



Centre for Nanotechnology
and Smart Materials

CeNTI – Centre for Nanotechnology and Smart Materials

Smarter technology.

Custom. For you.

About CeNTI

High Level Shareholders



Universidade do Minho

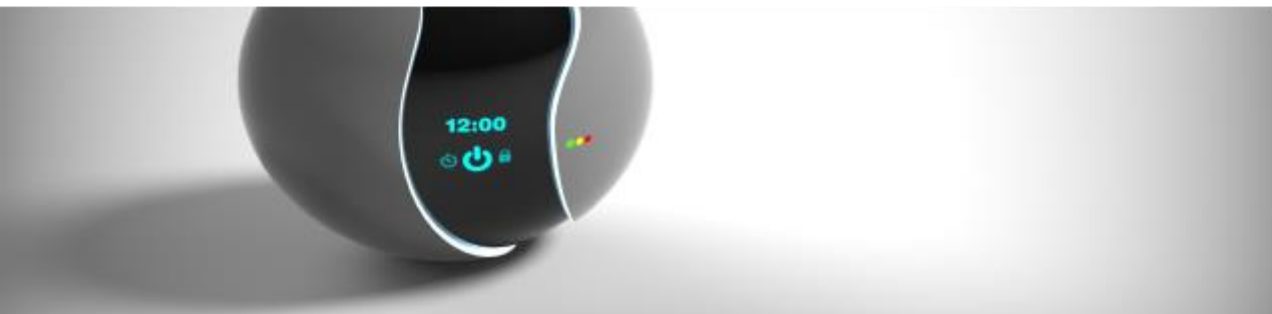
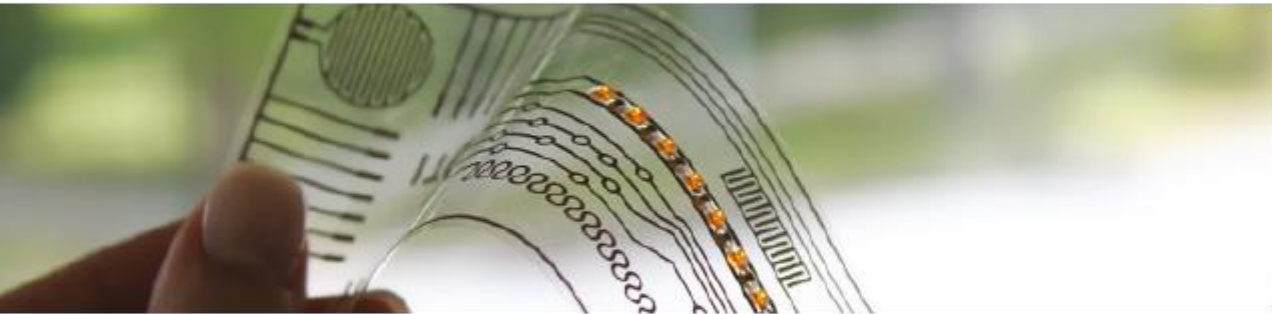


About CeNTI



- Drive the development of **new materials and product or innovation** through all the necessary stages of development;
- **Multi-disciplinary group** (chemistry, physics, engineers, industrial design, electronics and software):
 - *Multicomponent fibres*
 - *Smart materials/devices*
 - *Multifunctional coatings*
 - *Printed and Organic electronics*
 - *Embedded Smart Systems*
- Laboratory validation to **industrialization** (lab2fab);

Three Main Competence Pillars



① Functional Materials & Solutions

② Smart Materials & Systems

③ Design & Engineering



Three main targets

Automotive & Aeronautics



Architecture & Construction

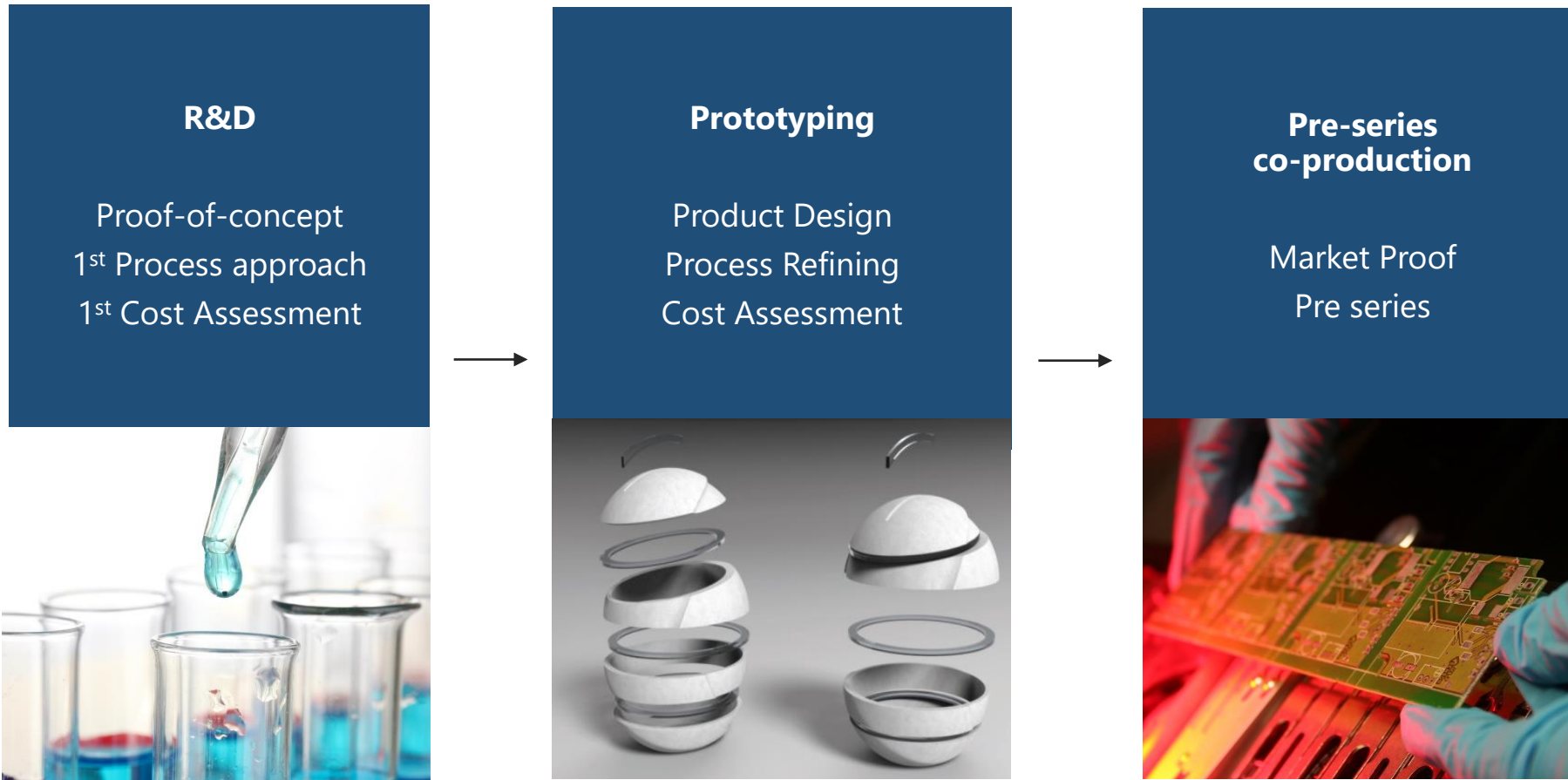


Sports, Health, Protection & Well-being





'Three steps' philosophy



Figures

Figures



150

FULL TIME RESEARCHERS
STAFF



15-20

MASTER / PhD STUDENTS



3400

CAMPUS (m2)



117

TECHNOLOGY TRANSFER
PROJECTS



23

SCIENTIFIC PROJECTS



85

DIRECT CONTRACTS



>250

ACTIVE CLIENTS



52

ACTIVE PATENT APPLICATIONS
40* pending, 12 granted



20

JOINT OWNERSHIP APPLICATIONS
18* pending, 2 granted



5

CeNTI OWNERSHIP
APPLICATIONS
3* pending, 2 granted

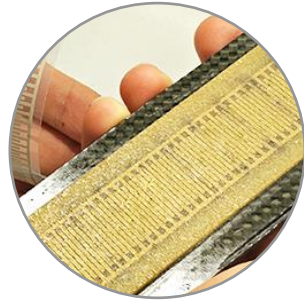
Competences



Technological Focus



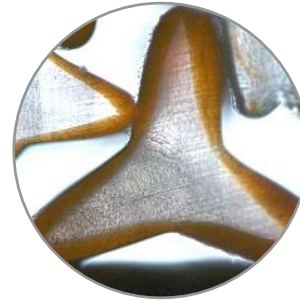
Materials for Sustainable Industry



Microfabrication and Printed Intelligence



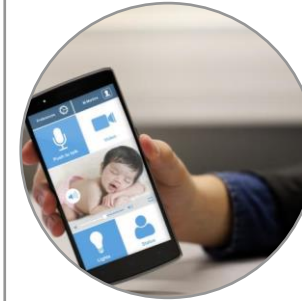
Novel Sustainable Composite Fabrication and Pilot Line



Nanostructured Solutions



Energy Storage and microgeneration technologies



Automation and Software





Recyclability

- Novel physical-chemical recycling
- Mechanical and chemical/compounding recycling
- Product design for circularity;



Reuse

- Closed cycle polymer composites processing;
- Chemical and enzymatic recycling processes;



Novel biodegradable materials

- Thermoplastic compounds and textile fibres based on Bio-based and biodegradable materials;
- Cellulose based textile fibres;
- Biodegradable polymer composites (closed-loop manufacturing);

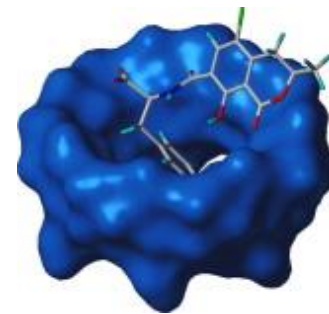




Nanoparticles and Nano capsules

Synthesis and processing capabilities

- Pilot and Semi-Industrial Scale Nano particle Manufacturing
- R2R UV Surface Modification
- Ozone Surface treatment
- Wet Coating / Nanoparticle Dispersion
- Plasma Surface Modification;
- Polymeric Composite nano-coatings
- Metal vapour deposition



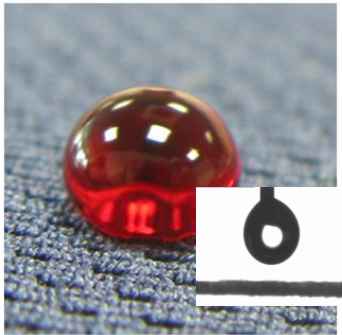
Functional Nano Additives



Matrix Dispersion



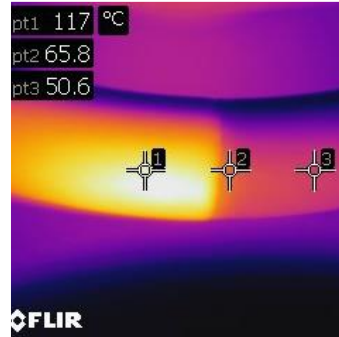
Easy/Self Cleaning



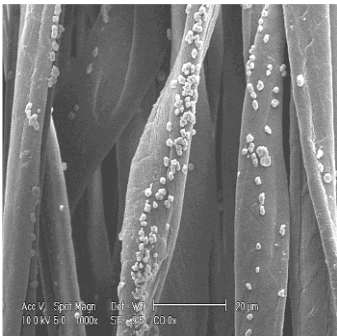
Drug Release



Thermal Management



Anti Microbial



Cosmetotextiles



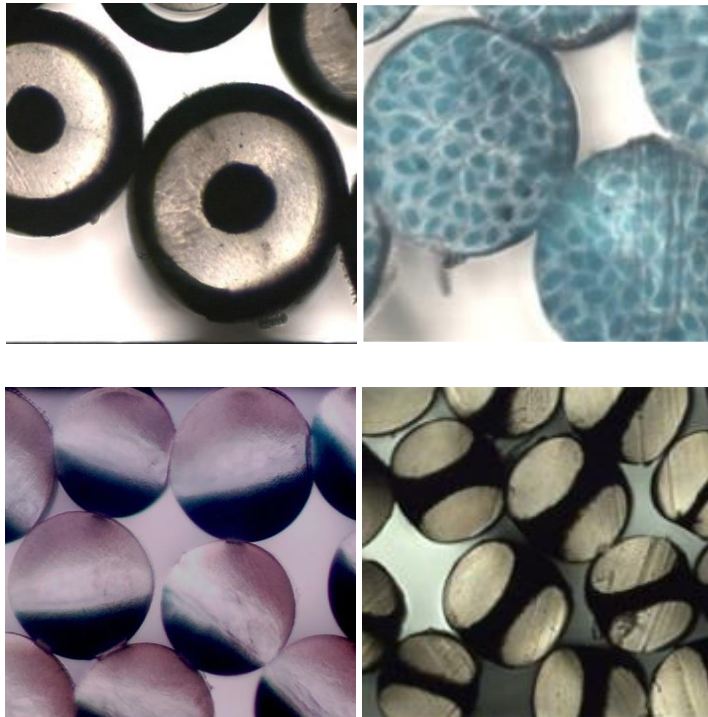
Fire Retardance



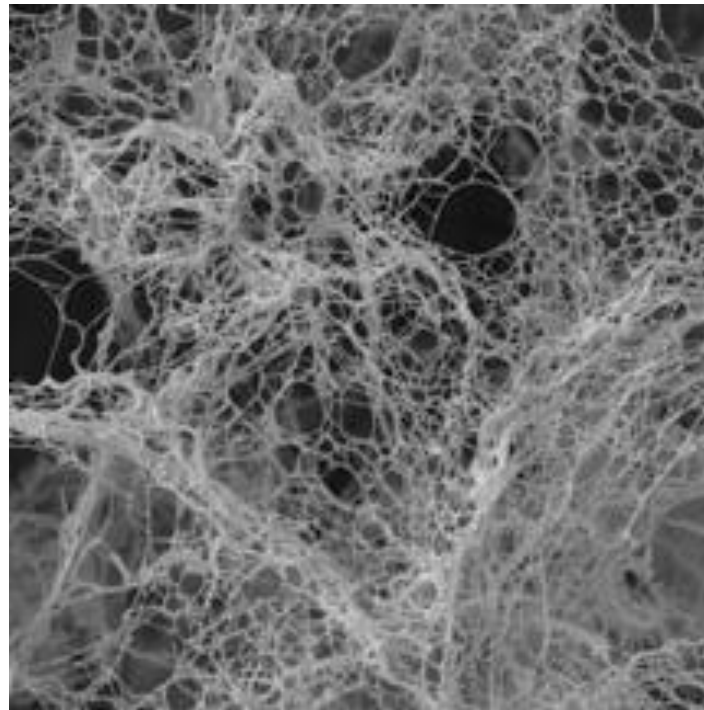
- Integration of nanomaterials and functional polymers without hindering or altering the traditional “feel and flavor” of materials;
- Self and Easy Cleaning surfaces;
- Anti-microbial, anti-virus and mite repellent;
- IR and UV reflective materials;
- Biomonitoring systems directly printed onto materials surface;
- Monitoring of VOC and interior air quality;



Bi / tri component fibers doped
with nanomaterials

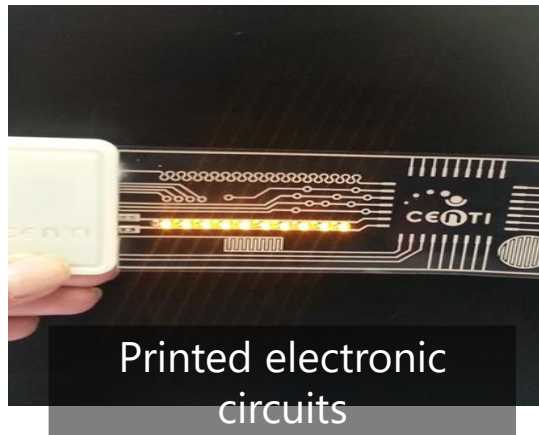
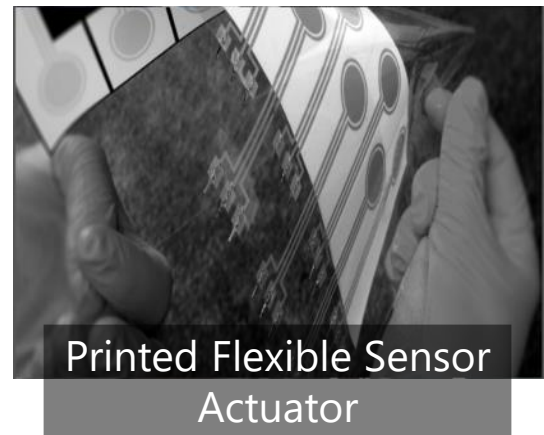


Cellulose based advanced
fibres



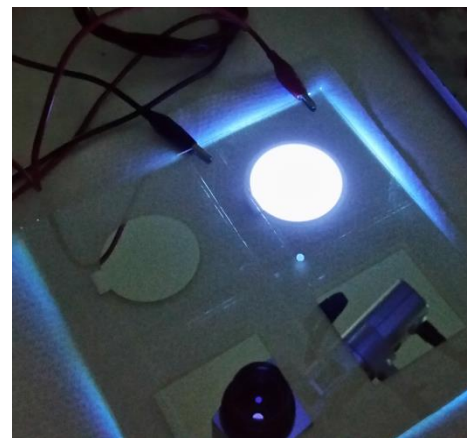
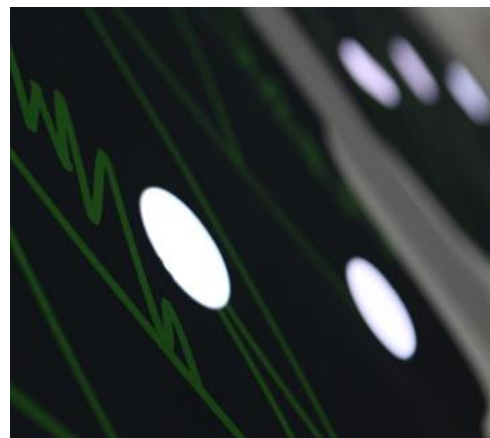
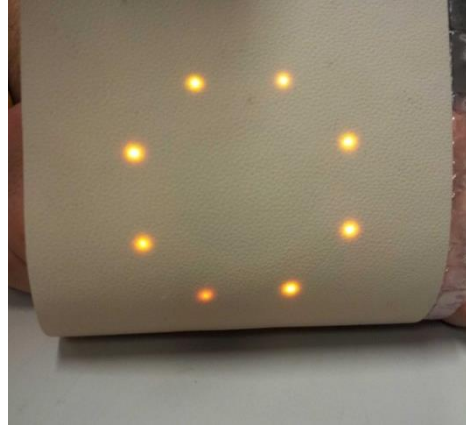
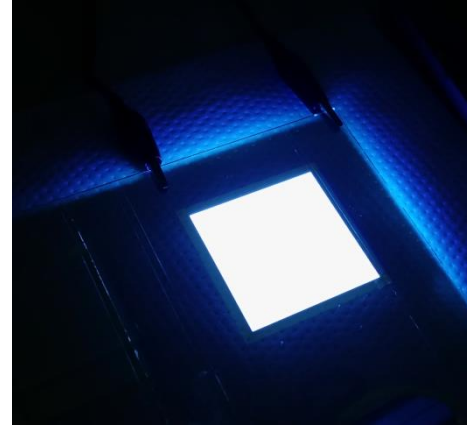
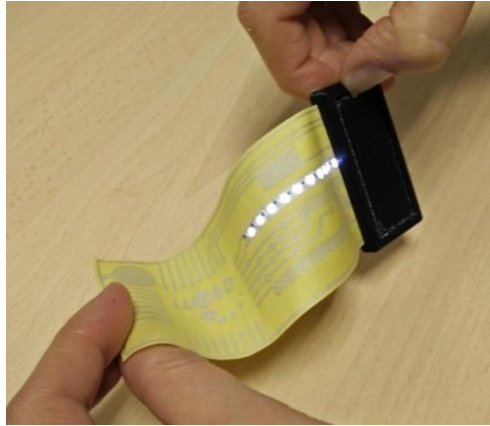
Compounding and Polymer
Coatings

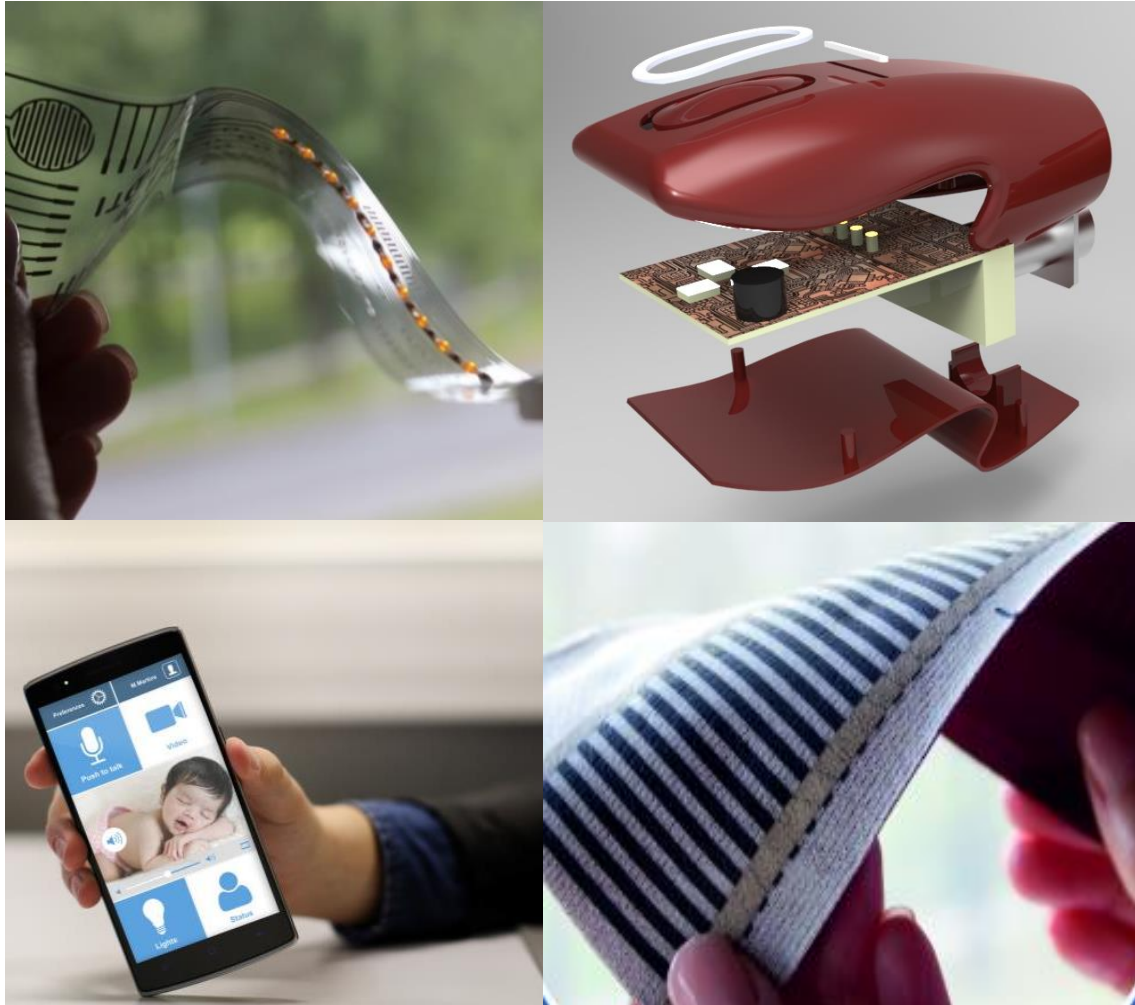




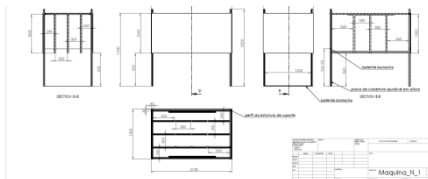


Printed Lighting





- ① Printed Sensors integrated onto non-conventional and flexible substrates;
- ① Development of printed-bulk electronics hybrid systems integrated onto and into flexible and rigid structures;
- ① Combination with Integrated/Printed lighting Elements;
- ① Hardware and software development – Mobile App;
- ① Printing and coating process development for rigid and flexible structures;



- ① 360° design solutions;
- ① Additive and subtractive digital fabrication;
- ① Thermoforming and Finishing;
- ① Rigid-flexible Integration;
- ① Conceptual RTD approach:
 - ① **From conceptual design to product;**
 - ① **Pre-series and market test manufacturing;**

Other services



- ① Support to apply for grants: H2020, PT2020, ...
- ① Support to companies to integrate international networks and consortia
- ① Support on patent applications
- ① Cross Sectoral partnerships development



Outputs

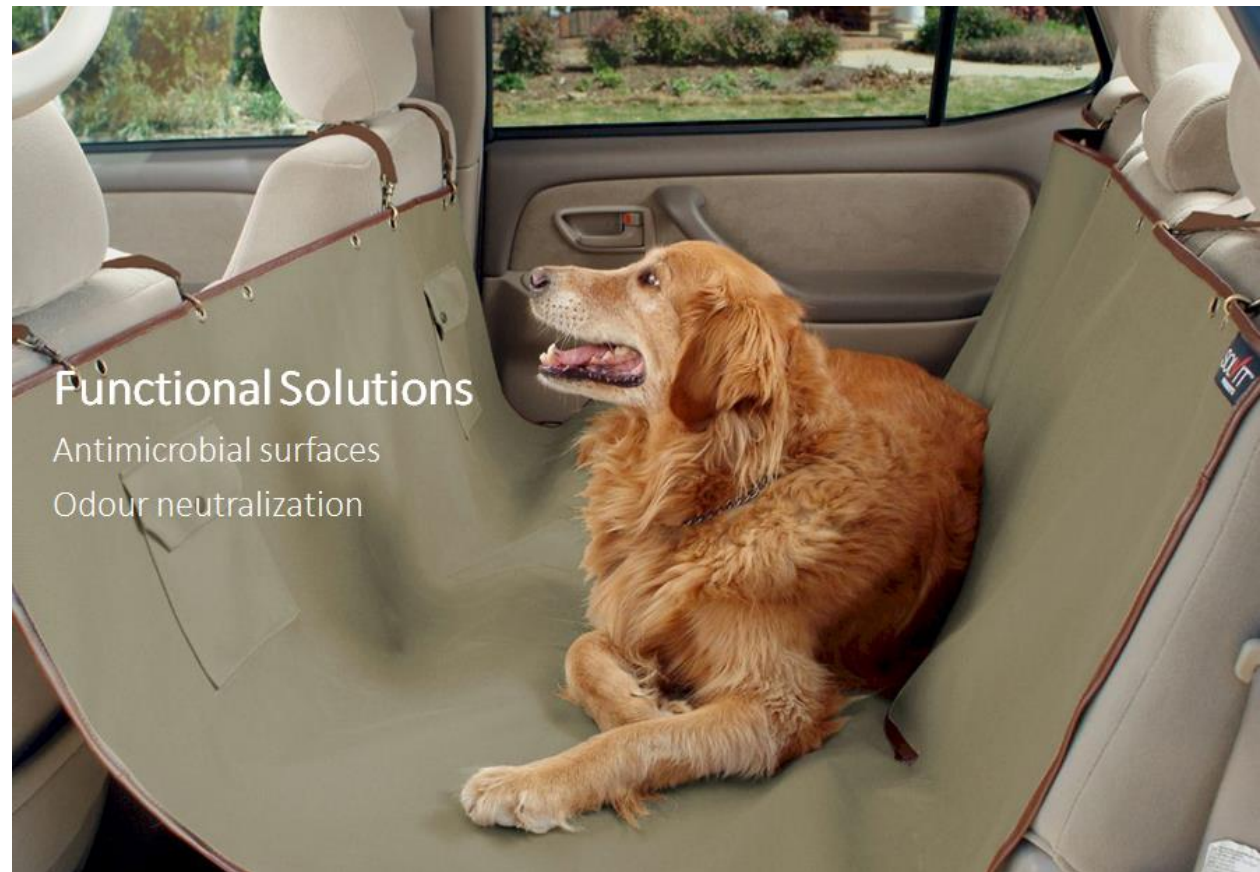
Surface Functionalization



Functional Solutions

Water repellent

Oil repellent



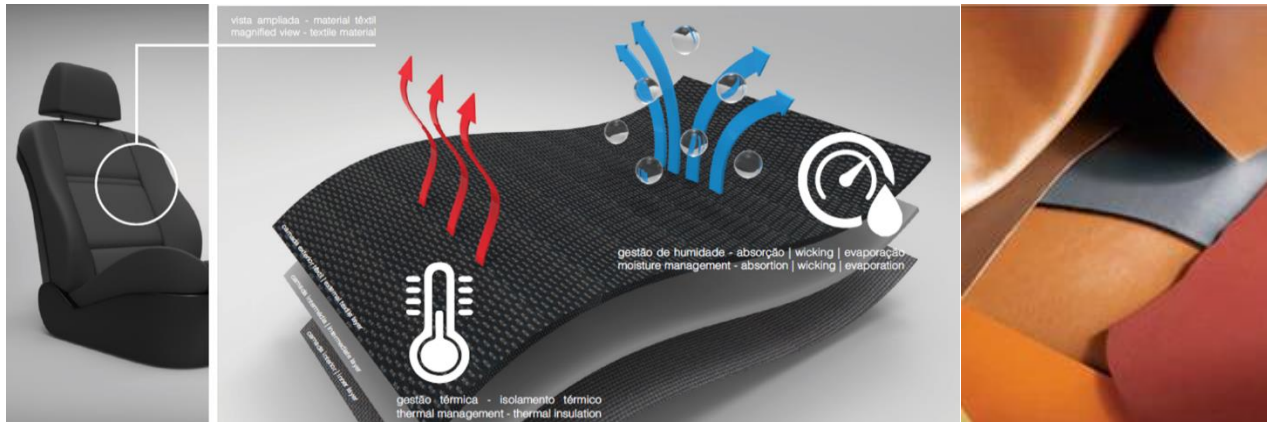
Functional Solutions

Antimicrobial surfaces

Odour neutralization



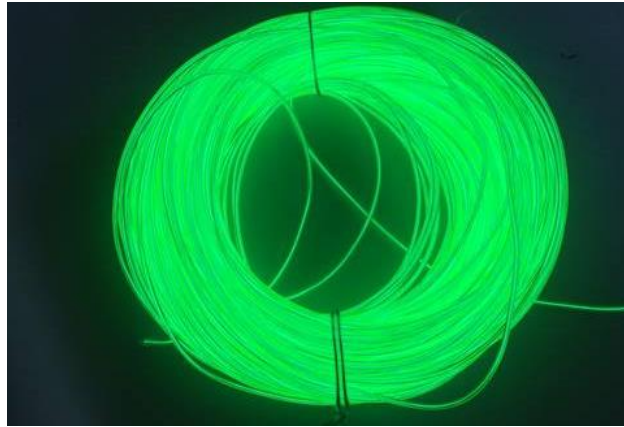
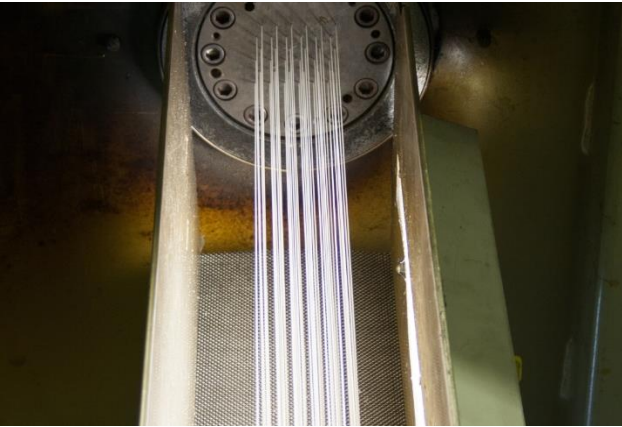
Functional Coatings



- ① Super-hydrophobic and super-oleophobic;
- ① Anti-Slip & Grip-Enhanced Surfaces;
- ① Self-cleaning materials;
- ① Abrasion resistant & anti-scratch
- ① Controlled Drug release or retention
- ① Fire Retardancy;
- ① Thermal Management;
- ① Bio Colouring Processes;



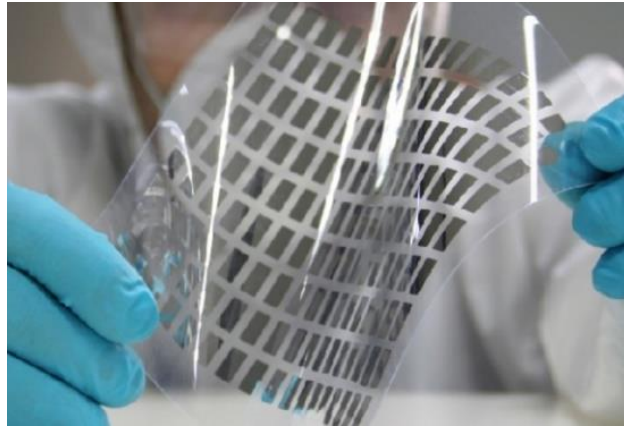
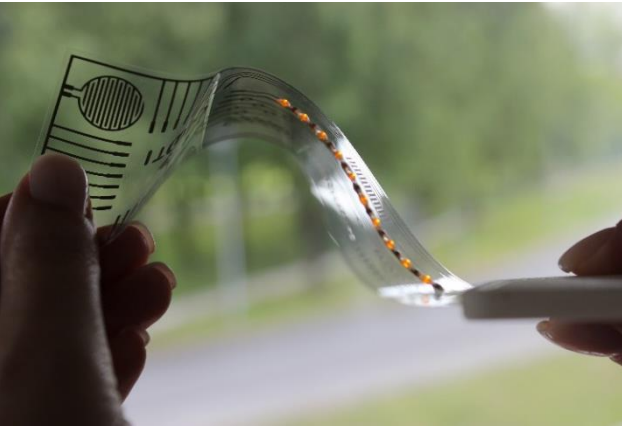
Composite Fibres and Films



- ① Tricomponent Fibres and filaments;
- ① Conductive fibres and films;
- ① Supercapacitors;
- ① Piezoelectric Fibres;
- ① High insulation coatings;
- ① Low weight thermoplastic & thermoset composites;



Outputs - Printed Electronics



Energy harvesting elements

Organic solar cells

Inorganic solar cells

Piezoelectric materials

Light emission elements

Organic LEDs

Electroluminescent materials

Electrochromic materials

Sensors

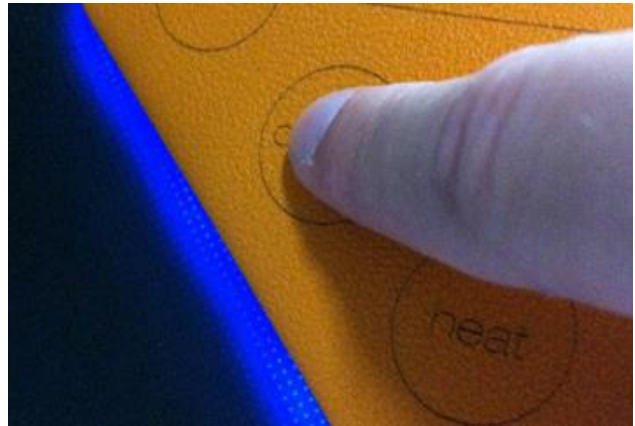
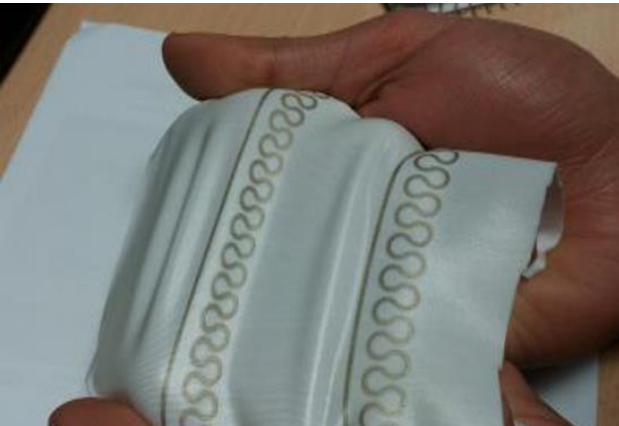
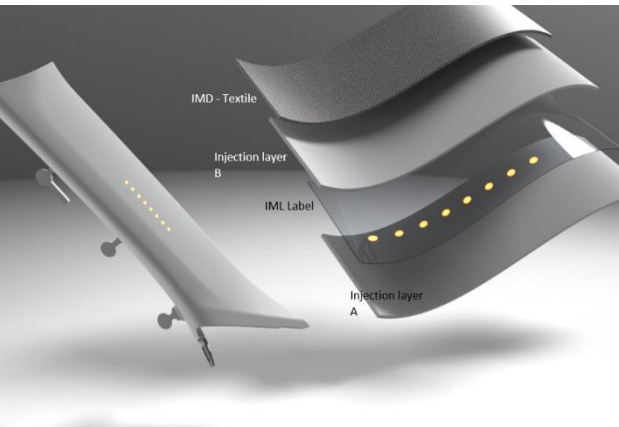
temperature, heart-rate, motion,
gas, touchpads/keypads,...

Actuators

Heating elements, ...



In Mold Thermoplastic Integration



- ① IML Integration of Haptic & Sensor Actuators;
- ① Active Matrix integration:
 - ① In Mold Labelling, In Mold Forming;
 - ① Printing Haptic and Sensor Components;
 - ① Integrated Hardware;
- ① In Mold Integration of Lighting – Decorative and Functional;
- ① Printed Lighting;
- ① Predictive actuation systems and gesture control;
- ① A.I. for predictive/adaptative interiors;





Memberships





2:26

Nanotech - PVU, TMG

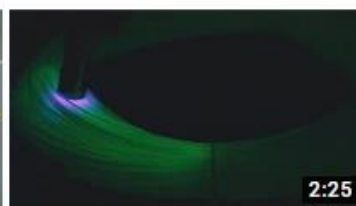
82 visualizações • Há 2 meses



2:23

Nanotech - Invisible Network, SONAE Indústria de...

122 visualizações • Há 2 meses



2:25

Nanotech - FishFiberLight, Cadilhe&Santos

180 visualizações • Há 2 meses



1:45

Advanced Fibres

3 mil visualizações • Há 7 anos



2:51

Nanotech - R4Textiles, Riopele

105 visualizações • Há 2 meses



2:35

Nanotech - LEDinTEX, Têxteis Penedo

149 visualizações • Há 3 meses



1:32

Nanotech@NortePT

102 visualizações • Há 4 meses



1:48

CeNTI Apresentação

53 visualizações • Há 5 meses



2:52

Nanotech Awards Maio 2018

41 visualizações • Há 8 meses



2:23

CeNTI no 100% ModaPortugal da Sic...

23 visualizações • Há 9 meses



0:22

Projeto Nanotech@Norte.PT

21 visualizações • Há 10 meses



11:19

Projeto Nanotech@Norte.PT na RTP3

48 visualizações • Há 11 meses



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Thank you for your attention!



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