

## Annex A – Positions with specific topic

<b>Ph.D. Course</b>	<b>NANOSCIENCES</b>
<b>Scholarship type</b>	<b>Financed by GEM Elettronica Srl</b>
<b>N.</b>	<b>1</b>
<b>Title</b>	<b>Integrated photonics based on hybrid circuits</b>
<b>Brief description of the research project</b>	Research grant on the topic “Integrated photonics based on hybrid circuits - Development of innovative protocols of micro- and nano-fabrication of photonic devices based on miniaturized and integrable semiconductor hetero-structures which aims at the quantum design, nanofabrication and characterization of miniaturized lasers based on semiconductor heterostructures and development of innovative nanofabrication protocols for integrated photonics. The candidate's research activity will focus on the development of quantum engineering methodologies of miniaturized optical frequency combs based on semiconductor heterostructures, operating in the far infrared. The activities will also include the development of innovative nanofabrication architectures to devise harmonic combs and the development of advanced optical techniques to characterize the electrical, optical and metrological properties of the developed sources. Suitable applicants must have a master's degree in physics, material science, electrical or electronic engineering or related fields.
<b>Period of study and research to be carried out abroad</b>	Each student is ordinarily expected to carry out periods of research and training activity, related to the research project, with highly qualified partners and/or institutions in Italy and abroad. The foreign and Italian destinations will be agreed with the students who will be holders of the scholarship, decided by supervisors and authorized by the Ph.D course board.