



MEMBER OF
BASQUE RESEARCH
& TECHNOLOGY ALLIANCE

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05/02/25

Ceit en cifras



+280

PERSONAS
EN
PLANTILLA

+350 PhDs

+400 Investigadores

TRANSFERIDOS A LA
INDUSTRIA



+100 Proyectos europeos

Actividad científica:

+1300 publicaciones científicas indexadas

+2000 publicaciones a Congresos
Internacionales

Spin-offs

+300 Puestos de trabajo creados

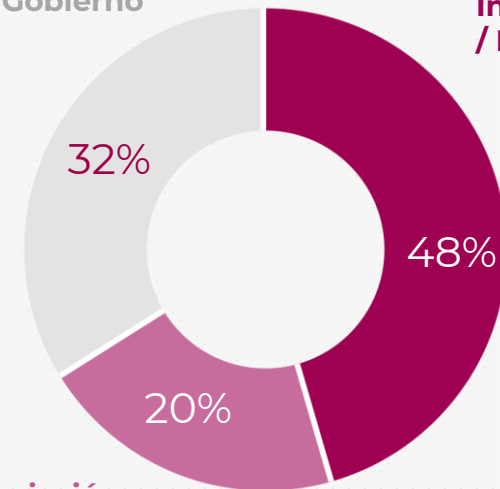
+200 Millones de euros de ingresos

PRESUPUESTO 2024

€ **25,5 Millones**

Fuentes de financiación y tipo de investigación

Financiación
Pública Competitiva
(Europa, Gobierno
Central, Gobierno
Vasco)*



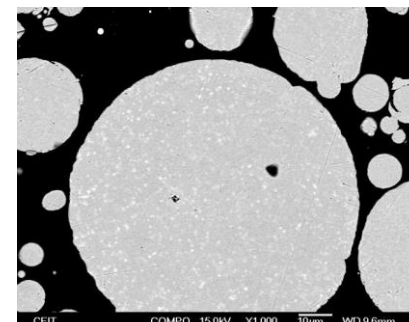
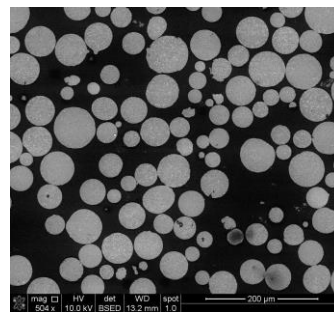
Financiación
Basal
Gobierno Vasco

Industria
/ Privada

1- Advanced Manufacturing & Powder Metallurgy



- RIME bracket (Spacecraft component)



Scalmalloy®



Scancromal®

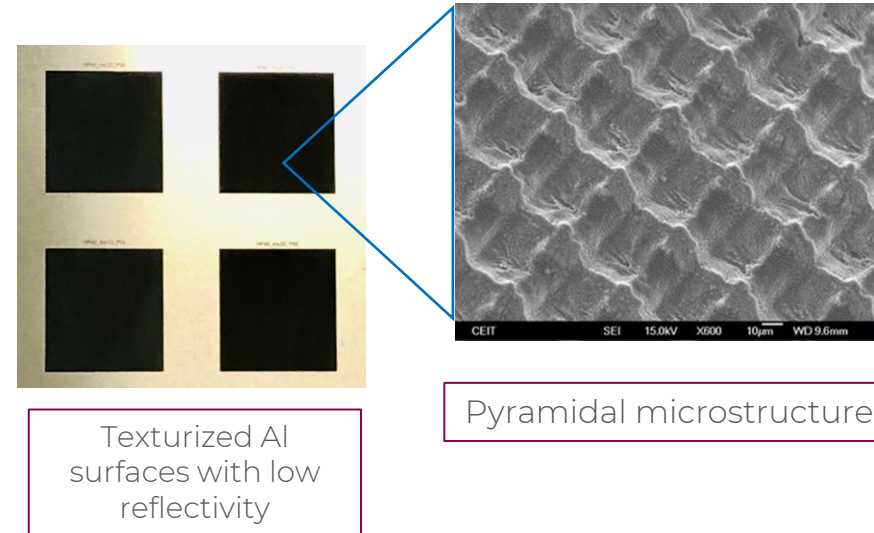
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2- Advanced Surfaces for Space

Fabrication of advance surfaces with high precision lasers (femtosecond)

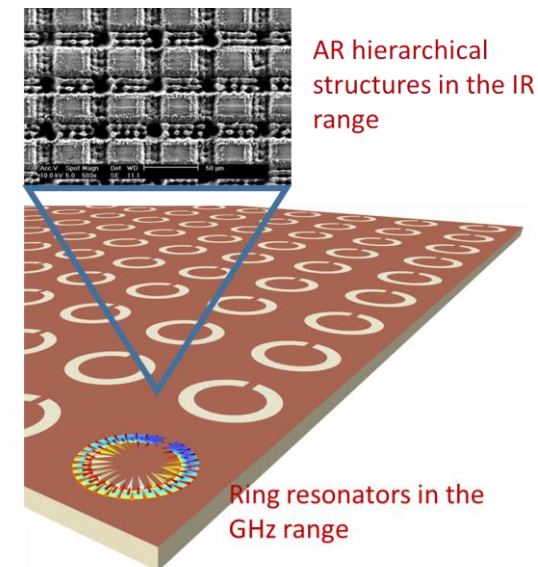
Antireflective surfaces for heat management

- Combination of micro-nanostructures in Al and Steel surfaces with:
 - Low IR-visible reflectivity(< 12%), High emissivity (> 89%), High absorptivity (> 92%) in Al
 - Industrial applications: Aerospace/aeronautic, IR Detectors, Solar panels



Stealth structures based on metamaterials

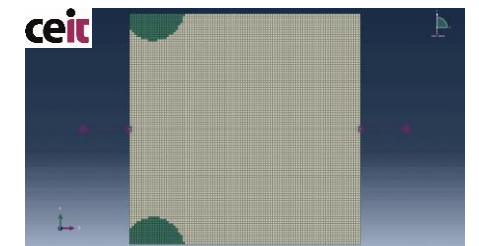
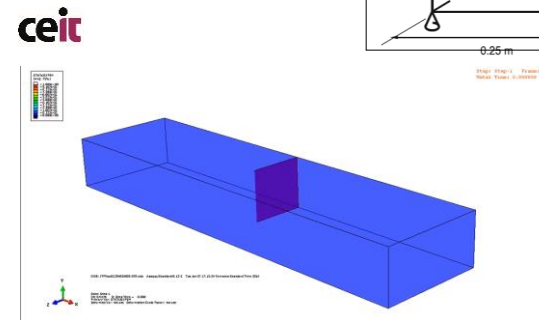
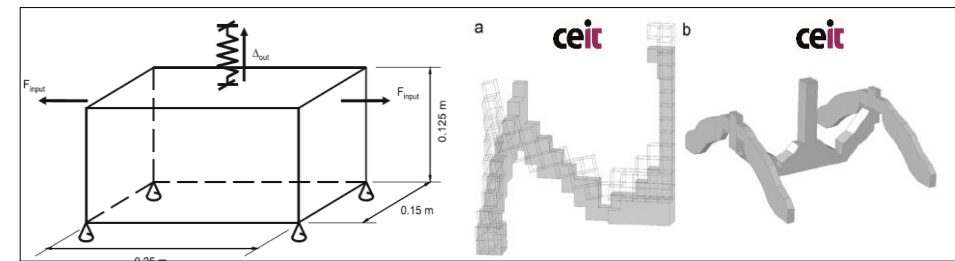
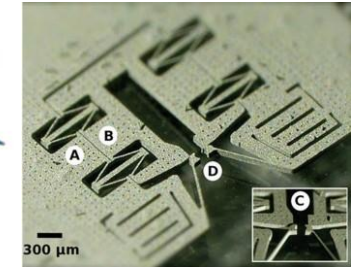
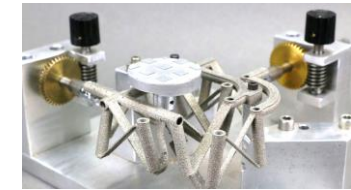
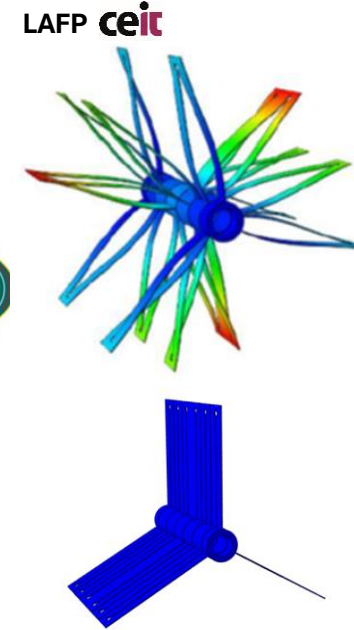
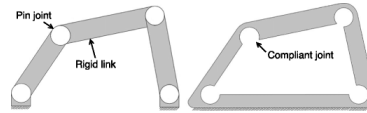
- 1.- Antireflective hierarchical micro/nanostructures in the IR range
 - Combining laser microstructures and LIPSS nanostructures
- 2.- Ring resonators in the GHz/THz range
 - Split/Closed ring resonators with tailored dimensions
 - Ultrabroadband absorbers using multiple ring resonators and/or lumped resistors
- 3.- Compatible stealth in radar and infrared bands
 - Combining ring resonators and hierarchical micro/nano structures
 - Design and simulation using standard FDTD method



3- Mechanical Design & Assessment

Design of compliant mechanisms

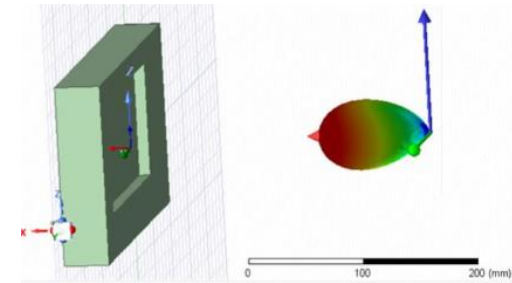
- Compliant
 - Flexible monolithic mechanisms.
 - Customized force-displacement relations.
 - No joints (not friction nor wear):
 - Replacement for bearings and journal bearings.
 - Less maintenance/parts/assembly reqs.
 - Simple manufacturing
 - Additive manufacturing ready.
- Space sector
 - Sudden changes (T, radiation, lubricant outgassing in vacuum, ...) deteriorate classical mechanical systems.
- Applications
 - Pointing mechanisms.
 - Scientific instruments.
 - MEMS.
- Skills and expertise
 - Topology optimization methodology:
 - From function to geometry
 - FEM and XFEM analysis
 - Structural, Dynamics
 - Model analysis (vibration response)
 - Fatigue and crack propagation



4- Electrónica y Comunicaciones

Tecnologías y técnicas RF/MW, ASIC y FPGA para SATCOM 5G+

- Diseño, caracterización y validación de componentes individuales y transceptores completos para comunicaciones, geoposicionamiento, sensores y radares en satélites
- IP cores propietarios para implementación de ASICs y FPGA
- Ceit pertenece a EURORACTICE – PDKs mundiales



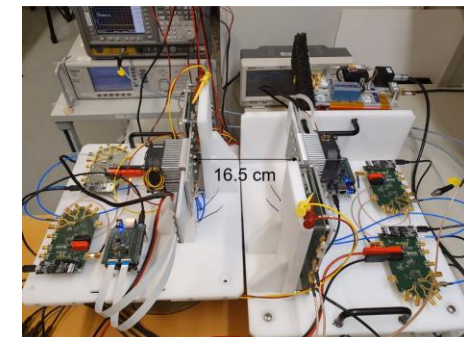
Comunicaciones para el Espacio



- Deep-Space communications: MFSK Receiver for very low Data Rates
- Satellite Receivers: QPSK receiver for digital satellite radio broadcasting



Diseño de transceptores multiestándar altamente integrados



5- Objetivos

- Colaboración con la industria
- Transferencia de la tecnología a la empresa
- Aumentar la competitividad en el sector espacio
- Convertirnos en vuestro partner



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Thank you,
muchas gracias,
eskerrik asko

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