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# Researchers - Photonic Integration & Quantum Information Processing

## EP-24 – Researchers for Photonic Integration & Quantum Information Processing

### Contract: Full Time/Fixed Term

Tyndall National Institute at University College Cork invites applications for **three Postdoctoral opportunity**.

The Epitaxy and Physics of Nanostructures ([EPN](#)) group, the III-V Materials & Devices group, the Integrated Photonics Group, Tyndall National Institution and University College Cork fund **three Postdoc position on “Postdoc positions on photonic integration and quantum information processing with semiconductor artificial atom structures”**.

The Epitaxy and Physics of Nanostructures group, the III-V Materials & Devices group and the Integrated Photonics Group are well-established research teams in Ireland addressing epitaxial growth, integrated photonic devices and quantum structures. E.g., quantum technology applications of III-V site-controlled quantum dots (see e.g. Gediminas Juska, et al. “Towards quantum dot based arrays of entangled photon emitters”, *Nature Photonics* 7, 527 (2013); T. H. Chung, et al. “Selective carrier injection into patterned arrays of pyramidal quantum dots for entangled photon light-emitting diodes”, *Nature Photonics* 10, 782 (2016)).

### Key Responsibilities

The main focus of these positions is developing a) novel epitaxial growth protocols to develop advanced site-controlled quantum dot structures, b) novel processing protocols for heterogeneous integration with silicon photonic chips and c) develop optical mode simulations and circuits designs.

The work will include for at least one of the roles, running structural characterization techniques, such as AFM and XRD and cryogenic quantum optics as guidance in the development of such structures, but there will be also extensive III-V cleanroom processing and running tailored simulation software. We do not expect candidates to have competences in all fields, but to be experts in a significant subsets of the requirements.

The postdoc positions will also involve collaborating with the rest of the groups’ members, potentially contributing to other group research projects. The successful candidate is equally expected to collaborate with the rest of the groups’ teams on industrial engagement (and projects).

The successful candidate is also expected to engage in PhD mentoring and supervision, and also follow Tyndall outreach engagement policies.

### Other responsibilities:

- Participate in Education and Public Engagement activities, as required.
- Ensure all activities are compliant with the Tyndall Quality Management system.
- Ensure all activities are compliant with the required Health and Safety standards.
- Carry out any additional duties as may reasonably be required within the general scope and level of the post.

The Postdoc level position is open for candidates of EU and non EU nationalities. We welcome applications from talented candidates with strong motivation and experimental skills. The appointment is for one year with the possibility of extension (up to three years), and previous experience in the field is preferentially requested.

The groups are led by Dr. E. Pelucchi, Dr. B Corbett and Prof. F. Peters.

### **Essential Criteria**

- Postdoctoral applicants must hold a PhD in Physics or a related discipline before the start of the contract.
- They should have a rich CV and experience in some of the following: MOVPE, quantum optics with quantum dots, cleanroom processing, transfer print, photonic simulations and photonic integration. Or at least in a field close to the topics to be investigated.
- First class university and research curriculum

### **Desirable Criteria**

- Highly self-motivated applicants with strong experimental attitude.
- A high number of scientific publications
- Preference will be given to candidates with strong background in at least one of the following areas: QDs as light sources, MOVPE or MBE growth of nanostructures, cleanroom processing, transfer print, photonic circuit simulations and photonic integration.

Informal enquiries concerning these positions can be made to Dr. Emanuele Pelucchi ([emanuele.pelucchi@tyndall.ie](mailto:emanuele.pelucchi@tyndall.ie)).

Appointment may be made on the IUA Researcher Scale €37,873 - €45,041. Salary placement on appointment will be in accordance with public sector pay policy.

### **Application Instructions**

**Step 1 - Click [here](#) to download and complete the Application form and indicate the Job Reference EP-24**

**Step 2 – Return the completed Application form, together with your CV and motivation letter to [careers@tyndall.ie](mailto:careers@tyndall.ie). Handwritten forms will not be accepted.**

Please note that Garda vetting and/or an international police clearance check may form part of the selection process.

The University, at its discretion, may undertake to make an additional appointment(s) from this competition following the conclusion of the process.

Please note that an appointment to posts advertised will be dependent on University approval, together with the terms of the employment control framework for the higher education sector.

At this time, Tyndall National Institute does not require the assistance of recruitment agencies.

Tyndall National Institute at University College, Cork is an Equal Opportunities Employer.