



UNIVERSITÉ
CÔTE D'AZUR



AGENCE NATIONALE DE LA RECHERCHE
ANR



Cemef
CENTRE DE MISE EN FORME
DES MATÉRIAUX

3 year PhD position starting in spring 2022

Université Côte d'Azur, Institut de Chimie, Nice, France

Mines ParisTech, Center for Materials Forming (CEMEF) Sophia Antipolis, France

Impacts of contaminant cocktails originating from plastics in soil ecosystems

Overview of the project. Plastic pollution might lead to the degradation of soils, with major environmental and economic costs for agriculture. Considering the multiple facets of plastic pollution (contaminant cocktails including additives and non-intentionally added substances NIAS, added alone in mulching or closely entangled with residual organic matter in amendments). With a novel methodology based on a back-and-forth collaboration between polymer chemistry and soil ecology, several exposure scenarios of soil organisms to custom-made plastics will be explored in order to decipher their toxicity in different environmental compartments (rhizosphere, microorganisms, mesofauna, plastisphere), and evaluate their impacts on soil functions and on biogeochemical cycles. This project is financed by Agence Nationale de la Recherche.

Context and mission. The PhD student will prepare various well-controlled custom-made microplastics and will fully characterize their chemical composition (polymer, additives and some NIAS). Possible changes undergone by plastics during waste treatment will be studied.

The physical aspect of plastic particles will be assessed using optical and electron microscopies. The chemical composition of the prepared plastics will be characterized by a combination of state-of-art chemical techniques. These techniques will be used to search for possible plastic changes in the organic amendments, in the bodies and feces of soil organisms of the incubated soil samples.

It will involve constant collaborations with the scientists of the project, specialists of other disciplines. The work is taking place in Nice and Sophia Antipolis (near Antibes).

The thesis is financed by Université Côte d'Azur via ANR.

Candidate's profile: chemist with excellent theoretical and practical knowledge in polymer science, analytical chemistry and organic chemistry; with very solid know-how on chemical characterization to be able to work at the interface organic – macromolecular chemistry; fluent in English; highly motivated, pro-active, enthusiastic and dynamic researcher with scientific creativity and with very good communication skills; MSc thesis completed.

Duration: 3 years, starting in spring 2022.

Salary: ≈ 1700 €/month.

Locations: Université Côte d'Azur, Institut de Chimie de Nice (Parc Valrose- 28 Avenue Valrose, 06108 Nice) and Centre de Mise en Forme des Matériaux, Cemef, Sophia Antipolis (<https://www.cemef.minesparis.psl.eu>).

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Application: Please send to the two contact persons (mails above): your detailed CV, motivation letter, a summary of their research/training experience, marks of your Bachelor and Master and at least two e-mail addresses of reference persons.