

# Vittorino Lanzio

ELECTRONIC ENGINEER

Berkeley, California

☎ (510) 345 9776 | ✉ vitto.lanzio@gmail.com | 🌐 vittorino-lanzio

## Profile

**Electronic Engineering Ph.D. Candidate with 4+ years research experience as nanoscale process engineer**

- Extensive knowledge in semiconductor processing, integrated photonics and optical simulations
- Process development hands-on experience from device design and simulation to fabrication, characterization and assembly
- Passionate about photonics, nanofabrication and their integration in cutting edge products

## Technical skills

### Nanofabrication

Nanofabricated and characterized innovative electro-optic devices for neurosciences

- Fabrication process optimization: dry/wet etch, lithography, film deposition
- Metrology tools: electron microscopy (SEM), surface profilometry
- Die assembly and wire bonding

### Optics, Photonics

Simulated, fabricated, tested and optimized photonics for light delivery in brain tissue

- Simulation of photonic demultiplexing filters (Lumerical simulation software)
- Optical setup assembly for chip level testing
- Optical test: fiber alignments, optical measurements and data analysis

### Layout, testing

Designed circuits, optical fixtures, implemented to automate the data acquisition

- Automated the optical setup data acquisition and analysis (Matlab)
- Designed photonic circuits (L Edit, K Layout)
- Designed and 3D printed fixtures with CAD (Fusion Autodesk)

### Soft skills

Strong capability in defining problems and delivering results in highly multidisciplinary fields

- Integrated design, simulation, fabrication and characterization processes to manufacture state of the art devices for neuroscience applications
- Managed collaborative research between a team of engineers (Berkeley Lab), neuroscientists (UC Berkeley), material scientists (Politecnico)

## Education and Experience

### Researcher at the Molecular Foundry

Berkeley, United States

LAWRENCE BERKELEY LAB, MOLECULAR FOUNDRY

03/2016 - Present

**Process engineer: manufactured electro-optical sensors to detect and stimulate neurons in living animals**

- Developed and optimized over 80 wafer level fabrication processes to manufacture innovative technology for neuroscience experiments
- Simulated, integrated photonics and improved the state of the art by reducing the device dimension by a factor of 10

**Managed multidisciplinary projects at the intersection of microfabrication, photonics, neuroscience, engineering**

- Wrote 6 accepted scientific proposals to access the research facilities at Berkeley Lab; managed project documentation
- Managed the project from the design steps to the device manufacturing, characterization
- Mentored 7 Master students and trained Users to cleanroom protocols in Berkeley Lab

### Ph.D. in Electronic Engineering

Turin, Italy

POLITECNICO DI TORINO

10/2017 - Expected 05/2021

- Integrated carbon-based nanomaterials on microelectrodes for neural sensing applications
- Published in peer-reviewed journals and presented results at several conferences

### Joint Master Degree in Nanotechnologies and Nanosciences

Paris, France

POLITECNICO DI TORINO AND PARIS SACLAY

09/2014 - 09/2016

- Courses on: micro, nanofabrication; characterization techniques for electro-optical devices and Cmos, integrated photonics, nanomaterials and experimental applications

### Bachelor Degree in Engineering Physics

Turin, Italy

POLITECNICO DI TORINO

09/2011 - 09/2014

- Courses on: advanced and applied physics (quantum, statistical, solid-state physics, optics), chemistry, electronics, electrical engineering (devices and circuits) and computer methods for modeling of physical systems (Density Functional Theory, C, Matlab).

## Publications and conferences

---

### PUBLICATIONS

- **V Lanzio et al.**, “Small footprint optoelectrodes for simultaneous readout and passive light localization by the use of ring resonators”, *Nature Microsystems and Nanoengineering*, *Under review*
- **V Lanzio et al.**, “High-density electrical and optical probes for neural readout and light focusing in deep brain tissue”, *J. of Micro/Nanolithography, MEMS, and MOEMS*, 17(2), 2018
- **V Lanzio et al.**, “Scalable nanophotonic neural probes for multicolor and on-demand light delivery in brain tissue”, *IOP Nanotechnology*, *Under review*

### CONFERENCES

#### **Electron, Ion and Photon Beam Nanofabrication conference (EIPBN)**

*San Jose, Porto Rico*

*Talk: optoelectrodes with passive switching optical circuits: light control in deep brain tissue*

*06/2018*

#### **Invited seminar at Politecnico di Torino**

*Turin, Italy*

*Talk: brain-machine interfaces and neural probes*

*01/2018*

#### **Electron, Ion and Photon Beam Nanofabrication conference (EIPBN)**

*Orlando, Florida*

*Poster: multifunctional neural probes for neural activity readout and control*

*06/2017*

#### **Molecular Foundry User Meeting**

*Berkeley, California*

*Multiple Posters: multifunctional probes for neural activity readout and control*

*2017,2018,2019*

## Languages

---

- English (fluent)
- Italian and Portuguese (native)
- French and Spanish (intermediate)