



# **VIII JORNADA DE INVESTIGACIÓN EN CIENCIAS EXPERIMENTALES Y DE LA SALUD**

**UNIVERSIDAD DE NAVARRA**

**Libro de resúmenes**

**PAMPLONA, 26 DE MARZO DE 2015**

**Póster nº 58**

**Física, Química y Matemáticas**

**NO<sub>x</sub> DISPOSITIVE INSTALLATION FOR PHOTOCATALYTIC ACTIVITY  
MEASUREMENTS**

María Pérez Nicolás, Íñigo Navarro Blasco, Adrián Durán Benito, Rafael Sirera Bejarano,  
José María Fernández Álvarez, José Ignacio Álvarez Galindo

Departamento de Química y Edafología, Universidad de Navarra

e-mail: mperez.52@alumni.unav.es

In order to evaluate the photocatalytic activity of several mortars modified upon the addition of photocatalysts, a laminar flow system was designed with the aim of assessing the abatement of pollutant NO<sub>x</sub>. The system consists of a photoreactor, where the samples to be studied must be placed, an irradiation source and a chemiluminescence detector, all of them connected by a manifold. The NO source is a commercial mixture of NO and inert N<sub>2</sub>, and the flow can be adjusted to provide different NO concentrations (usually around 1000 ppb). Three gas mass controllers set the flows of NO, dry-air and wet-air. Therefore, the system allows to adjust the relative humidity by mixing in different ratios the wet and dry air, controlling it by a humidity sensor. The total flow ranges from 0 to 3 L·min<sup>-1</sup>. Then, the total flow is directed into the photoreactor. The upper part of the photoreactor is made of a quartz cover allowing either the visible or the UV irradiation reach the sample. When the irradiation source is switched on, NO is partly oxidized due to the photocatalytic reaction that takes place on the surface of the additives. The outflow goes from the photoreactor to the chemiluminescence detector that continuously records the NO concentration. Finally the chemiluminescence detector is able to quantify NO and/or NO<sub>x</sub> concentrations, and from those values NO<sub>2</sub> concentration can also be estimated.