

# Portugal

September 2013



COST FP1205: Innovative applications of regenerated wood cellulose fibres



## ▪ Research Centres

- **INL - Iberian Nanotechnology Laboratory**  
([www.inl.int](http://www.inl.int))

The International Iberian Nanotechnology Laboratory is the first, and so far the only, fully international research organization in Europe in the field of nanoscience and nanotechnology.

- **3B's – Research Group (Biomaterials, Biodegradables and Biomimetics)**  
(Univ. Minho) ([www.3bs.uminho.pt](http://www.3bs.uminho.pt))

The goal of this Research Group is to develop novel biomaterials (hydrogels, scaffolds, membranes, nano/microparticles) based on natural polymers for applications in drug delivery and tissue engineering of bone, cartilage and skin.



## ▪ Research Centres

- **CICECO** – Centre for Research in Ceramics and Composite Materials (Univ. Aveiro)  
([www.ciceco.ua.pt](http://www.ciceco.ua.pt))

Research in developing the scientific and technological knowledge necessary for the innovative production and transformation of ceramics and organic-inorganic hybrids and materials for a sustainable development.

- **2C2T** – The Centre for Textile Science and Technology (Univ. Minho)  
([www.2c2t.uminho.pt](http://www.2c2t.uminho.pt))

The goals are centered in the development of innovative solutions the textile and clothing industries: i) Development of new materials /products; ii) Innovative and improved manufacturing processes, methods, equipment and integrated systems; iii) Development of supporting technologies to materials/product engineering.



## ▪ Research Centres

- **ISISE** – Institute for Sustainability and Innovation in Structural Engineering (Univ. Minho and Univ. Coimbra) ([www.isise.net/site/](http://www.isise.net/site/))  
This unit aims promoting innovation and sustainability, with a close link to the construction sector industry, and is organized in three Research Groups, addressing the topics of construction technologies in historical materials and masonry, steel, concrete and composites.

## ▪ Dissemination Foruns

- **Fibrenamics** (Univ. Minho) ([www.fibrenamics.com](http://www.fibrenamics.com))  
This project aims at developing various contents for dissemination in the media, about the latest developments in the field of fiber-based materials, with special focus on advanced applications in medicine, construction, architecture, personal protection, transport and sports.

Portugal

Portucel / Univ. Minho / Others

September 2013



## ONGOING FUNDED RESEARCH PROJECTS

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<b>Project Title</b>	<b>Development of polimeric systems reinforced with cellulose fibres for eco-sustainable products</b>
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Principal Promotor	Portucel
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WG Relevance	WG2
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Duration (from-to)	FEB 2013
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Total Funding	500.010,00 €
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Sponsoring Agency	Operational Competitiveness Programme - COMPETE
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Project Objectives	1.Combine cellulose fibre, extracted from sub-products of paper pulp, with different materials for the automotive and other industries.
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**ONGOING FUNDED RESEARCH PROJECTS**

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**Project Title**                      **Development of new generation tissue papers**

**Principal Promotor**              Renova

**WG Relevance**                      WG2

**Duration (from-to)**              DEC 2012

**Total Funding**                      250.196,00 €

**Sponsoring Agency**              Operational Competitiveness Programme - COMPETE

**Project Objectives**

- 1.Characterization of virgin and cellulose pastes for tissues
- 2.Assessment of the structural changes of virgin and recycled pastes when subjected to high pressure treatment
- 3.Development of paper tissue prototypes of new generation at a pilot scale



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**ONGOING FUNDED RESEARCH PROJECTS**

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<b>Project Title</b>	<b>Flat slabs for multi-storey buildings using hybrid reinforced self-compacting concrete: an innovative structural system</b>
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Principal Investigator	Vítor Cunha
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WG Relevance	WG1/WG2
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Duration (from-to)	APR 2012 – MAR 2015
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Total Funding	148.095,00 €
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Sponsoring Agency	FCT – Portuguese Foudation for Science and Techology
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Project Objectives	<ol style="list-style-type: none"><li>1. Development of an innovative structural flat slab system</li><li>2. Replacement of conventional rebar by discrete fibres</li><li>3. Experimental and numerical assessment of the material behaviour</li><li>4. Optimizing the construction process</li></ol>
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**APPLY FOR FUNDING**

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**Project Title**                      **Sustainable Rehabilitation of Buildings: Using Vegetable Fibre Reinforced Cement Composites**

Principal Investigator              Artur Feio

WG Relevance                        WG1/WG2

Duration (from-to)                 –

Total Funding                        48.380,00 €

Sponsoring Agency                 FCT – Portuguese Foudation for Science and Techology

Project Objectives

- 1.Rehabilitation of buildings with sustainable low cost natural materials.
- 2.Use of Portuguese abundant natural fibers, e.g. *Arundo Donax* L.
- 3.Use Vegetable fibers in construction.

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## ▪ Paper and Cellulose Industry

### • Portucel / Soporcel

([www.portucelsoporcel.com/pt](http://www.portucelsoporcel.com/pt))

The Group currently boasts an annual production capacity for 1.6 million tons of paper, 1.4 million tons of pulp (of which 1.1 million is integrated into paper) and power generation of 2.5 TWh, adding up to an annual turnover above 1,500 million euros.

### • ALTRI – Indústria de Celulose

(<http://en.altri.pt>)

Pulp is the core business of Altri and the focus is on bleached eucalyptus pulp. Altri has three pulp mills located in Portugal.



- INL - Iberian Nanotechnology Laboratory ([www.inl.int](http://www.inl.int))

INL relies on a high-tech research environment formed by state-of-the-art and instrumentation of 22.000 square meters. It was **Wet and Dry PI Lab, Cleanroom, High Accuracy Lab** and **Biochemistry Lab**.

Examples of available analytical tools:

- **XRD** – X-ray diffraction
- Infrared absorption spectroscopy
- Magic-angle spinning NMR spectroscopy
- **TEM** – Transmission Electron Microscopy
- **AFM** – Atomic Force Microscopy
- **SEM** – Spectroscopy Electron Microscopy
- **ESEM** – Environmental Spectroscopy Electron Microscopy
- Etc...



- **ISISE – Institute for Sustainability and Innovation in Structural Engineering**  
([www.isise.net/site/](http://www.isise.net/site/))

ISISE has nearby 4000 square metres of laboratories spread over Univ. Minho and Univ. Coimbra, mainly, devoted to the mechanical / structural behavior assessment of distinct materials used in civil construction.

Some available equipment:

- Universal testing rigs (up to 3 MN capacity)
- Equipment for cyclic, fatigue, creep, shrinkage tests
- Reaction walls and floors (for real scale testing)
- Monitorization equipment
- Environmental chambers
- Climate chambers
- Furnaces
- Etc...