Politecnico di Torino

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SUSTAINABLE MATERIALS, PROCESSES AND SYSTEMS FOR ENERGY TRANSITION

DM 352 - Study of sustainable materials and processes for energy transmission and storage devices

Funded By	UNIVERSITA' DEGLI STUDI DEL PIEMONTE ORIENTALE [P.iva/CF:01943490027] MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584]
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Context of the research activity	The activities refer to the theme "Infrastructures for sustainable mobility" and the results will be applied in the field of energy management relating to sustainable mobility, renewable sources and distributed generation with particular reference to the electric mobility sector.
Objectives	Scholarship financed in the frame of DM 352/2022 by Università del Piemonte Orientale/MUR/Mista SpA CUP: E12B22000920005 Main seat to carry out theresearch: Department of Science and Technological Innovation (DiSIT – UPO), Alessandria; Applied Science and Technology Department (DISAT – POLITO), Torino; Mista SpA, Cortiglione, Asti Supervisors: Michele Laus, DiSIT (UPO), michele.laus@uniupo.it Luciano Scaltrito, DISAT (POLITO), luciano.scaltrito@polito.it Luigi Costa, MISTA, luigi.costa@mista.it Batteries, with particular reference to the automotive sector, require on the one hand the management and transmission of electrical power and on the other the structural monitoring of its various components, in order to ensure their safety along with that of the vehicles on which they are installed. This particular topic poses increasingly stringent technological challenges aimed at optimizing the chemical-physical, thermal and electrical characteristics of the individual cells. In this context, the scientific need and the opportunity to develop

	technologies dedicated to the creation of new production processes for the packaging of cells for battery packs are identified. We intend to study new polymeric materials capable of guaranteeing structural integrity both during the construction of the bus bars for energy transfer and during the operational phase. The packaging will have to integrate new sensor devices into the production process to be able to monitor the status of the batteries. The activities will be aimed at the development of new technologies with respect to the state of the art, paying particular attention to the sustainability of the production cycle. The research activity will be carried out at the Chilab laboratory of the Polytechnic of Turin and the Polymer Laboratory of the University of Piemonte Orientale in collaboration with MISTA, a leading company in designing, development and production of connectors and electrical connections tailored to Customer needs.

Skills and competencies for the development of the activity	The candidate should be preferrably graduated in Material Science courses, Chemistry or Industrial Chemistry and Engineering.