



# PhD in INGEGNERIA DEI MATERIALI / MATERIALS ENGINEERING - 39th cycle

## PARTENARIATO PNRR Research Field: RECOVERY AND RECYCLING OF ACTIVE MATERIALS FOR BATTERIES

### 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

**PARTENARIATO NEST - PARTENARIATO ESTESO NETWORK 4 ENERGY SUSTAINABLE TRANSITION CUP D43C22003090001**  
**Decreto di concessione:** D.D. 1561 del 11/10/2022  
**SPOKE n. 6**

Scope of the work is the development of recovery and recycling protocols for materials and electrolytes from spent batteries. The outcomes of the proposed research aimed to produce recycled materials for electrochemical devices for the storage of energy both for electric cars and for long duration applications.

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

The research activities will include the evaluation of protocols for recovering materials and electrolytes from spent electrochemical energy storage systems. The use of electrochemical techniques and structural/morphological analyses will be part of the activities for the characterization of the materials. This scenario motivates doctoral multidisciplinary research in the field of energy storage. The proposed research will gain from knowledge coming from various disciplines, from material science to chemistry, from electrochemical processes to energy management, answering to the needs of innovation and new expertise and skills for into the energy storage as strategic area for our country.

#### Educational objectives



	<p>The educational aims are:</p> <ol style="list-style-type: none"> <li>1. amplify supported PhD research experience and favour co-operative research experience at possible partners;</li> <li>2. elevate the educational experience by creating a highly-visible center for electrochemical energy storage technology.</li> </ol>
<b>Job opportunities</b>	<p>The recovery and recycling of new materials and electrolytes in energy storage technology will implement the number of applications of these devices. Job opportunities for an expert PhD in this field are expected in the private and academic sector.</p>
<b>Composition of the research group</b>	<p>1 Full Professors 2 Associated Professors 2 Assistant Professors 8 PhD Students</p>
<b>Name of the research directors</b>	<p>Prof. Luca Magagnin</p>

<b>Contacts</b>
<p>Email: <a href="mailto:luca.magagnin@polimi.it">luca.magagnin@polimi.it</a>  <a href="http://www.cmic.polimi.it/en/ricerca/elenco-gruppi-di-ricerca/seelab/">www.cmic.polimi.it/en/ricerca/elenco-gruppi-di-ricerca/seelab/</a></p>

<b>Additional support - Financial aid per PhD student per year (gross amount)</b>	
<b>Housing - Foreign Students</b>	--
<b>Housing - Out-of-town residents (more than 80Km out of Milano)</b>	--

<b>Scholarship Increase for a period abroad</b>	
<b>Amount monthly</b>	700.0 €
<b>By number of months</b>	6

<b>Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information</b>
<p><b>Individual budget for research</b> (5.700 euro): 1<sup>st</sup> year: 1.900 euro; 2<sup>nd</sup> year: 1.900 euro; 3<sup>rd</sup> year: 1.900 euro</p> <p><b>Teaching assistantship:</b> availability of funding in recognition of supporting teaching activities by the PhD student. There are various forms of financial of for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities within the limits allowed</p>



practice. The PhD student is encouraged to take part in these activities within the limits allowed by the regulation.