

LERU STudent REseArch Mobility Programme (STREAM)
Project proposal



Host University:
Università degli studi di Milano



Field:
Health and welfare

Specified field, subject:
Nutritional sciences

Research project title:
Advanced materials and devices for food packaging applications



Possible starting month(s):

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
				x							



Possible duration in months:

1	2	3	4	5	6
		x	x	x	x



Suitable for students in: 1st cycle (bachelor students) and 2st cycle (master students)

Prerequisites: TOPIC 1) Materials science basis (preferably on graphene)
TOPIC 2) Food Packaging, materials' chemistry
TOPIC 3) Good chemistry background
TOPIC 4) Food packaging background
TOPIC 5) Analytical chemistry background (especially voltammetry techniques).
TOPIC 6) Good surface chemistry and physics background

Restrictions: none

Description:

The project has been conceived along six different topics, which can be selected individually by the students:

TOPIC 1) Graphene-based nanocomposite oxygen-barrier materials. This project deals with the development of nanocomposite materials impermeable to oxygen using graphene as a nanobuilding block entity.

TOPIC 2) Safety of food contact materials. This project deals with the development of bio-based functional barriers applied to plastics and papers to reduce the risk of food contamination. Evaluation of the effectiveness in practical conditions of use.

TOPIC 3) New materials based on bacterial cellulose. Using bacterial cellulose to fabricate bio-based materials with enhanced performance.

TOPIC 4) Smart food packaging materials for freshly-cut fruits and vegetables. Extending the shelf life of fresh fruit and salads by smart biopolymer-based coatings.

TOPIC 5) Nanosensors for safe food packaging materials. Nano-sensors with enhanced selectivity and sensitivity towards potential contaminants.

TOPIC 6) Tailoring the wettability of functional coatings. Adopting biomimetic



routes to obtain nanosized morphologies with tailored water wettability properties.

Faculty or Department: Department of Food, Environmental and Nutritional Sciences - Università degli Studi di Milano

Contact person: International relations office, University of Milan

Contact email: international.programmes@unimi.it.