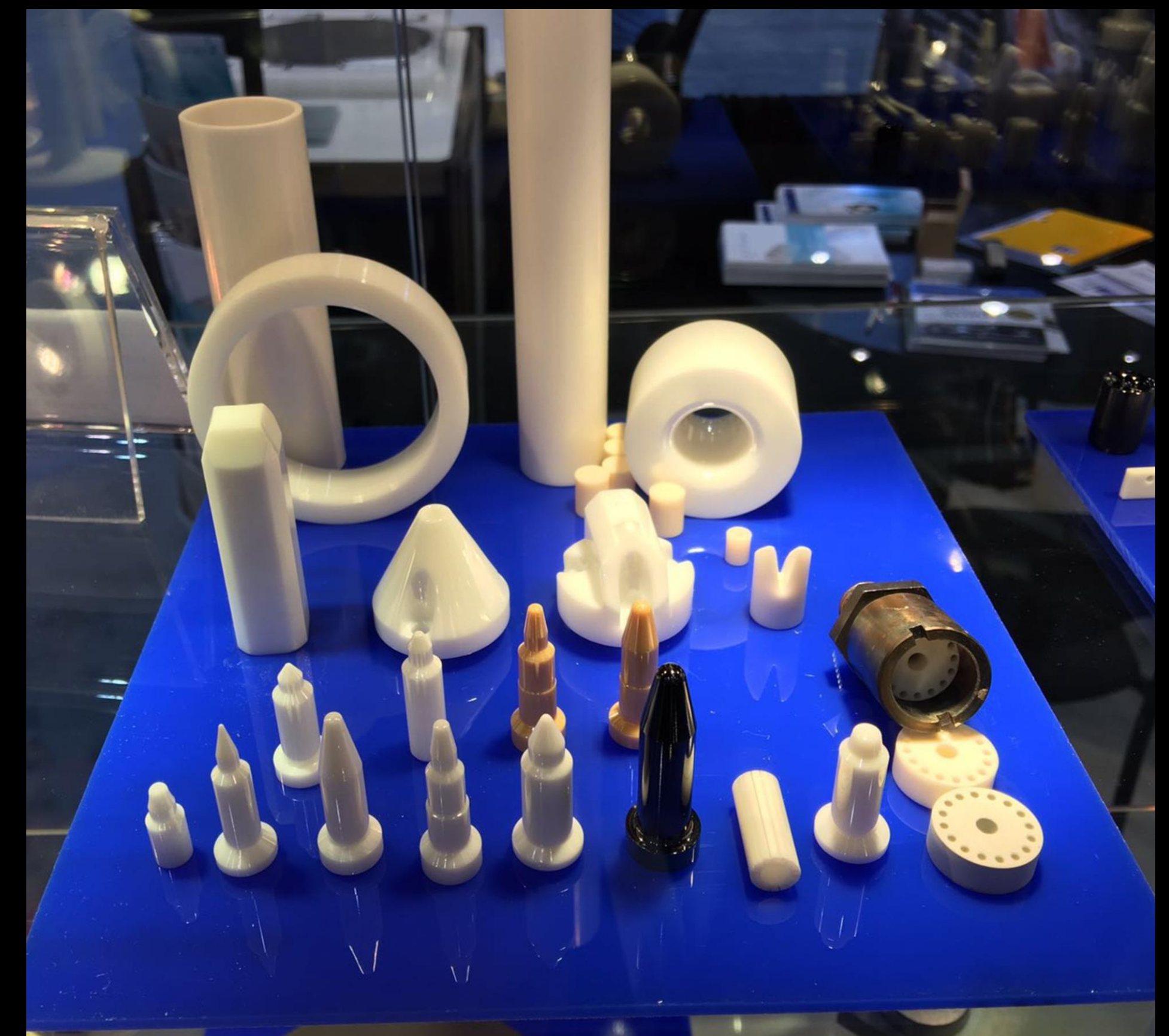
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Product Design & Manufacture

Ceramic components and engineered ceramic-based systems

WEAR & CORROSION HEAT RESISTANT COMPONENTS

- Hot Stamping and Automatic welding locator/centering Pins.
- Waterjet Nozzles.
- High Pressure Pump and Intensifier Pistons.
- Slurry and abrasive fluid piping Chokes.
- Custom Made Machine parts protection.
- Fiber and Textile guides/rolls.
- Laboratory Ware.



MAIN INDUSTRIAL Business Lines

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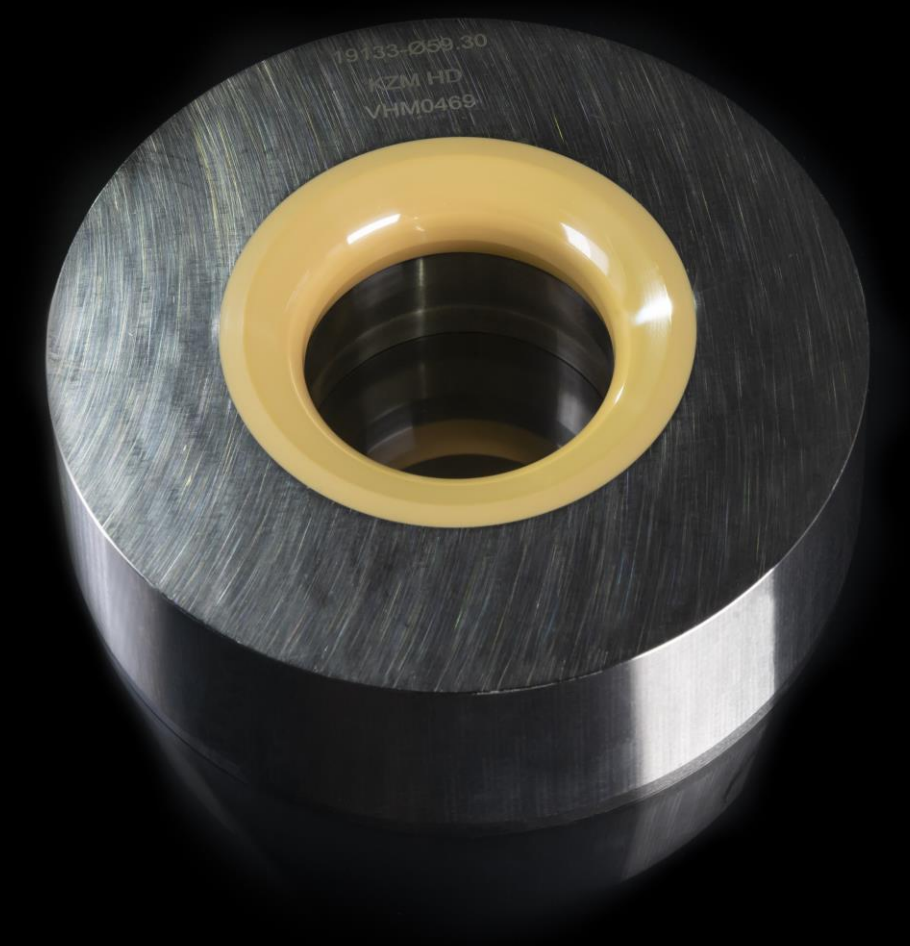
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Product Design & Manufacture

Ceramic components and engineered ceramic-based systems

METAL FORMING APPLICATIONS + COATING

- Extrusion (Direct & Inverse) Dies for Non-Ferrous Metals.
- Break Rings for Billet Casting.
- Canning rollers.
- Tools for Ultra Hard Metal-Cutting.
- Welding Rolls.
- Friction Drilling and FSW (friction stir welding) Pins.
- Special Sputtering Targets requiring intense densifying conditions.



MAIN INDUSTRIAL Business Lines

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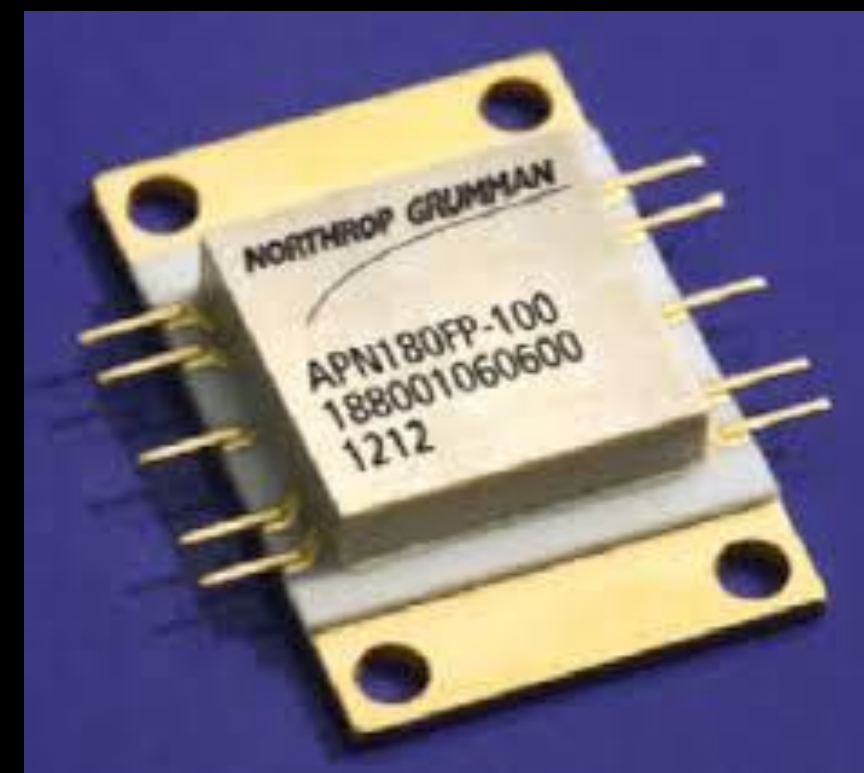
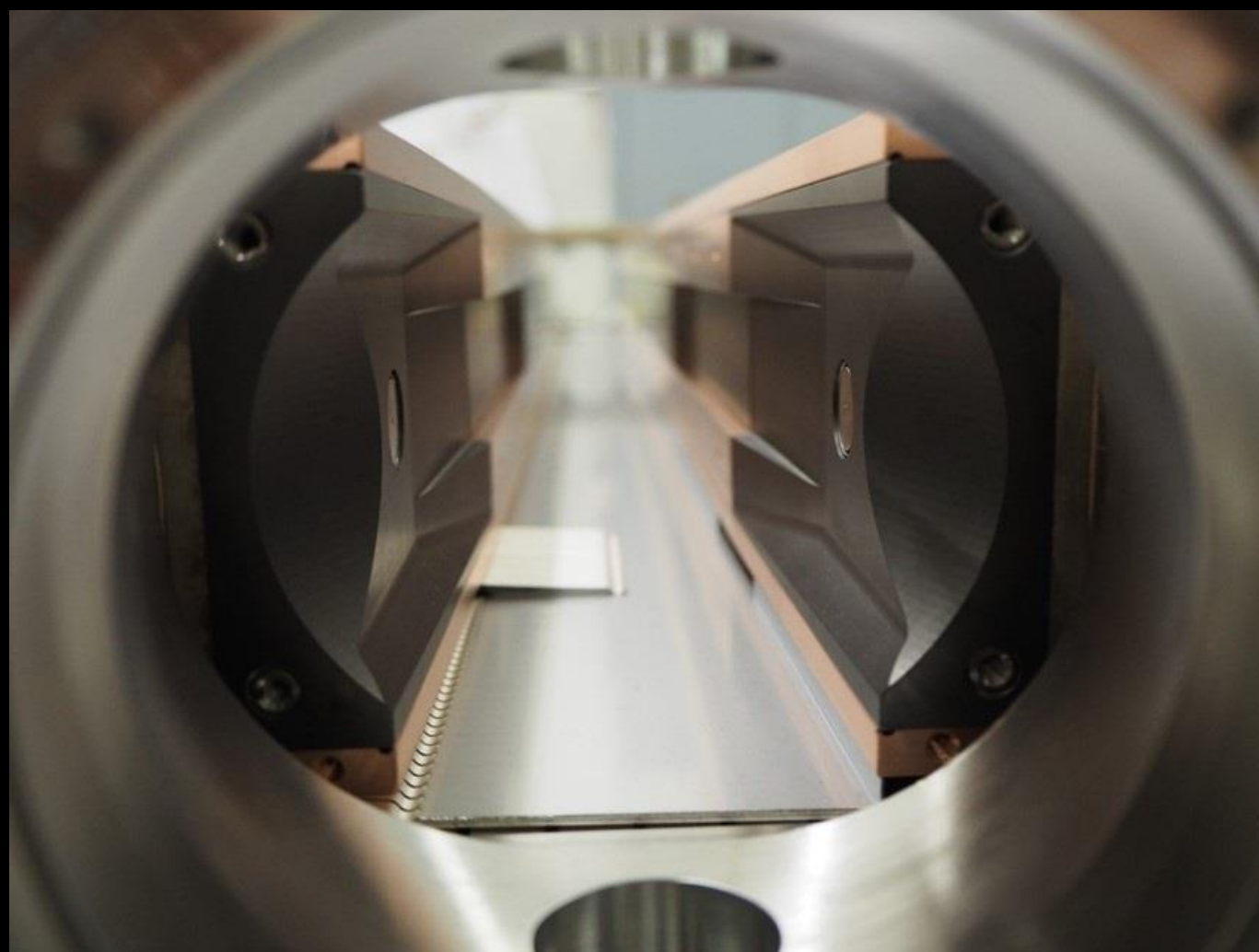
Product Design & Manufacture

Ceramic components and engineered ceramic-based systems

**FUNDING
&
PARTNERS
NEEDED
TO
FUEL
GROWTH**

HIGH PERFORMANCE HEAT SINKS

- Complex Composites for Maximum CTE stability and Heat Conductivity.
- Power Electronics /RF High Performance Heat Dissipation: Baseplates, Package Flanges.
- Aerospace and Turbines.
- Next Generation Ceramic Composites For Combustion Harsh Environments And Space



Our Technologies

Heat sink – Big Science industry

Nanoker has been awarded with the CERN tender IT-4201: "Manufacturing of 380 blocks and taperings for the HL-LHC collimators". Budget: 1.3 M€ (2018-2020)



Industrial scale SPS system



Two configurations – 170 mm and 230 mm tools
Material thickness – 35 mm

MAIN INDUSTRIAL Business Lines

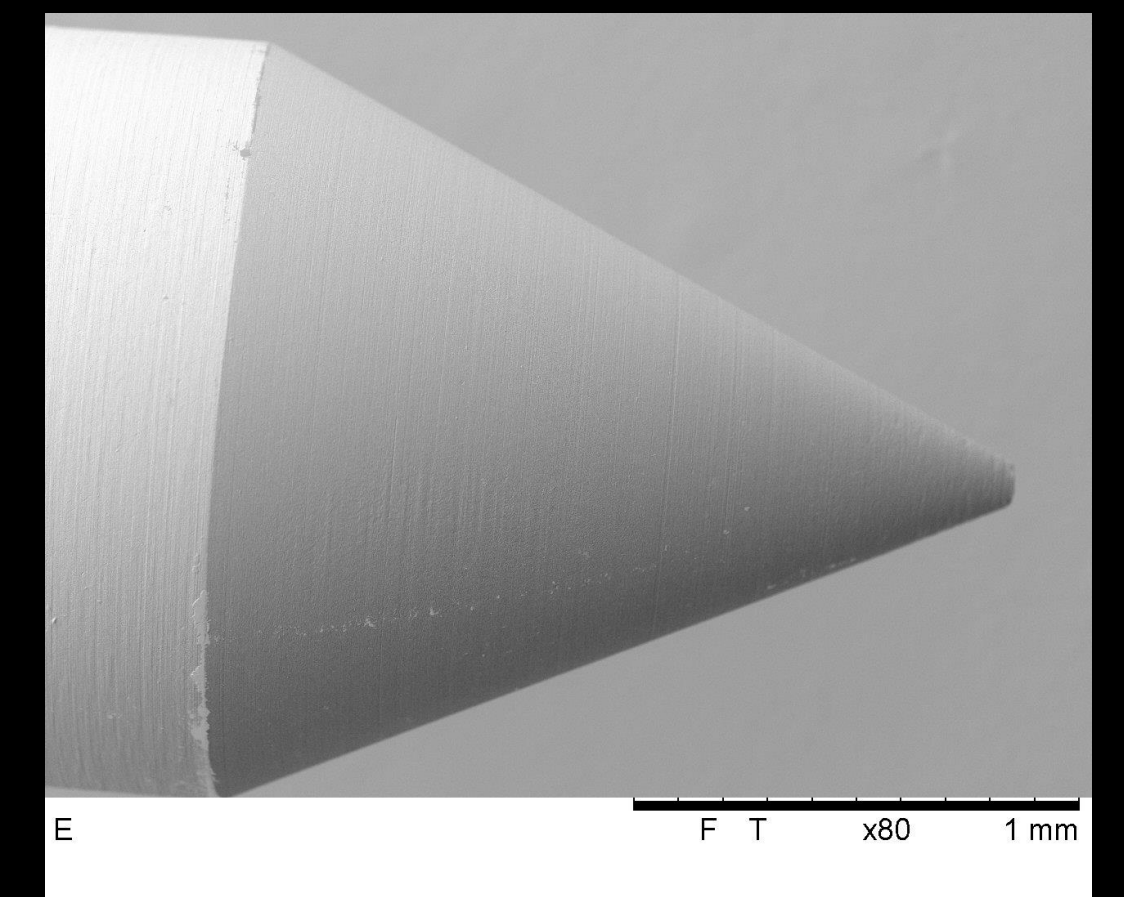
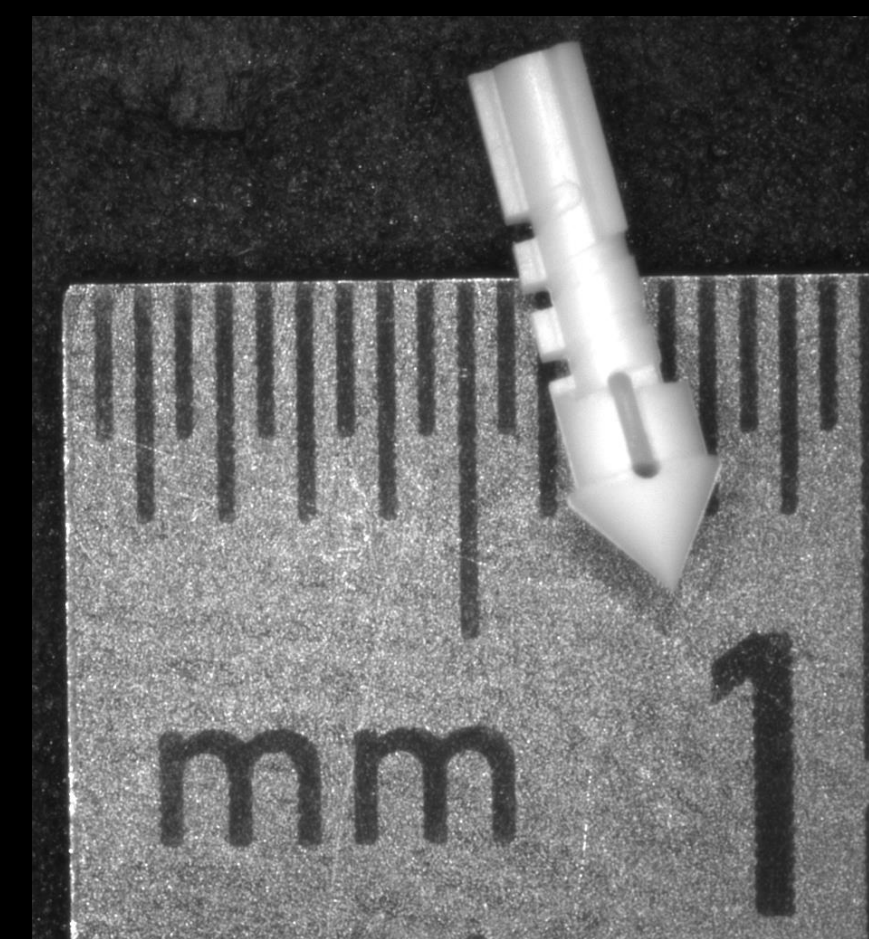
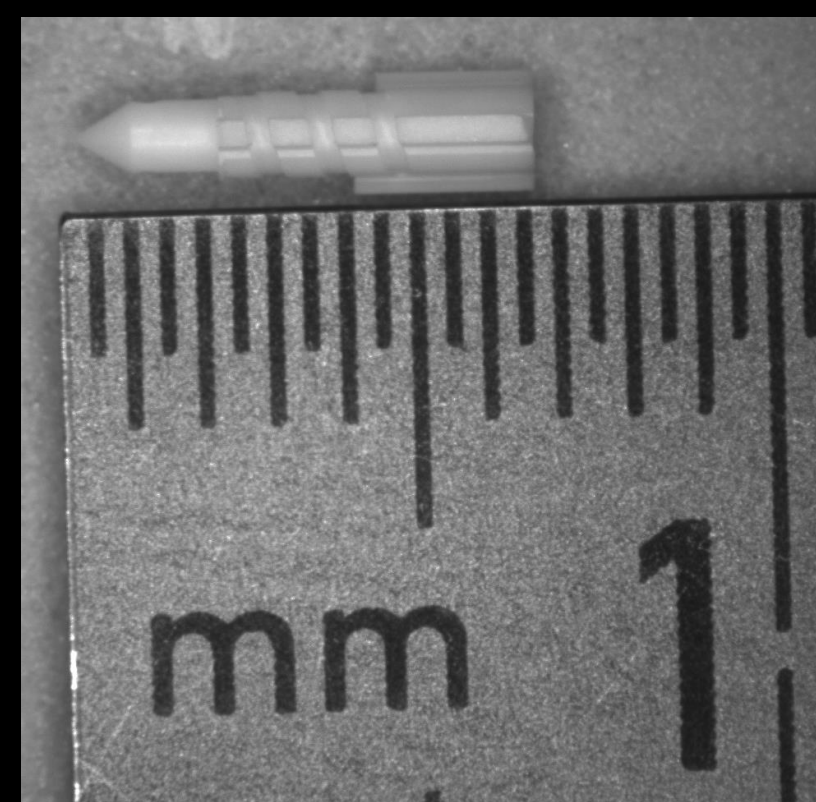
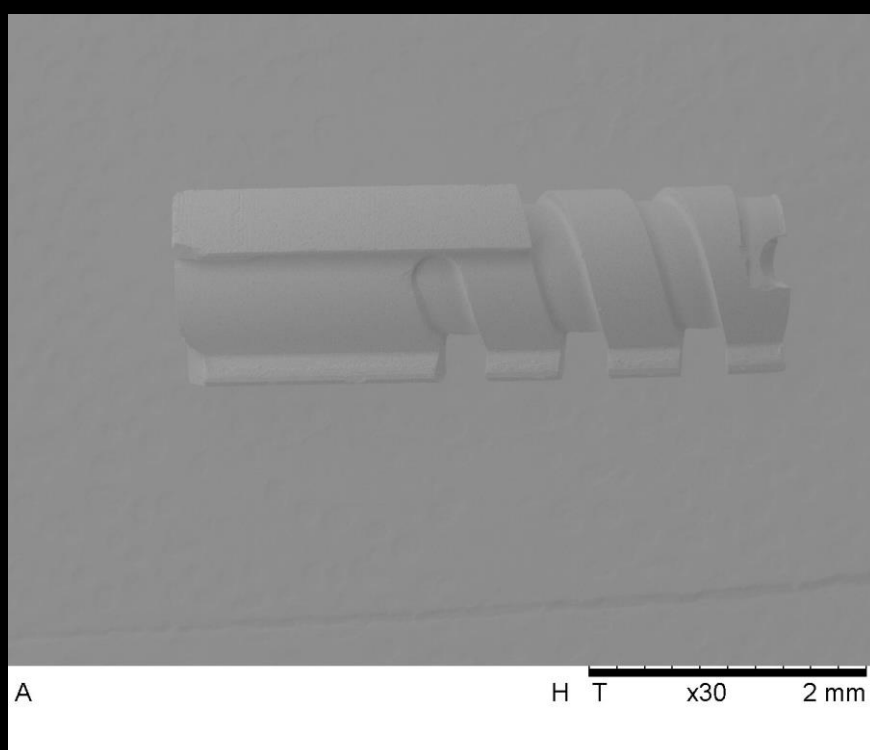
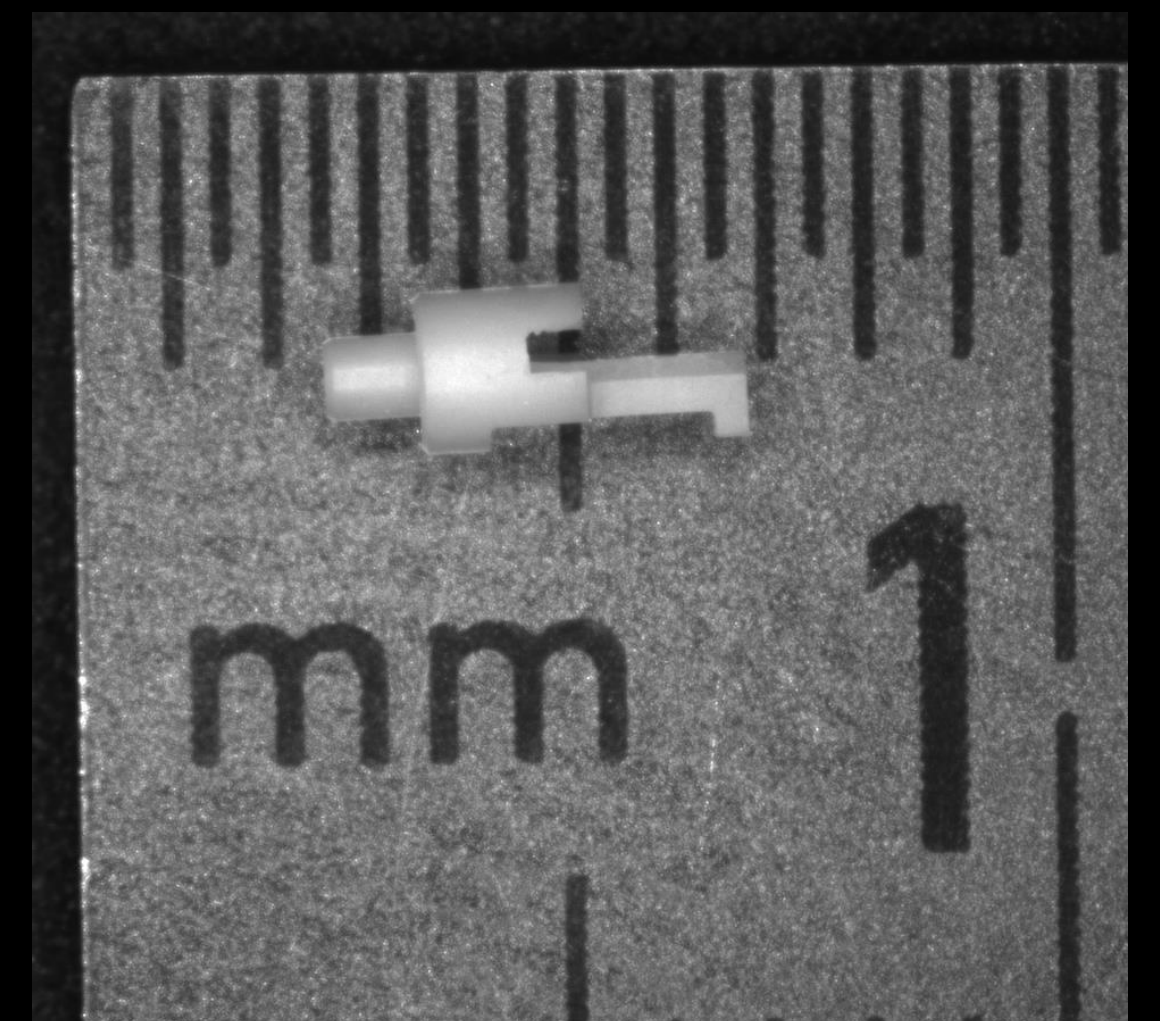
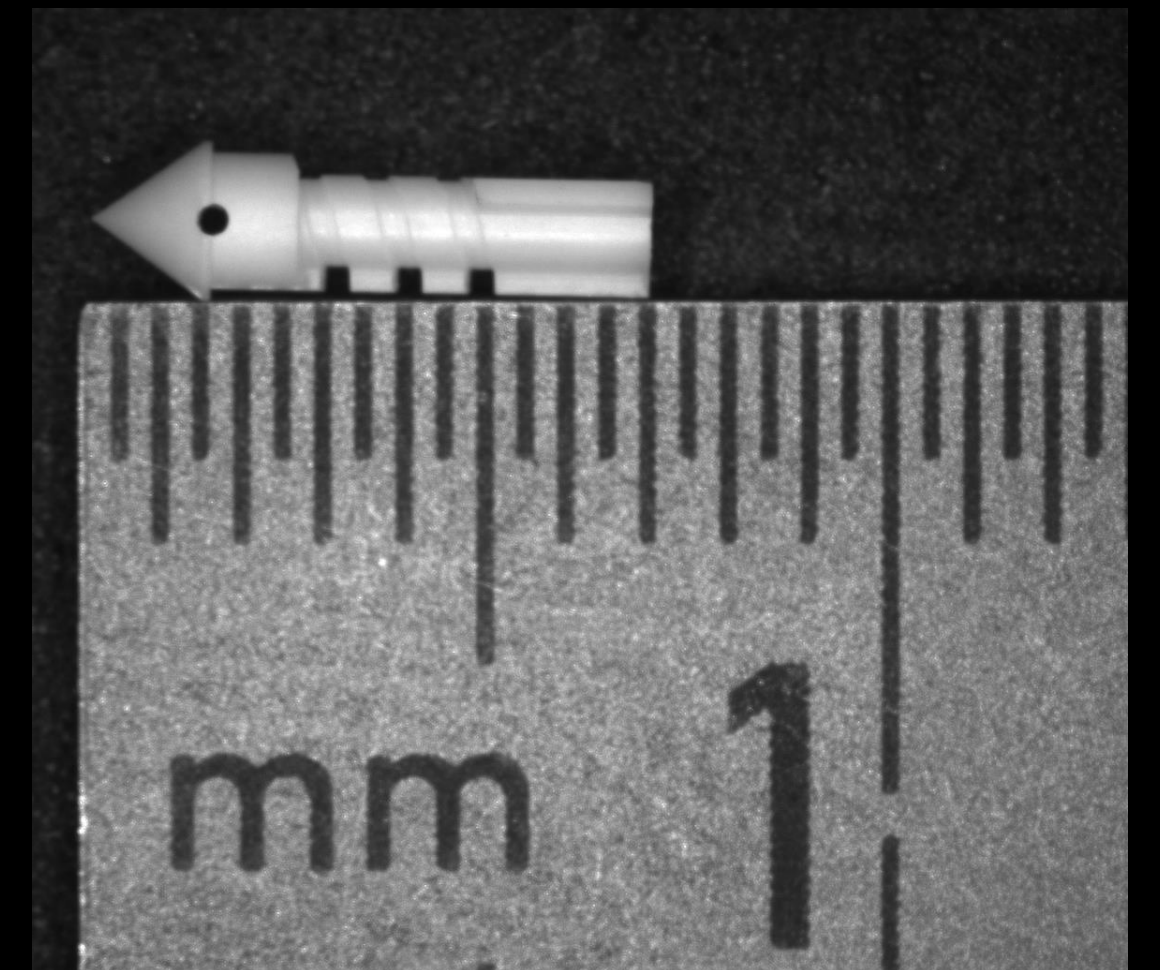
Product Design & Manufacture

Ceramic components and engineered ceramic-based systems

MEDICAL DEVICES

- Zirconia Blanks for Dental Protetic CAD/CAM.
- Custom-Made Biocompatible ceramic parts for clinical equipment.
- Various Patented ANTIMICROBIAL BIOGLASS types.

- Dedicated Clean Rooms & Equipment.
- ISO 13356, ISO 13485
- Design and Machining of Green Forms.
- Final Tolerances of down to +/- 20 Microns.
- Boring Diameters down to 200 Microns x 4mm in length.
- Precision Machining. Milling tool down to 100 Microns x 3mm.
- In-House Regulatory Expert Department.



Technologies

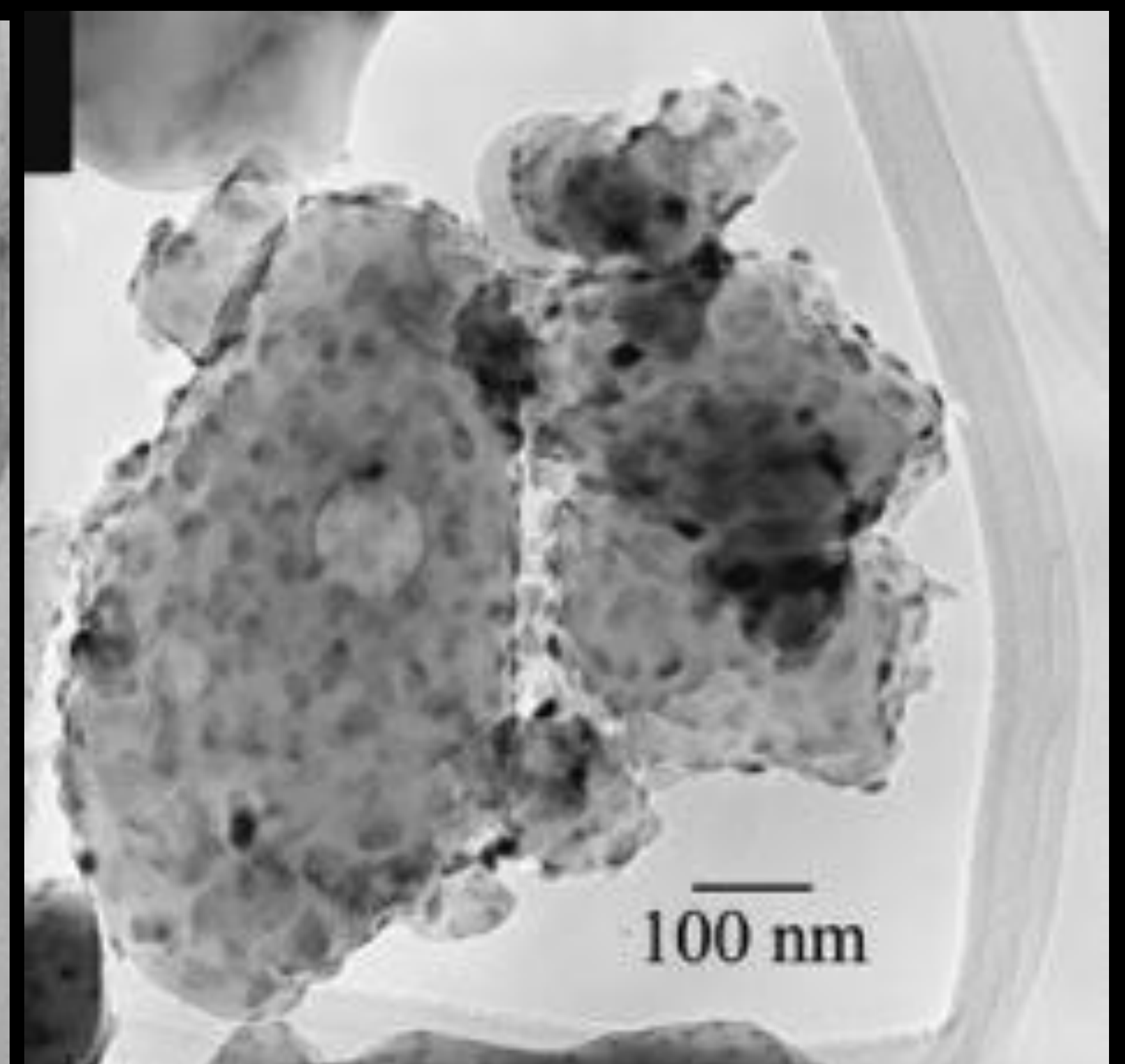
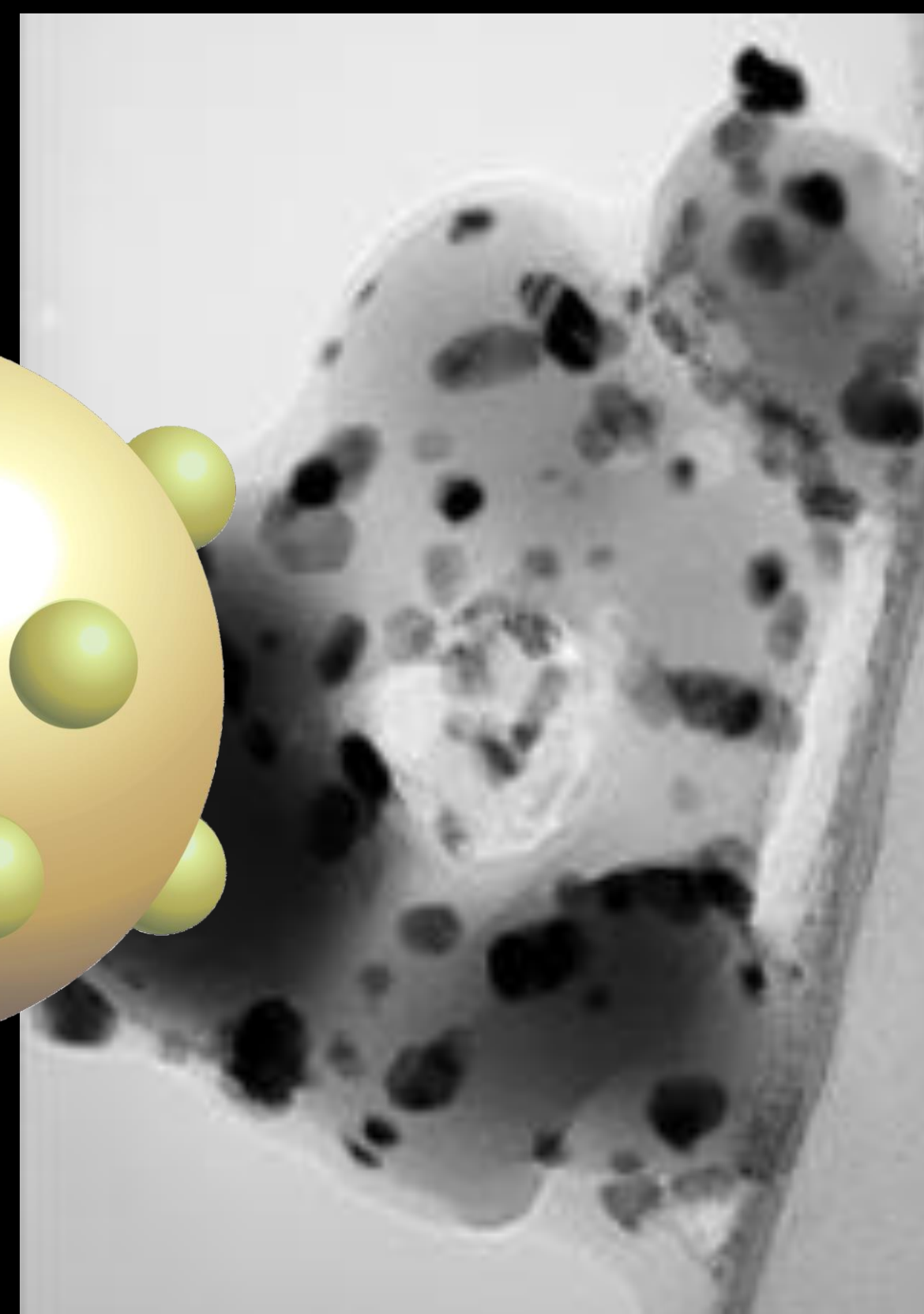
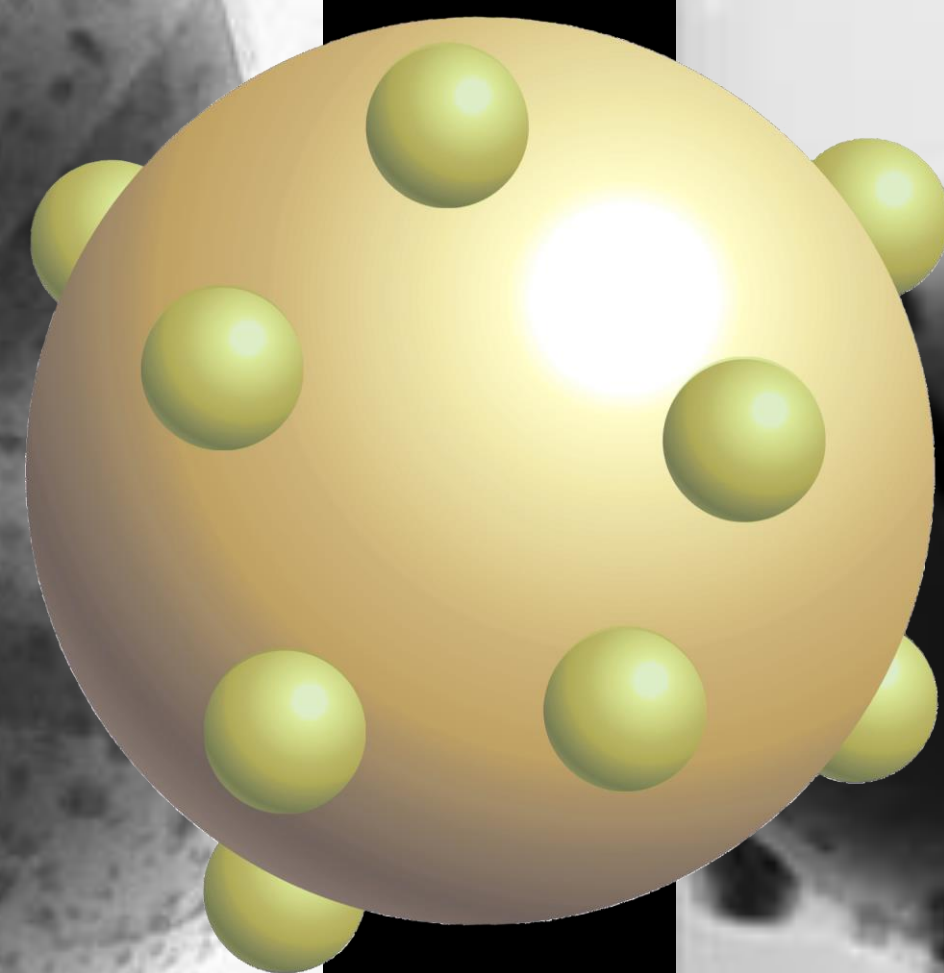
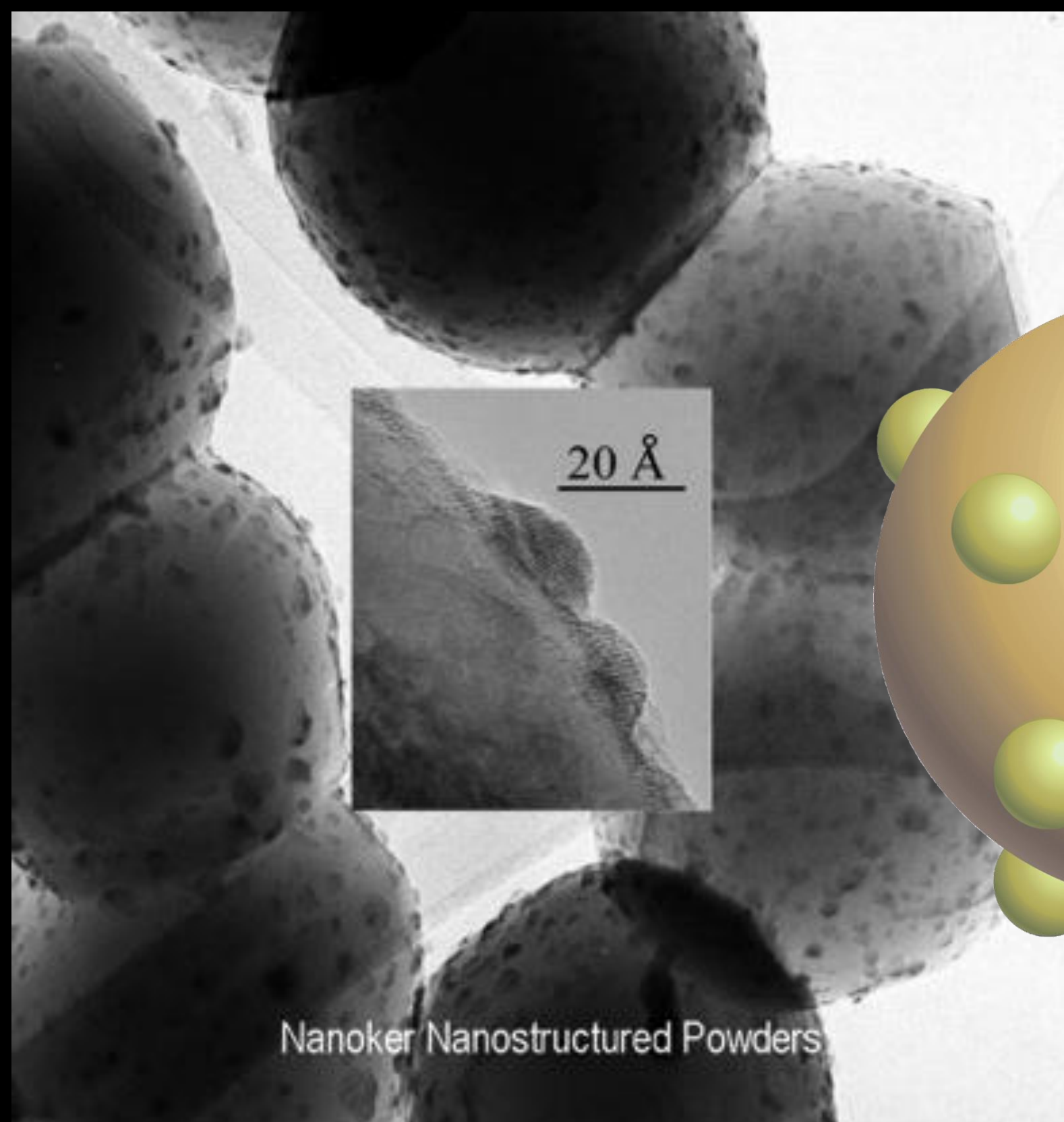
Our tools for design and production

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Oxides and Composite Powders Production Line

Our own patented technology to industrialize a safe production of nanostructured powders



Nanostructured Raw Materials

Functional Nanomaterials

Oxides and Composite Powders Production Line

Our own patented technology to industrialize a safe Synthesis of nanostructured powders

Aluminas

Zirconias

TZP, PSZ and FSZ

Aluminum
Titanate

Nanocomposites

Alumina-CeTZP

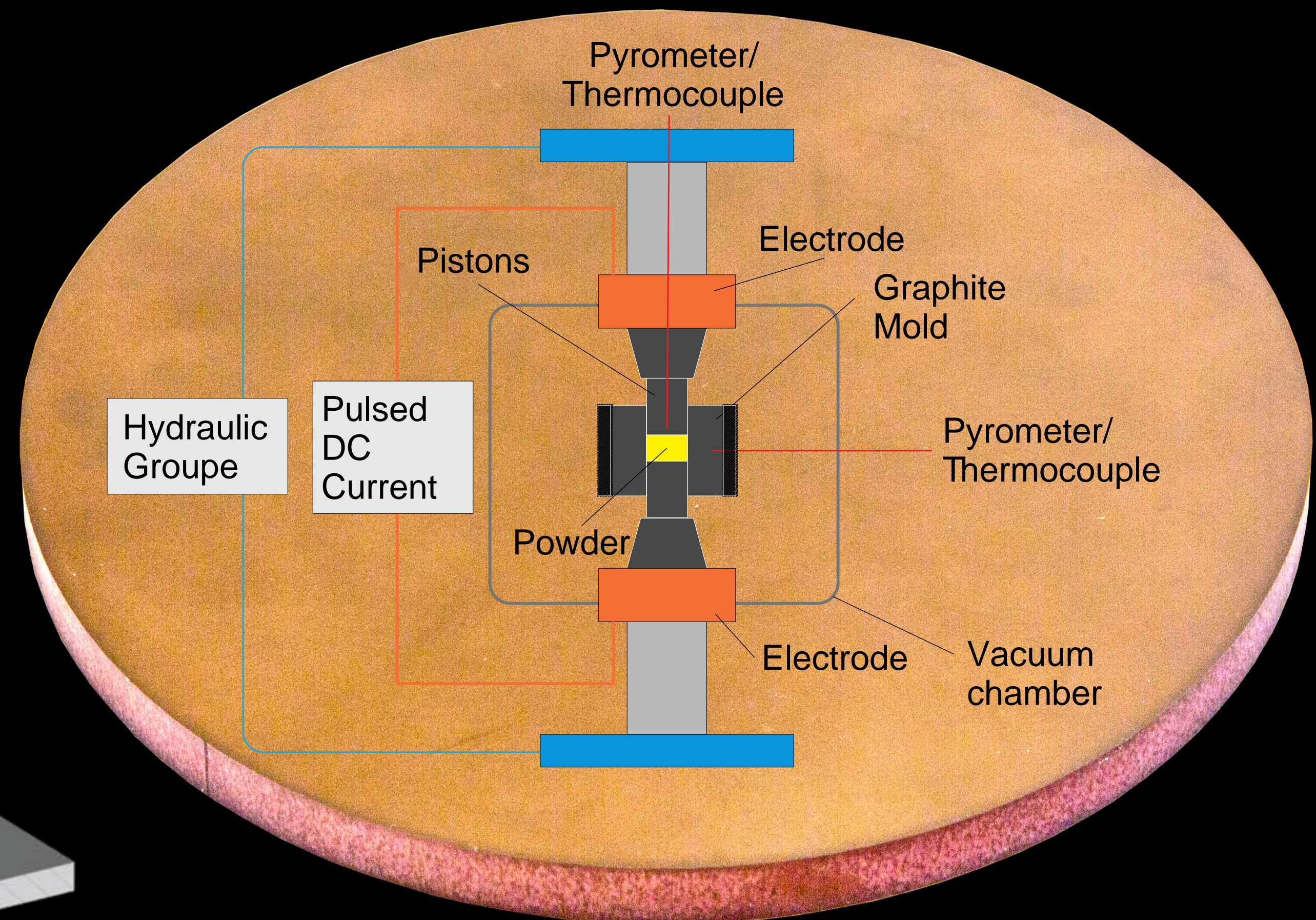
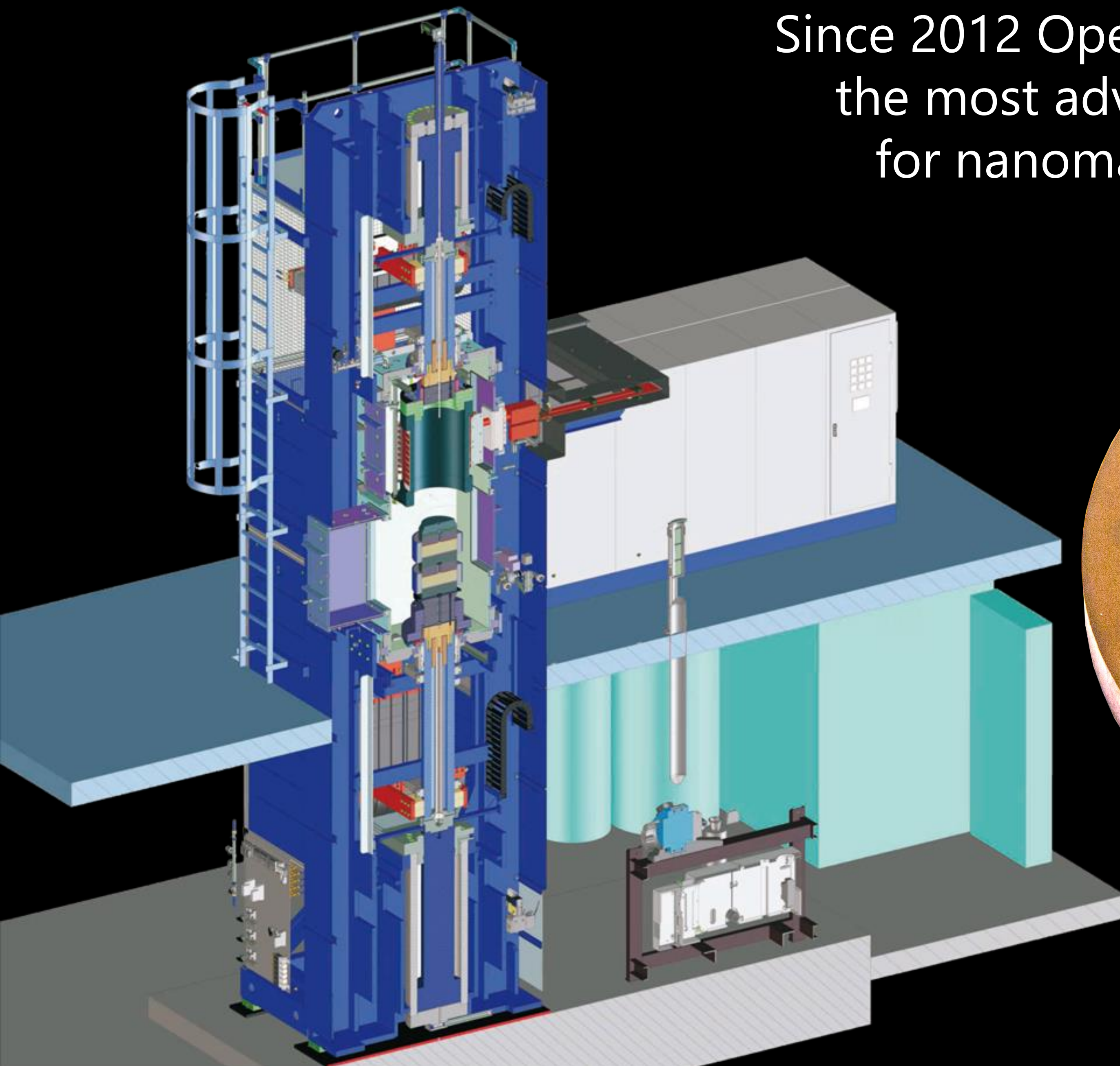
Composites

ATZ and ZTA

Graphite
Molybdenum

EUROPE'S BIGGEST Spark Plasma Sintering Equipment

Since 2012 Operating, Perfecting and Mastering
the most advanced production technology
for nanomaterials and nanocomposites



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Our tools for design and production

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Near Net Shaping by Casting

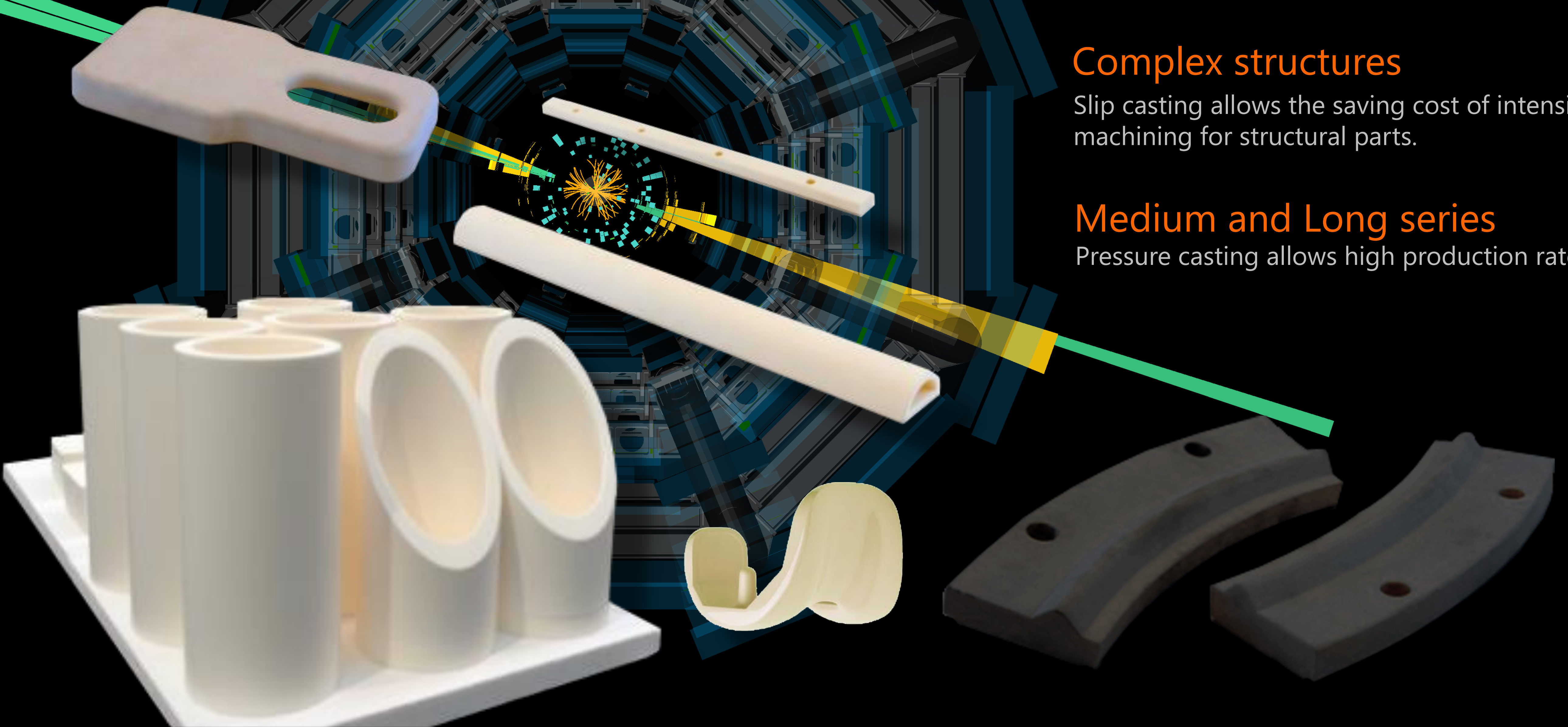
Complex shaped components using designed molds by 3D printing and 5 axis CNC

Complex structures

Slip casting allows the saving cost of intensive machining for structural parts.

Medium and Long series

Pressure casting allows high production rates



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CAD CAM of complex shaped parts from green bodies



Technologies

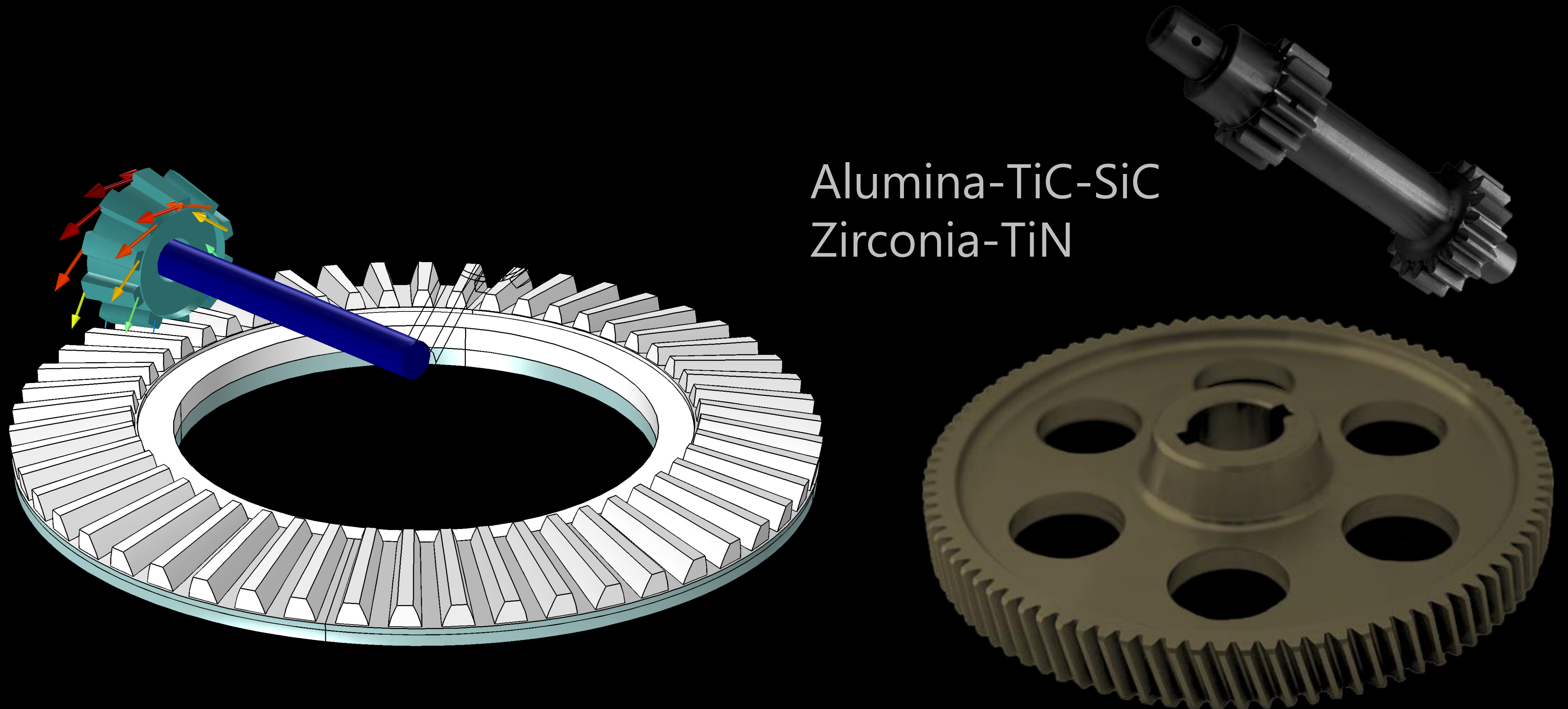
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EDM Machining of conductive composites

Alumina, zirconia based

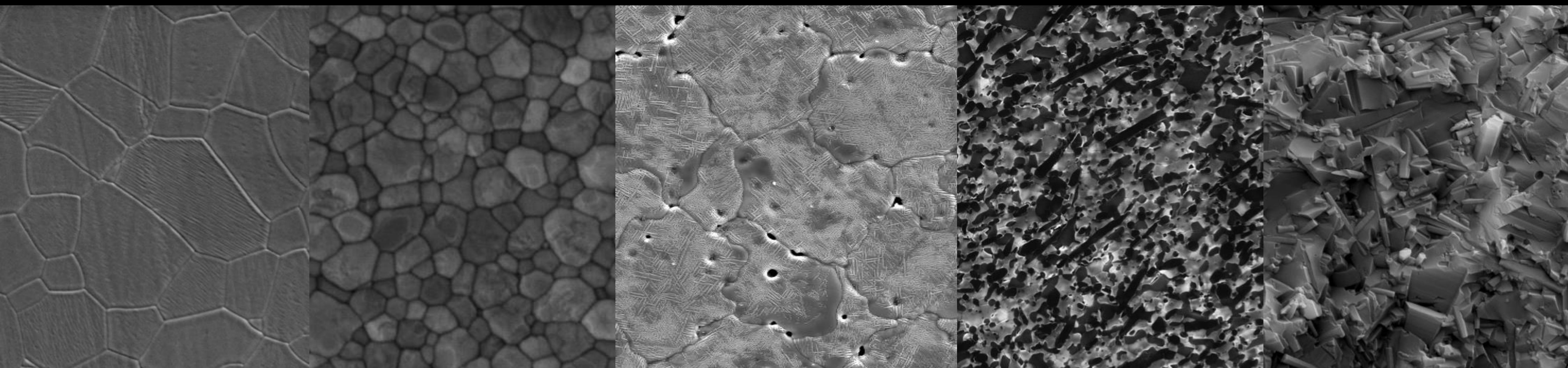


Materials

Outstanding and innovative new advanced ceramics and nanocomposites

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Alumina

We produce aluminas with different purities depending on different application fields. Standard grades are aluminas of 98, 99.7, 99.9 wt%

Zirconia TZP

We produce Y-TZP zirconias with different colors, mechanical and optical properties

Zirconia PSZ

MgO Partially Stabilized Zirconia shows a controlled mixture of cubic and tetragonal zirconia phases with outstanding properties at high temperatures

A- TiC- SiCw

An electroconductive and tough ceramic composite



A- SiCw

A high toughness ceramic with good mechanical properties in very aggressive environments

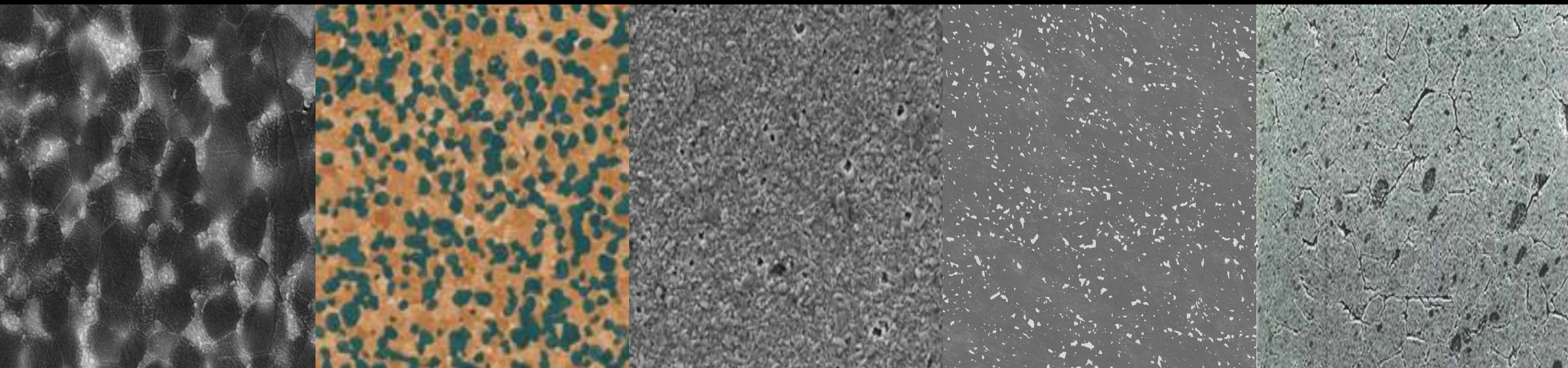


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Zirconia- TiN

An electroconductive and high resistant ceramic with metallic shine



Alumina- CeTZP Nanocomposite

A material with the highest toughness ever reached in a ceramic material

Pure WC

An extremely hard material for thin film deposition in hard coatings



Graphite-Mo

A material specifically designed for heat sink applications



Aluminum Titanate

High thermal shock resistant ceramic, non-wettable by melted non ferrous metals

Materials

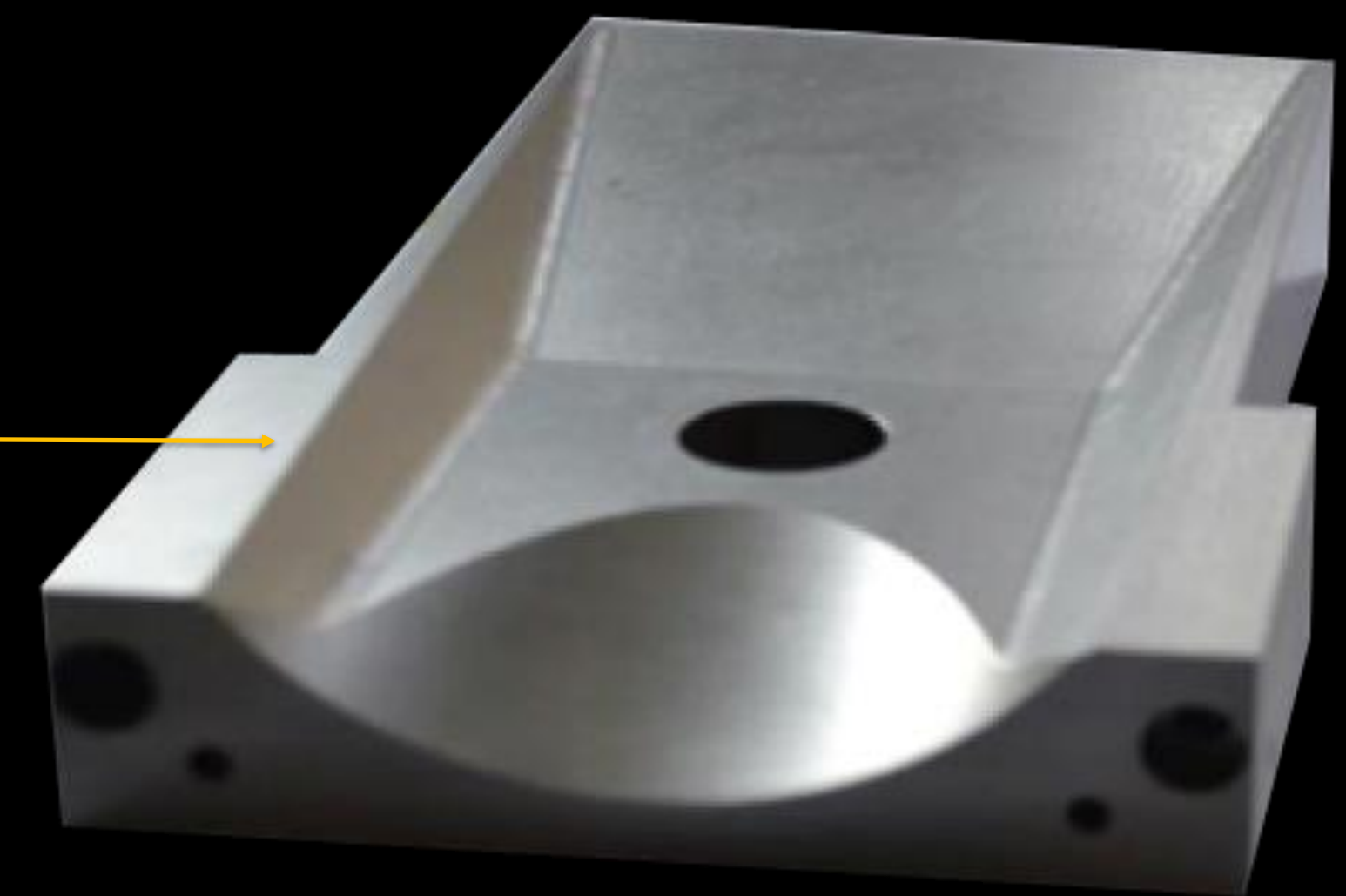
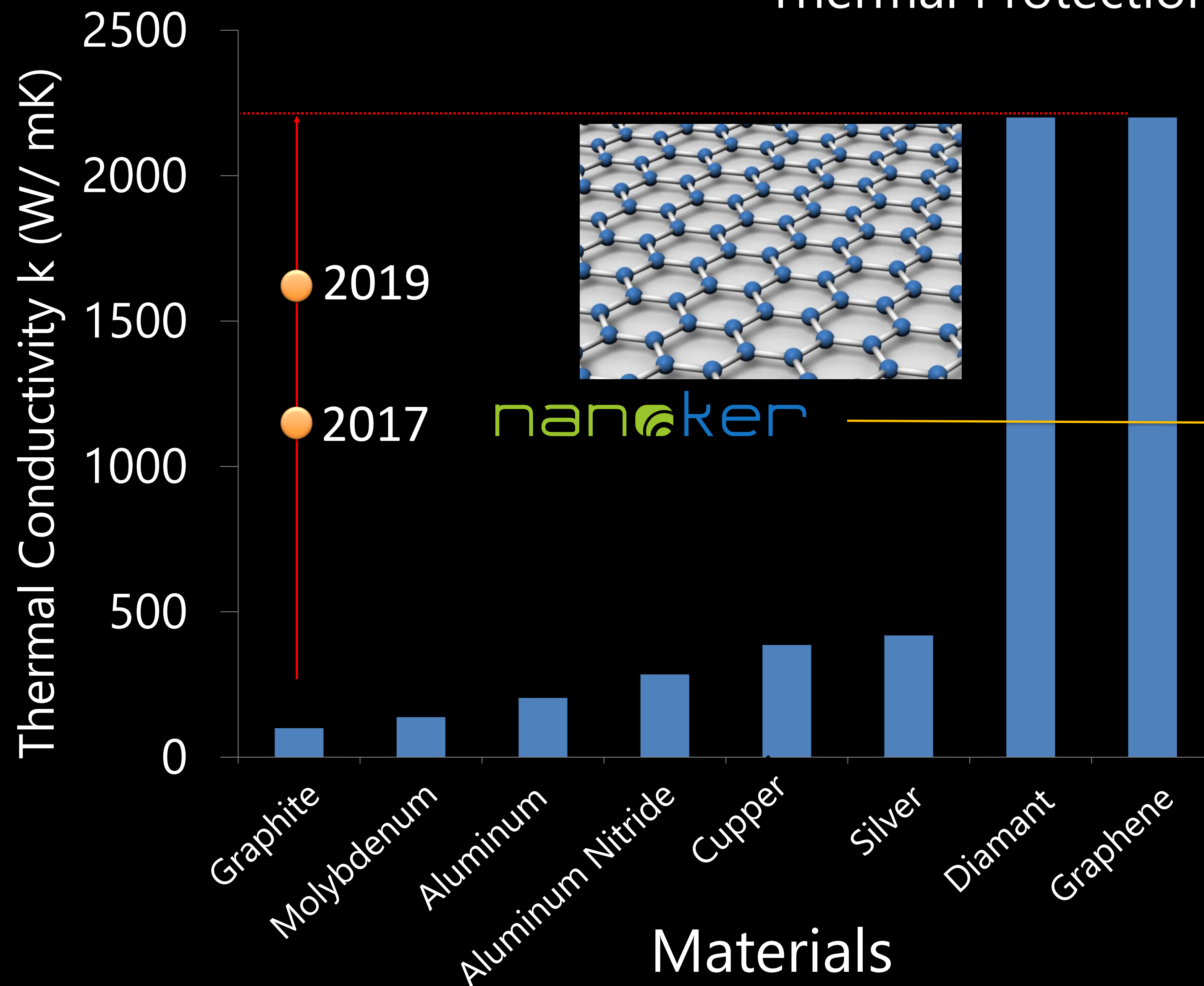
Outstanding and innovative new advanced ceramics and nanocomposites

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Heat Sink Composites

Thermal Protection



WE LIKE CHALLENGES

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**NOW SEEKING
EQUITY FUNDING
TO SCALE-UP
DISRUPTIVE
BIOMAT PROJECT
WITH EXIT & Fair Value
STRATEGY**

The Dental Implant Market: Europe & Titanium



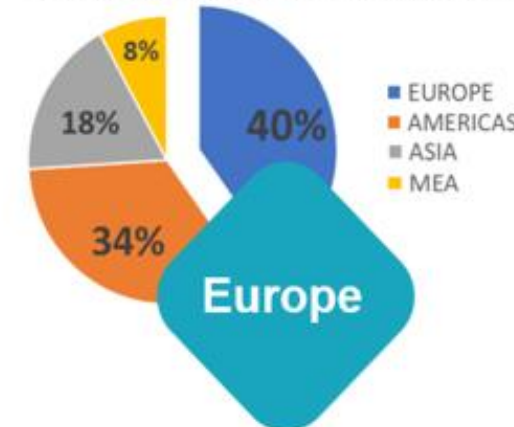
2018

4.5 Bn€

Size

20 million implants/year
86.2% Ti-based
80% 7 big players (none EU!)

DENTAL IMPLANT GEOGRAPHIC DISTRIBUTION



40%

Share

Germany leads the ceramic-based
market share: 29.2%
(vs. 13.8% globally).



Ti-based
86.2%
market share



Ceramic-based
13.8%
market share

COUNTRY	MILLIONS IMPLANTS SOLD (2018)
USA	2.70
Spain	1.50
Germany	1.30
Italy	1.20
France	0.95

TITANIUM:

Cheap and Easy to Machine.
Worse Biocompatibility.

CERAMICS:

Have failed to succeed
so far due to *poor
Mechanical Properties.*

SEAL OF EXCELLENCE

European Commission

Ref. Ares(2020)7031460 - 25/11/2020

**Certificate delivered by the European Commission,
as the institution managing Horizon 2020,
the EU Framework Programme for Research and Innovation 2014-2020**

The project proposal
969350, NACRE
A solution to peri-implantitis: the "time bomb" in dental implantology
submitted under the Horizon 2020's SME Instrument (grant only and blended finance)
call H2020-EIC-SMEInst-2018-2020 (H2020-EIC-SMEInst-2018-2020-3) of 7 October 2020
in the area of EIC-SMEInst-2018-2020

SME instrument
by
NANOKER RESEARCH SL
POLIGONO DE OLLONIEGO 5 PARCELA 22 NAVE 5
33660 OVIEDO
Spain

following evaluation by an international panel of independent experts
**WAS SCORED AS A HIGH-QUALITY PROJECT PROPOSAL
IN A HIGHLY COMPETITIVE EVALUATION PROCESS***

This proposal is recommended for funding by other sources, since Horizon 2020 resources
available for this specific Call were already allocated following a competitive ranking.

* This means passing all stringent Horizon 2020 assessment thresholds for the 3 award criteria
(excellence, impact, quality and efficiency of implementation) required to receive funding from the EU budget Horizon 2020.

Elisa Ferreira,
Commissioner for
Cohesion and Reforms

Mariya Gabriel,
Commissioner for Innovation, Research,
Culture, Education and Youth

Brussels, 25/11/2020

INPERIO
DENTAL IMPLANT SYSTEM



- » **BETTER OSSEOINTEGRATION**
- » **ENHANCED SOFT TISSUE ATTACHMENT**
- » **LESS BACTERIAL ADHESION**

**BIOLOGIC CERAMIC BENEFITS
MEET
TITANIUM CLINICAL VERSATILITY**

Step forward

- » **BONE LEVEL**
- » **NARROW DIAMETERS**
- » **MULTIUNIT AND SREW-RETAINED CONNECTION**
- » **IMMEDIATE LOAD**

SURFACE ROUGHNESS 1.4 µm [Ra]

- Tailored for optimum osseointegration
- Without traces or impurities

TAPERED DESIGN

- DIAMETER RANGE: Ø 3.30 mm Ø 3.75 mm Ø 4.20 mm
- High primary stability in immediate extraction socket
- Fitting in anatomically constricted apical areas

BONE LEVEL DESIGN / PLATFORM SWITCHING

- Facilitates biologic width as well as soft and hard tissue growth
- Disperses forces towards the center of the implant, away from marginal bone

MONOBLOCK / TISSUE LEVEL DESIGN

- No bacterial microleakage at bone level
- No abutment micro-movements

MULTIUNIT CONNECTION

- Anti-rotary for single tooth restorations
- Rotary for multiple tooth restorations
- Corrects disparallelisms of up to 25° between implants

TRIEDGE, SELF-TAPPING AND DOMED APICAL DESIGN

- Lowers friction coefficient with bone minimizing osteonecrosis risk
- Allows angle correction
- Prevents reverse rotation while placing/removing immediate restoration screw
- Domed apex minimizes sinus membrane or alveolar nerve injury probability

COMPRESSIVE THREAD

- Increases bone density, primary stability and releases stress

ANATOMIC EMERGENCE PROFILE

- Seamless and natural looking emergence profile

IMPROVED ANTIMICROBIAL EFFECT

- Antibacterial properties
- Hampered biofilm maturation

INSERTION TORQUE: UP TO 50 N/CM

- Insertion torque of conventional clinical procedures with titanium implants
- Qualifies for immediate load protocols

SCREW-RETAINED CROWN

- Multiunit dynamic screw prevents the non aesthetic emergence of screw channels

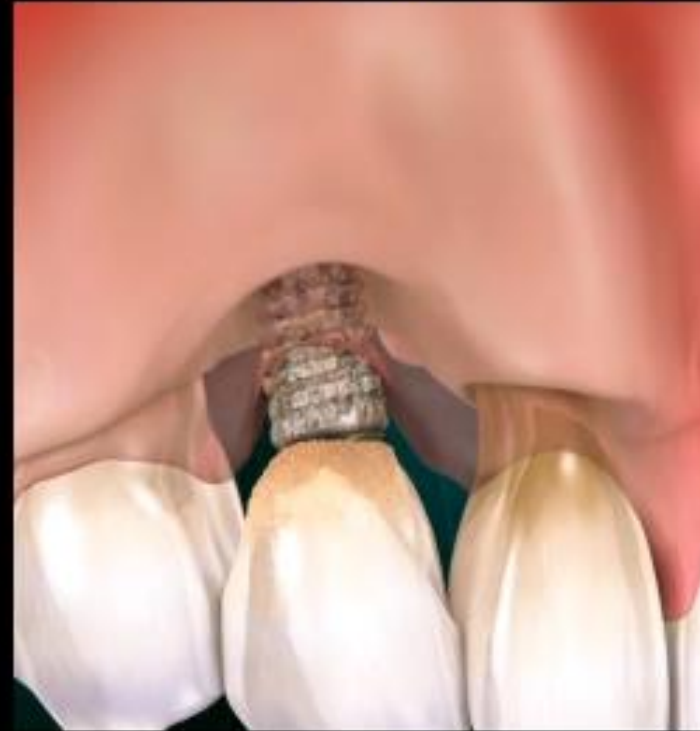


INPERIO
DENTAL IMPLANT SYSTEM



WE LIKE CHALLENGES nanoker

The Problem: Peri Implantal Disease



- Titanium has associated & crossed metal intolerances.
- 50% of World's population develops periodontal disease.
- Titanium attracts Biofilm: Plaque Formation.
- Plaque under gum causes recession: Aesthetic Problem.
- Plaque damages gum and destroys bone: Loss of Implant
- Only solution is periodic painful & expensive scaling.

Our BREAKTHROUGH: NACRE PROJECT



New Material
Patented Nanocomposite
Highest toughness ever achieved
in a ceramic material



PROOF OF CONCEPT
INPERIO – Monoblock Implant
Finalizing CE/MDR Marking **2021**
IMQ– Notified Body Italy

Monoblock Market Entry
+
Production Scale-Up
+
Bioglass & 3 Pce. Regulatory

Antibacterial bioglass coating

PATENTED



Access 5:45 min. Video

<https://youtu.be/2-WZ2T62c6o>



Three-piece design



Game changing!

Our value proposition: an all-Ceramic Nanocomposite versatile implant system

THAT BEATS BOTH TITANIUM AND EXISTING CERAMICS



Narrow diameters

Disruptive!



Prosthetic versatility

Disruptive!



Extraordinary resistance,
>50 Ncm insertion torque

Disruptive!



Peri-implantitis prevention via
our unique bioglass coating

Game changing!



**B
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**M
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Strategy
Europe first
Market segmentation
Premium clinics

- Premium clinics (quality-sensitive, eager-for-change, differentiation niche).
- Less price-sensitive & prone to differentiation.
- Better informed/more sensible to KOL.



Patient Pull
Addressing patients directly
NACRE Centers
Changing obsolete ways

- Innovative approach: prestige & proximity.
- The patient (finally and really) matters.
- Delegations spreading knowledge & awareness and directing patients to NACRE-certif. clinics.



Product Push
Game-changing solution
Strong branding
Healthcare stakeholders

- Solution to end user pain and tool for practitioners.
- Direct & indirect actions aimed at practitioners and industry (hospitals, insurance, etc.).
- International events, publications, etc.

THINK BIG

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NANOKER is one of the 11 Spanish companies selected for TechShare program 2020-2021

And the only one in the Material-Science Field.

Ownership & Contact

www.nanoker.com

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"MAKING THE SMALL PROFITABLE"



Eduardo Álvarez



Samuel Menéndez



Ramón Torrecillas



Sergio Rivera



Metodio Ferradás

2011

Founders of Nanoker
Research Company



ContactInfo

HQ and Main Production Plant

Polígono Industrial Olloniego,
Parcela 22A, Nave 5
33660 Oviedo, Asturias, Spain
Tel.: +34 985 20 76 13

SPS Plant

Polígono Industrial de La Florida
Calle Mina el Rimadero - Parcelas 77-79
33950 Sotrondio – Asturias- Spain

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