

SILK IT

SILK ITALIAN TECHNOLOGY FOR INDUSTRIAL BIOMANUFACTURING

Duration	Start date	Total budget	Funding
24 months	15th January 2012	551.866 €	308.000 €

Scientific/Industrial objective

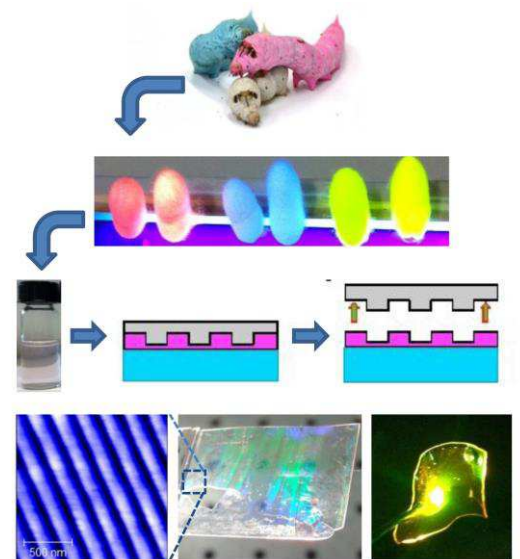
The main objective of SILK.IT is to present an integrated technology based on silk-fibroin advanced optical device for bio-diagnostics. Optically active fibroin substrates will be engineered starting from 1) production of raw-material (*Bombyx mori* insects selected/grown under the best conditions) 2) assessment of extraction/purification methodology 3) testing for biocompatibility/best-performances. The results will pave the way to establish a sustainable, controllable, reproducible, high quality silk based bio-manufactory.

Ideas and solutions

To reply to the demand of renewable and biodegradable raw materials and innovative environmental friendly manufacturing of the technology of the future, SILK.IT **presents an innovative technology based on natural material, silk-fibroin, as main component in advanced optical devices for bio-diagnostics.**

Results achieved

- Definition of a protocol for fibroin cocoon breeding and feeding for functionalization via bio-doping
- Definition of protocols for controlled and standardized fibroin extraction, purification and chemophysical characterization from biodoped cocoon.
- Fabrication and implementation of silk based photonic structures such as linear DFB and multilayer photonic crystal
- Implementation of a fabrication process for realizing of silk-based microfluidic platform
- Definition of biocompatibility of the silk components



Follow up

The results obtained within the project were the seed for following initiatives at European level focused on biomedical applications based on controller and tunable silk fibroin, produced in loco at CNR.

The results of the project were also presented in regional industrial contest with the partnership of Laboratory MIST E-R which is Laboratory of Industrial Research and Technology Transfer of the High Technology Network of Emilia-Romagna. These contest set the scenario for future implementation and exploitation of the results obtained.



Partnership

The consortium ISOF, ISMN, IBIMET at CNR is uniquely qualified to set-up the whole-chain for biomanufacturing of novel silk-based bio-tech (from the raw material to the engineered Lab-on-a-Chip).

Project coordinator

ISOF multidisciplinary research activities in the fields of Key Enabling Technologies - such as advanced materials, nanotechnologies and chemical manufacturing, photonics - develop technological applications mainly in the fields of healthcare, solar energy conversion and environmental sustainability, also through projects of industrial relevance that address the societal challenges of the Europe 2020 strategy.

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Coordinato da:



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