

Master internship offer

Supervision team: Alexandre Poli, Benoit Teychené and Teko Napporn

Topic: MnO₂ grafting on ceramic membranes functionalized with carbon nanotubes (CNTs).

Background and objectives:

Membrane filtration techniques are nowadays widely used in urban or industrial water treatment. The main challenge with this technology is related to the membrane fouling, which leads to higher operating costs. One way to overcome this issue is to modify the surface properties of the material in order to control the fouling.

The objective of this internship is to synthesize MnO₂ nanoparticles on flat sheet silicon carbide (SiC) membranes already functionalized with carbon nanotubes (CNTs), to characterize the modified material surface properties and to study their application in oil-in-water emulsion separation.

Working environment and internship layout:

This internship is the result of a collaboration between the IC2MP and a French private company. Located in Poitiers (France), Poitiers Institute of Environmental and Materials Chemistry (IC2MP, *Institut de Chimie des Milieux et Matériaux de Poitiers*) is a mixed research unit of the French National Center for Scientific Research (CNRS, *Centre National de la Recherche Scientifique*) and University of Poitiers, which main research topics deal with catalysis, organic synthesis and environment remediation.

The intern will start with a bibliographical study on the different methods and protocols for grafting nanoparticles or functions on CNTs (CVD, oxidation, hydrothermal synthesis, etc.). Then, the trainee will carry on synthesis experiments and material surface characterization (XRD, SEM, Zêta potential, etc.). Application to oil-in-water emulsion separation on a laboratory scale pilot could be possible.

The intern will be in charge of the experimental part and the analysis of the results. Synthetic reports will be requested, and the student will participate to the collaboration project meetings.

Requested profile: Master 2 student in chemistry/material chemistry.

Language: English (fluent), French is not mandatory but a plus.

Duration: 6 months – Start as soon as possible.

Wage: 568.76 €/month.

Contact: Please send your resume to alexandre.poli@univ-poitiers.fr