

INFORMATION CALL 2019
DOCTORAL INPhINIT FELLOWSHIPS PROGRAMME – INCOMING FRAME

PhD POSITION OFFER FORM

Position

1. Project Title/ Job Position title:
Microplastic fluxes to the ocean in a plastic era
2. Area of Knowledge: (choose one option)
 - Life Sciences
 - or
 - **Physical Sciences, Mathematics and Engineering**
3. Group of disciplines: (choose one option)

LIFE SCIENCES

Medicine, Public Health, Sport Sciences, Nutrition, Clinical Psychology, Health Management
Animal, Plant, Environmental Biology, Physiology, Ecology and Conservation
Human Biology, Microbiology, Molecular Biology, Genetics, Cellular Biology, Genomics and Proteomics, Biochemistry
Agriculture, Veterinary Science, Animal Production, Forestry
Biotechnology, Bioinformatics, Pharmacy, Food Technology

PHYSICAL SCIENCES, MATHEMATICS AND ENGINEERING

Theoretical and Applied Mathematics, Computer Sciences
Physics
Geology, Earth Sciences, Environmental and Atmosphere Sciences , Mines, Geological Engineering, Oceanography , Hydrology

Civil and Construction Engineering, Energy, Nuclear Energy and Renewable Energy Engineering

Chemistry and Chemical Engineering

Telecommunications, Electronics, Robotics, Biomedical Engineering, Automation Engineering, ICT

Industrial Engineering, Mechanical Engineering, Metallurgy, Materials, Nanotechnology, Aeronautical, Naval and Aerospace Engineering

4. Research project/ Research Group description (màx. 2.000 caràcters)

Over the last decades, the plastic debris disposed of and accumulating in the natural environment have posed a serious environmental issue that could threaten biodiversity at a short to medium term, as well as human health and activities. Since the Second World War, the manufacturing, use and disposal of plastic material is in constant increase (335 million tons of plastic were produced in 2016); and it is estimated that around 8 million tons enter the marine environment annually. These plastic debris particles when exposed to physical, chemical and biological processes in the natural environment break down and form smaller fragments better known as microplastics. They will likely play a critical contaminant role in the near future, as plastic items already present in the natural environment may remain there for decades and their fragmentation will release huge amounts of microplastics, even if plastic pollution is stopped right away.

Microplastic pollution has raised specific concern due to their worldwide distribution. Their presence has been reported in very different environments such as fresh water systems (lakes, rivers or estuaries) or marine environments (shorelines, surface waters and even pristine deep marine sediments). However, despite the increasing amount of scientific research on the occurrence of microplastics in the aquatic environment, their transfer to the marine environment through freshwater and atmospheric systems remains poorly constrained.

This PhD project is contributing to the assessment of microplastic fluxes to the ocean via the freshwater system (rivers, runoff) and the atmospheric system (wind). It will focus on the quantification and the characterization of microplastic inputs to the Mediterranean Sea from an inland perspective targeting main influx systems. The semi-enclosed Mediterranean Sea is showing one of the highest concentrations of plastic debris in the global ocean.

5. Job position description (màx. 2.000 caràcters)

The candidate is expected to have a strong knowledge and background in environmental and atmospheric science and statistical analysis.

The specific strategy of this PhD project includes:

- To determine and characterize the state-of-the-art of the microplastic pollution in the Mediterranean region considering both continental and oceanic areas.
- To conduct periodical sampling in freshwater systems connected to the Mediterranean Sea to assess the microplastic fluxes.
- To periodically monitor the concentrations of airborne microplastics close to the selected freshwater systems.

This project is focusing on the Mediterranean Sea and Atlantic water influx. The very high concentration of plastic debris of this enclosed sea is mainly due to its peculiar circulation with limited outflow of surface waters, coastline population density and intensive fishing, shipping, touristic and industrial activities. It is also recognized as a hotspot for marine biodiversity, which may be adversely affected by this pollution.

The research will be carried out at the Institute of Environmental Study and Technology (ICTA) at the Universitat Autònoma de Barcelona (UAB) within the research groups 'Marine and Environmental Biogeosciences'.

Group Leader

1. Title: Professor
2. Full name: Patrizia Ziveri
3. Email: patrizia.ziveri@uab.cat
4. Research project/ Research Group website (Url):
Marine and environmental biogeosciences research group (MERS)
5. Website description: : <http://ictaweb.uab.cat>

Other relevant websites (optional)

1. Url:
2. Website description: