



PhD in FISICA / PHYSICS - 41st cycle

THEMATIC Research Field: DEVELOPMENT OF FUNCTIONAL BARRIER FOR PEROVSKITE SOLAR CELLS

Monthly net income of PhDscholarship (max 36 months)

1400.0

In case of a change of the welfare rates during the three-year period, the amount could be modified.

Context of the research activity

Motivation and objectives of the research in this field

Lead halide perovskites are promising semiconducting materials for solar energy harvesting. However, the presence of heavy-metal lead ions is problematic when considering potential harmful leakage into the environment from broken cells and also from a public acceptance point of view. Moreover, strict legislation on the use of lead around the world has driven innovation in the development of strategies for recycling end-of-life products by means of environmentally friendly and cost-effective routes. Lead immobilization is a strategy to transform water-soluble lead ions into insoluble, nonbioavailable and non transportable forms over large pH and temperature ranges and to suppress lead leakage if the devices are damaged.

This project will focus on the development of encapsulant materials which are able to

- 1) protect lead-free perovskites from oxidation;
- 2) capture lead in case of device failure.

Methods and techniques that will be developed and used to carry out the research

- Materials solution and vacuum processing
- Wet chemistry
- Analytical chemistry
- Electronic microscopy
- Electronic characterization

Educational objectives

- Material science
- Optoelectronics
- Inorganic chemistry



Job opportunities	<ul style="list-style-type: none"> - PV industry - Energy related technologies industry - academia
Composition of the research group	1 Full Professors 2 Associated Professors 3 Assistant Professors 4 PhD Students
Name of the research directors	Dr. Annamaria Petrozza

Contacts
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Additional support - Financial aid per PhD student per year (gross amount)			
Housing - Foreign Students	1st year	2nd year	3rd year
	1000.0 € per student	1000.0 € per student	1000.0 € per student
	max number of financial aid available: 1, given in order of merit (only for students with scholarship)..		
Housing - Out-of-town residents	1st year	2nd year	3rd year
	1000.0 € per student	1000.0 € per student	1000.0 € per student
	max number of financial aid available: 1, given in order of merit (only for students with scholarship)..		

Scholarship Increase for a period abroad	
Amount monthly	700.0 €
By number of months	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information
<p>Educational activities: Educational activities (purchase of study books and material, funding for participation to courses, summer schools, workshops and conferences). Financial aid per PhD student per 3 years: 5707,20 Euros</p> <p>Teaching assistantship: There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.</p> <p>Computer and desk availability: individual use computer and desk</p>