



PhD in INGEGNERIA MECCANICA / MECHANICAL ENGINEERING - 38th cycle

Research Area n. 3 - Engineering Design and Manufacturing for the Industry of the Future

**PARTENARIATO PNRR Research Field: MATERIALS AND PROCESSES FOR
SUSTAINABILITY AND ECOLOGICAL TRANSITION**

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**

The research is aimed at the development of advanced, sustainable materials and processes to fully address the principles of sustainability, environmental footprint and critical raw materials reduction, zero-waste society and circular economy. The objectives are twofold:

- developing advanced, innovative materials based on secondary raw materials and/or with a reduced content of critical raw materials (i.e. polymers from wastes, etc.).
- developing industry 5.0 solutions for materials design and manufacturing.

The research activity is financed and developed within ECOSISTER (*Ecosistema per la transizione sostenibile in Emilia-Romagna* - Ecosystem for the sustainable transition in Emilia-Romagna) - Spoke 1 (Materials for sustainability and ecological transition), in the framework of the National Plan of Recovery and Resilience (*Piano Nazionale di Ripresa e Resilienza - PNRR, Missione 4 Istruzione e ricerca - Componente 2 Dalla ricerca all'impresa - Investimento 1.5*), funded by the European Union - NexGenerationEU.

Norms of reference:

CUP D73C22000800001 - D.D. 1052 del 23/06/2022



	D.D. 3277 del 30/12/2021 - Avviso pubblico per la presentazione di Proposte di intervento per la creazione di 12 Ecosistemi dell'innovazione sul territorio nazionale da finanziare nell'ambito del Piano Nazionale di Ripresa e Resilienza, Missione 4 Componente 2 Investimento 1.5 - Creazione e rafforzamento di "ecosistemi dell'innovazione", costruzione di "leader territoriali di R&S" - finanziato dall'Unione europea - NextGenerationEU.
Methods and techniques that will be developed and used to carry out the research	<p>The following methodologies and techniques could be useful for developing the research activities:</p> <ul style="list-style-type: none"> - manufacturing/demanufacturing processes modelling and analysis (FEM, analytical/numerical modelling, etc.) - material characterization procedures - product quality assessment - design of Experiments and Statistics - data acquisition and signal processing - data analysis techniques - design of manufacturing equipment
Educational objectives	The candidate should attend courses/seminars for enhancing his/her soft-skills and specific courses that should help the research development.
Job opportunities	Our last survey on MeccPhD Doctorates highlighted a 100% employment rate within the first year and a 35% higher salary , compared to Master of Science holders in the same field.
Composition of the research group	1 Full Professors 1 Associated Professors 1 Assistant Professors 0 PhD Students
Name of the research directors	Prof. Michele Monno, Prof. Paolo Albertelli

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

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>Financial aid is available for all PhD candidates (purchase of study books and materials, funding for participation in courses, summer schools, workshops and conferences) for a total amount of euro 5.707,13.</p> <p>Our candidates are strongly encouraged to spend a research period abroad, joining high-level research groups in the specific PhD research topic, selected in agreement with the Supervisor. An increase in the scholarship will be applied for periods up to 6 months (approx. 700 euro/month- net amount).</p> <p>Teaching assistantship: availability of funding in recognition of supporting teaching activities by the PhD candidate. 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>