



<b><i>Project Title:</i></b>	<i>Development of patterned substrates for micro-concentrator solar cells</i>
<b><i>Project Short description</i></b>	<p>In this project the student will use the INL state-of-the art clean room to prepare micro-patterned substrates. The preparation and characterization of these substrates will be made by the student using lithography, scanning electron and scanning probe microscopy. Two types of processes will be optimized, one for selective deposition of CuInSe<sub>2</sub> using electro-deposition and the second for a lift-off process of CuInSe<sub>2</sub>. In the two approaches, the objective is to prepare micro-dots of CuInSe<sub>2</sub> to be used as micro-cells. The student will learn valuable clean room skills based on lithography processes, deposition of photo-active resists, and etching techniques. The student will also get training in scanning electron microscopy and atomic force microscopy which will be used for the evaluation of the patterned substrates. The international and multi-disciplinary research environment at INL allows young professionals to be exposed to very different cultures and scientific topics which is a very valuable experience at this point of their studies.</p> <p>About the hosting group (LaNaSC): The Laboratory for Nanostructured Solar Cells (LaNaSC) is directed to the development of nano- and micro-structures of chalcopyrite-type semiconductors (Cu(In,Ga)Se<sub>2</sub>) for application in photovoltaic energy conversion. The group currently consists of the principal investigator and 4 researchers (3 post-docs and 1 PhD student) of 5 different nationalities.</p>
<b><i>Expected Start/end date</i></b>	As soon as possible
<b><i>Required degree and Background knowledge of students, minimum grade point average, etc...</i></b>	Engineering, chemistry, physics or similar area degree. Experience in solar cells, semiconductors, clean room processing, will be considered but it is not essential.

### Supervisor at INL

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