Activity 6

“Green” and smart structural materials repair products and systems

European Union
European Regional Development Fund
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ATLANTIC AREA
Transnational Programme

A6.1 Concrete mixes with sub-products and recycled aggregates (Univ. Bordeaux) (Fr)

A6.2 Rebars more resistant to corrosion (SS, fibers) (Univ. Vigo) (Es)

A6.3 Smart structural materials (Coatings, Permanent monitoring) (QUB) (UK)

A6.4 New materials and systems for steel protection (LNEC) (Port)

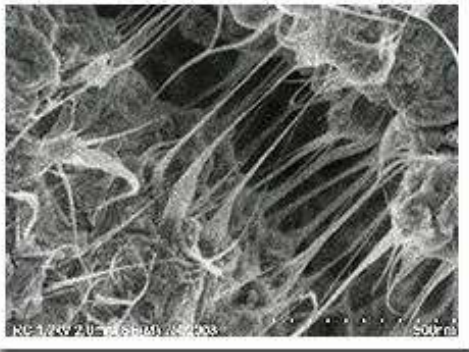
Objective

Critical review on:

- the use of “green”concrete mixes for new or repaired structures.
- the use of structural materials with improved durability.
- the use of intelligent structural materials with active properties.

  (self cleaning concrete, coatings, permanent monitoring systems)
- the use of more resistant reinforcement materials than carbon steel.

NANOLAYERS OF CALCIUM ALUMINATE



CARBON NANOTUBES FILLING THE CRACKS IN A CEMENTING COMPOSITE

Non-compliant coal fly ash becoming common:

- Emissions control
- Opportunity fuels such as biomass-coal cofiring

Sears Tower in Chicago (442 m high)

- world's tallest building from 1974 to 1998

Residual mining world production: 80 M tpy

Granite cutting slurries

End-product: **State of the art reports**

A6.1	**Concrete mixes with by Concrete mixes with by-products and recycled aggregates**
6.1.1	Recycled aggregates
6.1.2	Mineral additions for mitigation of deleterious expansive reactions in concrete
A6.2	**Reinforcements more resistant to corrosion**
6.2.1	Stainless Steel Rebars
6.2.2	Coatings on Steel Rebars
6.2.3	Fiber reinforced polymer composite materials used in civil engineering
A6.3	**Smart structural materials**
6.3.1	Smart structural materials with permanent monitoring with permanent monitoring system for concrete
6.3.2	Results of application of sensors in the monitoring of concrete structures
A6.4	**New materials and systems for corrosion protection**
6.4.1	Nanostructured coatings for steel and concrete cover protection

- To promote awareness and discussion of these issues a forum will be created as part of the DURATINET dissemination process.

- This forum will provide the basis for the future Atlantic Cluster "Green and Smart Materials".

- Participation in this group is open to all researchers or other individual or organisations that are working or interested in these new fields and new solutions for sustainable construction.

duratiNet

Thank you

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