

**Ph.D. in Information Technology  
Thesis Defense**

**May 19<sup>th</sup>, 2026**

**At 10:30 p.m.**

**Sala Schiavoni - Building 20A**

**Francesca GROSSI – XXXVIII Cycle**

**CMOS COMPATIBLE ANTI-REFLECTIVE COATING (ARC) AND ANTI-REFLECTIVE  
MICROSTRUCTURES (ARM) FOR OPTICAL COMPONENT FOR MIR AND LWIR**

Supervisor: Prof. Francesco Morichetti

**Abstract:**

The main objective of this research project is to design and fabricate antireflective coating (ARC), micro- nano antireflective structure (ARM), optoelectronic devices working in the mid infrared region that can be integrated in actual CMOS process line. The main issues in the realization of these devices on silicon substrate comes from indirect bandgap of silicon, which results in very low radiative efficiency, and from very stringent temperature constraints to be met for CMOS processes. Another challenge is the choice of materials that can be used. There are very few materials with optical properties suitable for MIR application and that can be processed in CMOS compatible way. Part of this research project is carried out in collaboration with STMicroelectronics. The specific project is the one on TMOS included in the JRC STEAM projects.

**PhD Committee**

Prof. Gian Guido Gentili, **Politecnico di Milano**

Prof. Rita Asquini, **Università degli Studi di Roma “La Sapienza”**

Prof. Gaetano Bellanca, **Università degli Studi di Ferrara**