



PHOTOMAT

Project ID: 318899

Funded under: [FP7-PEOPLE](#)

TUNABLE MATERIALS: PREPARATION, CHARACTERIZATION AND INVESTIGATION OF PHOTOCATALYTIC ACTIVITY OF NEW HIBRID MATERIALS

From 2012-09-01 **to** 2015-08-31, closed project | [PHOTOMAT Website](#)

Project details

| | |
|-------------------------|---|
| Total cost: | Topic(s): |
| EUR 107 400 | FP7-PEOPLE-2012-IRSES - Marie Curie Action "International Research Staff Exchange Scheme" |
| EU contribution: | Call for proposal: |
| EUR 107 400 | FP7-PEOPLE-2012-IRSES See other projects for this call |
| Coordinated in: | Funding scheme: |
| Italy | MC-IRSES - International research staff exchange scheme (IRSES) |

Objective

This project aims at developing new materials with tunable properties, conjugating good mechanical properties and photocatalytic activity. New and advanced materials will be synthesized on purpose, characterized and their efficiency as photocatalysts in abating pollutants such as pesticides and emerging pollutants will be evaluated. In the first stage, inorganic materials (TiO₂, CNTs, graphene oxide) will be prepared and tested both in dispersed phase or added into a polymeric coating. For such aim, doped semiconductor oxides and carbon nanotubes (alone or combined with oxides) will be synthesized and tested. We also plan to conduct a detailed study of the charge transfer processes in the hetero-junctions to evaluate the factors providing the best performance of the hybrid materials. In addition, the efficiency of surface photochemical processes will be estimated in terms of the quantum yield of surface chemical transformation.

In the second stage, preparation and characterization of new UV-cured polymeric materials containing at the same time CNTs or graphene and semiconductor oxides will be carried out, with the aim of exploring the synergistic/antagonist effect of the fillers in the photodegradative process followed by pollutants.

For both stages, we plan on investigating the semiconductor properties of the inorganic material and its efficiency in the abatement of pollutants both when the catalyst is dispersed in water or when the target molecule is adsorbed on a polymeric film containing the catalyst dispersed into the network. The polymeric films will be employed for the degradation of pollutants in water or gas phases. In all cases, we will evaluate the initial degradation of the molecule, identify the transformation products and measure the toxicity of the system.

Five multidisciplinary groups from Italy (University and Politecnico of Torino), Russia (University of Saint Petersburg), Spain (University of Madrid) and Canada (McGill University) are involved

Related information

| | |
|-------------------------|---|
| Result In Brief | New materials to improve water quality |
| Report Summaries | Final Report Summary - PHOTOMAT (TUNABLE MATERIALS: PREPARATION, CHARACTERIZATION AND INVESTIGATION OF PHOTOCATALYTIC ACTIVITY OF NEW HIBRID MATERIALS) |

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Subjects

[Scientific Research](#)

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