POLITECNICO DI MILANO

PhD in INGEGNERIA DELL'INFORMAZIONE / INFORMATION TECHNOLOGY - 38th cycle

Research Area n. 4 - Telecommunications

PNRR_352 Research Field: MULTILAYER COATINGS FOR ANTIREFLECTION AND MICROMIRROR IN THE MIR AND LIR WAVELENGTHS

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 covers the scientific and industrial needs to realize multilayer thin films for eliminating or increasing the reflectivity in a broad wavelength range (UV to LWIR) from photonics and electronics devices. The approach follows a complete multiphysic methodology. Numerical evaluations (design) and characterizations of the device.
Methods and techniques that will be developed and used to carry out the research	Design and analysis of thin multilayer films for antireflection and mirror application in a wide wavelength range. Deposition techniques with sputtering, evaporators and CVD. Material analysis. Device characterization. Simulation with custom software and commercial software.
Educational objectives	The educational objectives cover the entire field of materials and fabrication processes for photonics with a multiphysic approach. Photonics, microwave, electronics, thermal and software are routinely used in the group. The student will work in an international environment.
Job opportunities	Job opportunities in technology and material science for photonics are huge worldwide. STm recruits regularly PhD for R&D and production.

	All my previous PhD found a job in the field of photonics, 2 in USA, 2 in Canada and 3 in Italy.
Composition of the research group	1 Full Professors 1 Associated Professors 4 Assistant Professors 4 PhD Students
Name of the research directors	Prof. Andrea Melloni

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

National Operational Program for Research and Innovation	
Company where the candidate will attend the stage (name and brief description)	STMicroelectronics Electronica, MEMS (https://www.st.com/content/st_com/en.html)
By number of months at the company	6
Institution or company where the candidate will spend the period abroad (name and brief description)	STMicroelectronics, Grenoble, France Electronics, Photonics, MEMS (https://www.st.com/content/st_com/en.html)
By number of months abroad	6

Additional information: educational activity, teaching assistantship, computer availability, desk availability, any other information

Attinenza alla tematiche, alle missioni/componenti prescelte del bando PNRR v. D.M. 352, art.6

L'Italia da tempo vanta eccellenze nel settore di produzione di sensori MEMS innovativi con diverse aziende. STMicroelectronics, leader mondiale del settore, ha una consolidata collaborazione con diverse Università Italiane e in particolare con il Politecnico di Milano (come dimostrato dal grande investimento fatto con il JRC MEMS e STEAM). La proposta di questa borsa co-finanziata è perfettamente in linea con la propria politica di rinnovamento produttivo, ed è allineata con la missione tecnica M1 e la Key Enabling Technology Photonics.

L'argomento riguarda sensori ottici a MEMS. Nello specifico, la componente del PNRR alla quale il presente progetto di ricerca risponde è la M1C2, Investimento 2: Innovazioni e tecnologia della microelettronica.

Impresa, presso cui si svolgerà l'attività esterna

STMicroelectronics
Electronica, MEMS
https://www.st.com/content/st_com/en.html
6 mesi
Design e caratterizzazione dispositivi TMOS
Attività in corso nell'ambito del JRC STEAM

Ente, università, azienda, centro di ricerca presso cui si svolgerà il periodo di studio e ricerca all'estero.

STMicroelectronics, Grenoble, France
Electronics, Photonics, MEMS
https://www.st.com/content/st_com/en.html
6 mesi
Silicon Photonics
Collaborazioni spontanee e in ambito di progetti EU su tematiche di silicon photonics

All information regarding educational activities, personal funding, regulations and obligations of Ph.D. candidates are available on the web site https://dottoratoit.deib.polimi.it/