

PhD and postdoctoral positions in the “Nanophotonics Technology Center” at Universitat Politècnica de València, Spain

Chiral separation of molecules enabled by enantioselective optical forces in photonic integrated circuits

Separating enantiomers is crucial to produce bio-active molecules, e.g., in early-phase drug discovery. The present solution of chiral chromatography for this USD multi-billion market is slow and cumbersome since it requires tailored chemistry for each chiral compound, and relies on large and expensive separation columns. The EU Pathfinder project CHIRALFORCE aims at a radically new strategy to separate enantiomers on photonic chips: using chiral optical forces at silicon-based integrated waveguides.

We are offering a PhD and a post-doctoral position to work in the design, fabrication, and characterization of chiral circuits in silicon-photonics integrated technology. The final goal is the observation of chiral optical forces exerted by such circuits on nanoparticles and molecules in liquid environments as well as the separation of enantiomers via optical forces on a chip. Research activities will be performed within a European project and in collaboration with different European institutes, universities and companies.

PhD position: the candidates must have a degree in physics or electrical/telecommunications engineering. Other profiles may be considered. Master studies related to optics and nanotechnology will be very valuable.

Post-doctoral position: the candidates must have a PhD degree in one of these topics: photonic integrated circuits, chiral optics, molecular nanophotonics. They must show extensive expertise in design and optical characterization. Experience in clean-room nanofabrication will be also considered.

In both cases, a high level in English is mandatory.

Candidates should send a motivation letter (1 page) and a short CV to Prof. Alejandro Martínez (amartinez@ntc.upv.es) and Ms. Isabel Salas (misalas@ntc.upv.es).

Starting date: Autumn, 2022.

Duration: up to 3.5 years (renewable on a yearly basis)

Additional information on the group: https://ntc.webs.upv.es/plasmonics_optomechanics/

Location: <https://ntc.webs.upv.es/contacto/>