

*PUBLIC SELECTION BASED ON QUALIFICATIONS AND INTERVIEW FOR THE AWARDING OF NO. 1 GRANT LASTING 24 MONTHS FOR CONDUCTING RESEARCH IN ACCORDANCE WITH ART. 22 OF LAW OF 30.12.2010 NO. 240 AT THE DEPARTMENT ENGINEERING AND APPLIED SCIENCES OF THE UNIVERSITY OF BERGAMO (ACADEMIC RECRUITMENT FIELD 03/B2 – PRINCIPLES OF CHEMISTRY FOR APPLIED TECHNOLOGIES - ACADEMIC DISCIPLINE CHIM/07 – PRINCIPLES OF CHEMISTRY FOR APPLIED TECHNOLOGIES RESEARCH PROJECT ENTITLED TITOLO “MULTIFUN – MULTIFUNCTIONALIZATION OF TEXTILE MATERIALS FOR FASHION BY NEW TECHNIQUES”, FINANZIATO DA REGIONE LOMBARDIA NELL’AMBITO DEL BANDO BANDO SMART FASHION AND DESIGN PER LA PRESENTAZIONE DI PROGETTI DI SVILUPPO SPERIMENTALE, INNOVAZIONE A FAVORE DELLE PMI E DISSEMINAZIONE DEI RISULTATI NELLA FILIERA DELLA MODA E/O DEL DESIGN NELLE AREE DI SPECIALIZZAZIONE INDIVIDUATE DELLA “STRATEGIA REGIONALE DI SPECIALIZZAZIONE INTELLIGENTE PER LA RICERCA E L’INNOVAZIONE (S3)” COFINANZIATO DAL POR FESR 2014-2020” FONDO MULTIFUNROSA17 – (CUP E48I16000160002).*

*announced with decree of the Rector Rep. no. 285/2017 of 18.05.2017 and posted on the official registry of the University on 18.05.2017.*

### **RESEARCH PROJECT**

#### **“Synthesis and characterization of hybrid materials for wearable sensors”**

The project "Multifun" aims to study multifunctional compounds and technologies of textile finishing with highly innovative features.

In particular, the project was designed to develop the scale-up of processes and technologies (sol-gel and UV curing) for textile finishing, to obtain the following properties:

- antifouling and/or antimicrobial for technical textiles used in the footwear, furniture for outdoor, sportswear, medical fields;
- UV protection for outdoor (eg. curtains);
- electrical conductivity for technical textiles, smart textiles and anti-static applications.

During the project, stable hybrid nano-sols will be developed (combining inorganic sol-gel precursors with organic molecules) and applied to the textile fibres, in order to characterize both the chemical composition and the performance of the coated surfaces. With the goal to realize permanent chemical interactions between fibres and chemicals to improve high washing fastness, textile finishings will be carried out using two approaches: (a) use of catalysts and crosslinkers in the hybrid nanosol; (B) immobilization of the functionalized chemicals through UV curing. For both approaches, the first step will be carried out on the laboratory scale. Then, after a screening of the obtained results (TRL6), the most effective treatments among those tested will be brought at industrial scale. The last step of the project will address the optimization of production conditions, the validation of results, the analysis of costs.