UNIONE EUROPEA
Fondo Sociale Europeo

Ministero dell'Istruzione, dell'Università e della Ricerca

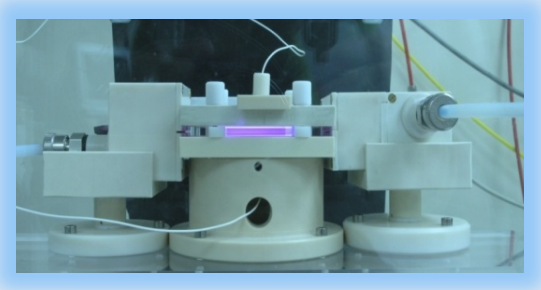
PON RICERCA E INNOVAZIONE 2014 - 2020

PhD in Chemical and Molecular Sciences – XXXII Cycle

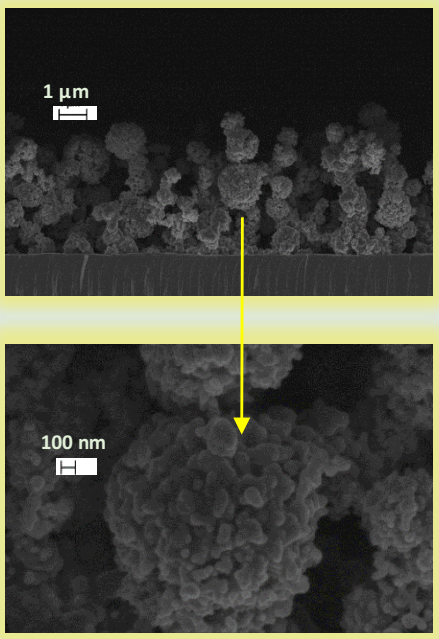
Deposition of photocatalytic thin films by atmospheric pressure cold plasma processes for the sustainable degradation of industrial wastes

AIM OF THE RESEARCH PROJECT

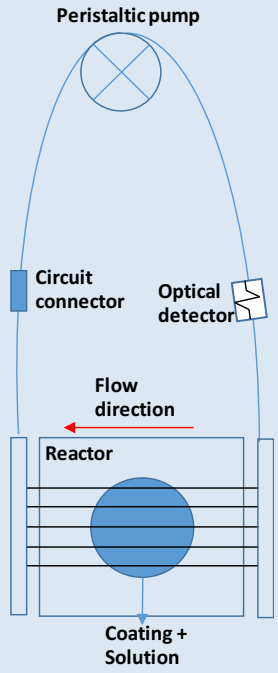
Deposition of photocatalytic nanocomposite (NC) thin films by Aerosol-Assisted Atmospheric Pressure Cold Plasma Processes in order to immobilize photocatalytic nanoparticles on flat and three-dimensional porous substrates and use the deposited coatings for the treatment of wastewaters.



Dielectric Barrier Discharge (DBD) reactor.



SEM images: from left to right, NC coating deposited in a DBD reactor on flat substrates a) at lower and b) higher magnification.



Example of set-up designed for films photocatalytic properties measurements.

INTERNATIONAL PARTNER

PROMES is a Research Unit of CNRS that aims to develop scientific knowledge and technological innovations. The fields of interest are various: thin films, plasma processes, storage materials, etc., all focused around solar energy use for environmental issues.

Within the PhD project they will collaborate in the optimization of the electrical parameters for the plasma deposition and in the study of thin films photocatalytic properties.

INDUSTRIAL PARTNER

Bracco Imaging Spa is actively involved in the research, development, manufacturing and marketing of diagnostic imaging solutions. Among the major priorities of the Company there are the achievement of high quality products and compliance with sustainable production.

Within the PhD project they will provide the industrial wastes to degrade by using the coatings deposited in the Chemistry Department.

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