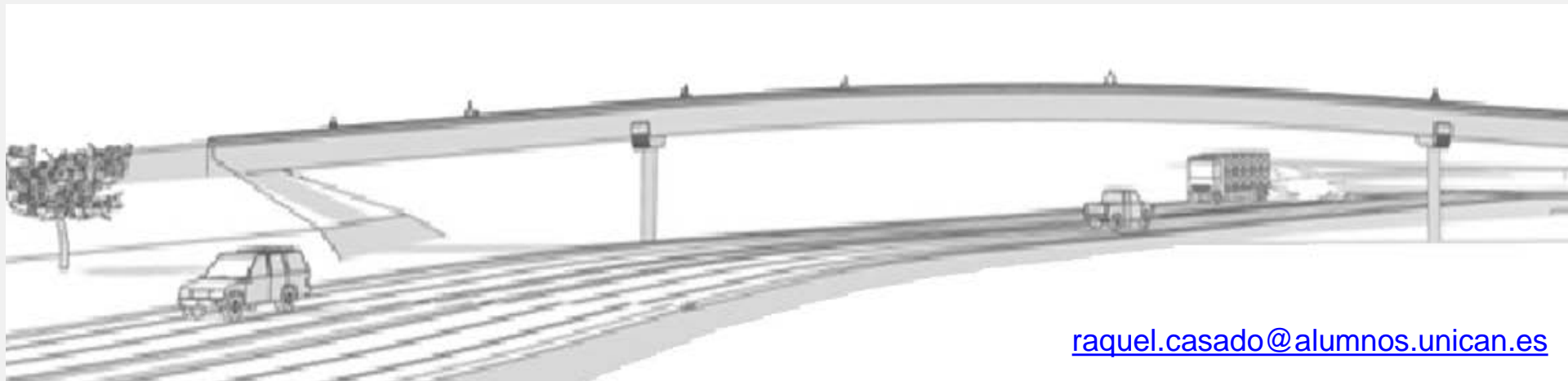


# MULTIFUNCTIONAL ASPHALT MIXTURES

PhD student: Raquel Casado Barrasa

Director: Daniel Castro Fresno

EIDEIC II (19-05-2016)



## 1. OBJECTIVES

To develop advanced asphalt mixtures with added value properties aiming at:

- ❑ Designing safer and durable roads
- ❑ Improving the air quality.



Associated impact:



Long lasting roads



↓ Traffic disruptions

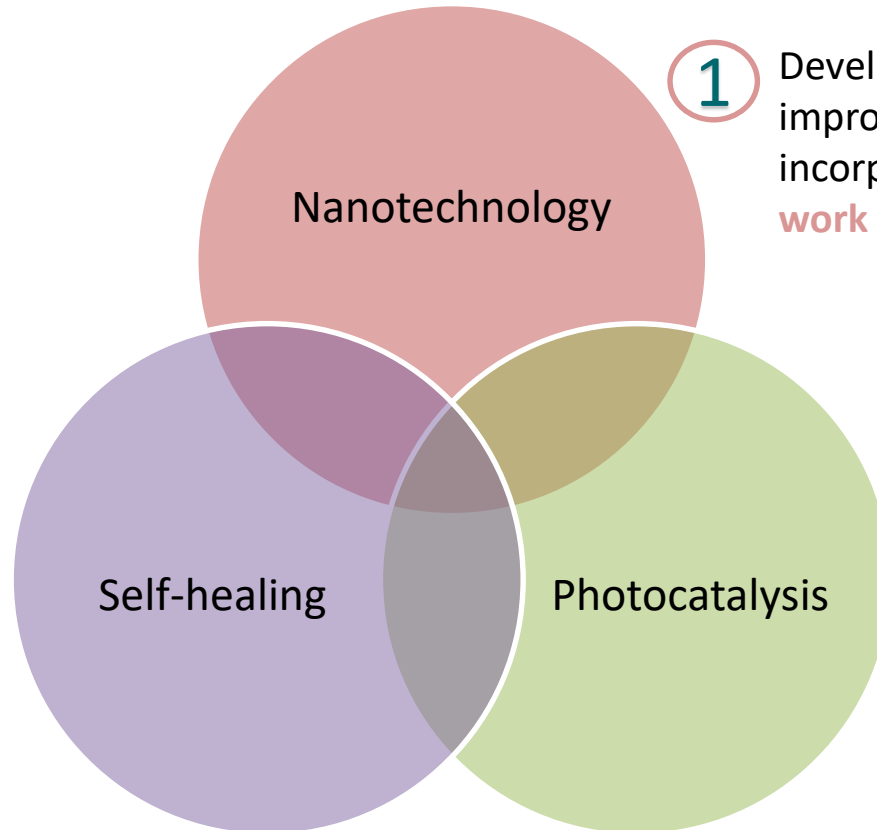


↓ Accidents



↓ Natural resources consumption

## 2. RESEARCH LINES



① Development of asphalt mixes with improved properties thanks to the incorporation of **additives that work at nano-molecular level.**

② Use of **embedded capsules** containing asphalt rejuvenator to compensate ageing of asphalt concrete.

③ Implementation of photo-catalytic pavements capables to **clean up air pollutants (NOx and VOCs )**

## 2. RESEARCH LINES

- ❑ Selection of the materials for the investigation.
- ❑ Study and characterization of modified binders.
- ❑ Design and characterization of the advanced asphalt mixes.
- ❑ Validation of the technology in a trial section (when possible).



*From the research at a laboratory scale to the validation for industrial application.*

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### 3. ACADEMIC ACTIVITY

#### Technical papers

- ❑ V. Blanco, R. Casado, E. Saez, C. Martín-Portugués, “**Asphalt mixtures improved by the use of nanotechnology**”. Asphalt Professional Issue 68, April 2016 (p. 14-19).
- ❑ Casado, R., Blanco, V., Martín-Portugués, C., Contreras, V., Pedrajas, JF., Santarén, J. **Addressing durability of asphalt durability of asphalt concrete by self-healing mechanism**. Procedia - Social and Behavioral Sciences 162 (2014) 188 – 197. doi: 10.1016/j.sbspro.2014.12.199.

#### Conferences

- ❑ K. Kowalski, J. Król , P. Radziszewski , R. Casado , V. Blanco, D. Pérez, V. Viñas , Y. Brijse , M. Frosch , D. Le, M. Wayman “**Eco-friendly materials for a new concept of asphalt pavements**”. TRA2016 6th European Transport Research Conference, Warsaw, 18-21 April 2016
- ❑ R. Casado, V. Blanco, C. Martín-Portugués, V. Contreras, JF. Pedrajas, J. Santarén, “**Addressing durability of asphalt concrete by self-healing mechanism**”. 6th International conference on Bituminous Mixtures and Pavements, Tessaloniki, Greece, 10-12 June, 2015.

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- ❑ V. Blanco, R. Casado, E. Saez, C. Martín-Portugués, “**Asphalt mixtures improved by the use of nanotechnology**”.6th International Conference on Bituminous Mixtures and Pavements, Tessaloniki, Greece, 10-12 June, 2015.

#### Training Courses

- ❑ Statistics for research in Construction Engineering I and II (2016). 20 hours. EDUC.
- ❑ Excel – intermediate level (2015). 25 hours. Acciona Universidad Corporativa.
- ❑ Powerpoint- advanced level (2015). 20 hours. Acciona Universidad Corporativa .
- ❑ EDUC Basic course training (2014). 40 hours. EDUC.

#### Seminars

- ❑ 2nd Joint Meeting: US – EU collaboration on infrastructure projects. FHWA – EU Commission (Madrid, 2015)
- ❑ Taller PTEC: Proyectos CIEN e Interconecta (Madrid, 2015).

### 3. ACADEMIC ACTIVITY

#### Mobility











- No mobility as a such.... so far.
- Short stay for attendance to follow up EU projects. (1-5 days)





## 4. EVALUATION GUIDE

 Scientific publications  
  PI evaluation  
  Internationalisation

Basic Competences	Science and Technique	Technology	Training Courses	Results	SWOT analysis	Work Plan	Mobility	Funding	Ethics
CB11									
CB12									
CB13									
CB14									
CB15									
CB16				