



Sparkle^{*}

Candidate Information Pack

Sparkle

Training Europe's Future Photonics Research Leaders

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Please read this document **carefully** before submitting your application.

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Sparkle*

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Executive Summary

Welcome to *Sparkle*, an innovative intersectoral training, career development and mobility training programme co-funded by the Marie Skłodowska-Curie Actions programme (EU) and Science Foundation Ireland (SFI). *Sparkle* is hosted by the Irish Photonics Integration Centre (IPIC), Ireland's centre of excellence for research, innovation and training in photonics.

This document sets out the information required for applicants to the programme and will aid you prepare and submit an application. It also provides information on the review and assessment process, contractual arrangements and living conditions in Ireland.

Sparkle open calls are now closed. *Sparkle* had one Open Call that ran continuously from December 2019 to the end of September 2022.

1. About Sparkle

1.1 Background

Photonics impacts our everyday lives, from the screens that drive our mobile phones, to the fibre optic based communications network that underpins the modern internet, to light based diagnostics systems that identify diseases. It also represents an enormous worldwide sector that is growing twice as fast as the global GDP and expected to reach €704 billion in 2023. Europe is at the heart of this industry with a market that has grown by over 62% over the last 10 years, investing about €10 billion per year in innovation through its 5,000 photonics companies that directly employ over 300,000 with a global market share of 15.5%, second only to China.

The story doesn't stop there, the industry is highly dynamic with a large number of emerging disruptive technologies and market opportunities, for example AR/VR that needs higher resolution and energy efficient displays, autonomous vehicles that require photonics sensors to 'see', guided surgical instruments that will utilise light to identify cancerous versus non-cancerous tissue, but to mention a few. The future is exciting, but investment is needed to enable Ireland and Europe to continue to compete on the global landscape, including the training of our future photonics research leaders with innovative independent thinking to drive leading edge research, and translational skills to turn scientific breakthroughs into technology and products that meet market needs across multiple sectors.

The Irish Photonics Integration Centre (IPIC) is emerging as one of Europe's top research centres in photonics integration, incorporating the expertise of 17 Principal Investigators (PIs) covering topics from photonics theory through to full system development, i.e. the full technology development cycle where the underpinning sciences are explored in parallel to the development and fabrication of novel prototype devices and systems. Today IPIC comprises over 200 photonics researchers with access to world-class equipment infrastructures, including exte

Figure 1.1 Sparkle Academic Partners

IPIC is a dispersed centre, headquartered at Tyndall National Institute, University College Cork (UCC), with academic partners including Ireland's leading universities, Trinity College Dublin, Dublin City University, National University of Ireland Galway and Munster Technological University (Figure 1.1).



Figure 1.1 Sparkle Academic Partners

Collectively, the team publishes over 100 publications per year, with 40% in the top 10% journals as measured by SciVal (Elsevier), 60% with international collaborators and over 25% include two or more IPIC PIs demonstrating the interdisciplinary and integrated nature of the research.

Our Principal Investigators are also active research leaders in European funding programmes and have to date secured over €24M in the highly-competitive H2020 programme. This research excellence, in combination with the capability to fabricate functioning prototypes addresses the historic gap between academia and industry (typically between TRLs 3 and 5), making us attractive partner for industry. As a result we have in recent years expanded our industrial collaborations to more than 30 companies who provide over €3.4M per year, representing global technology leaders and rapidly growing SMEs across numerous sectors, including telecommunications, data storage, AR/VR, semiconductor, medical devices and life sciences. Training is also one of our core roles and over the last 5 years we have trained over 100

PhDs and Postdocs, with 64% taking positions in industry as their first destination. Well above international levels, and reflecting the relevance and quality of the training programmes, and close industry ties.

2.1 Equality, Diversity & Inclusion

Equality, Diversity & Inclusion (EDI) is a core principle of *Sparkle* and is integrated into all elements of the programme, including a transparent, fair, objective and gender-balanced evaluation and selection process. We encourage applications from all members of the photonics research community, including those from traditionally underrepresented groups, and endeavour to create a bespoke training plan for each applicant to help you achieve your own career goals and aspirations.

2.2 Programme Objectives

Sparkle is an intersectoral training, career development and mobility fellowship programme that seeks to develop Europe's future industrial and academic research leaders. These leaders with combined skills in scientific excellence, product development and manufacturing, will be equipped to compete at the highest level and will ensure that Ireland and Europe remain at the forefront in photonics technology and industrial activity.

The programme offers 27 x two-year fellowships, with each fellow having a training plan tailored to the career path they wish to pursue following their fellowship. For fellows wishing to pursue an academic career, their training includes the identification and submission to funding opportunities to enable them build their own independent research programme upon completion of the fellowship. For fellows focussed on a career in industry, their training has greater focus on translational skills, such as fabrication and commercialisation, and they are introduced to our wide network of industry partners.

Irrespective of the direction fellows might pursue, the demand for experienced photonics researchers with the capability to be global leaders is very clear from the response of our industry partners to participate in *Sparkle*. These companies are driving scientific development and advancement to manufacturing of new challenging and disruptive technologies across multiple sectors, and have committed to *Sparkle* by making a total of 48 x 6-month secondment opportunities available to fellows. In addition, these companies expect to recruit over 100 researchers with skills matching those from *Sparkle* in the next 4 years.

Programme Aims For Fellows:

- An advanced training programme in a cutting-edge research environment to train future world leaders in the field of photonics, highly employable both in academia and industry.
- An expanded set of translational skills, including prototype development and fabrication, manufacturing, problem solving, commercialisation, communication and dissemination, leadership, grantsmanship, financial management, planning and time management.
- Enhanced innovative and entrepreneurial awareness skills through training on subjects such as market awareness, Intellectual Property, licensing, technology transfer, entrepreneurship and industry engagement.
- A career-oriented 6 month industry placement with either a global leader or rapidly growing SME.
- Integration into a network of Europe's academic and industrial leaders that will boost future career opportunities across many disciplines and sectors.



- Participation in IPIC’s comprehensive and diverse Education and Public Engagement (EPE) programme, to develop and apply dissemination skills with different audiences from school students to the general public.
- Participation in a transparent, fair, objective and gender-balanced evaluation and selection process.

Through the delivery of *Sparkle* we aim to:

- Strengthen and raise the excellence and impact of Ireland and Europe’s photonics research and manufacturing activities through the transition of leading edge science into market leading products.
- Address the expanding skills shortage in the field of photonics, specifically at experienced researcher level.
- Support photonics based SMEs by providing them with highly skilled trainees to support their business growth ambitions.
- Expand Ireland and Europe's research and innovation capacity and outputs, ensuring that they remain among the leading global destinations for attracting high skilled researchers to both expand their skills and also progress to fulfilling and impactful careers.

2.3 Academic Partner Institutions

Fellows will be based at one of Sparkle’s academic partners located in Cork, Dublin or Galway.

Academic Partner	Brief Description
 <p>Tyndall National Institute (Tyndall) www.tyndall.ie</p>	<p>Tyndall National Institute is a leading European research centre in integrated ICT (Information and Communications Technology) hardware and systems, specialising in both electronics and photonics – materials, devices, circuits and systems. The institute hosts the only full Silicon CMOS, Micro-Electro Mechanical Systems (MEMS) and III-V Semiconductor Wafer fabrication facilities and services in Ireland.</p> <p>Central to its mission is delivering economic impact through research excellence. Tyndall works with academia and over 200 industry partners and customers worldwide to transform research into products in the core market areas of electronics, communications, energy, health, agri-food and the environment.</p>
 <p>Munster Technological University (MTU) https://www.mtu.ie/</p>	<p>Munster Technological University is a multi-campus technological university, contributing to the region through the provision of academic programmes that support student development and opportunities, education and research. MTU has an extensive and impressive regional footprint with six campuses across the South-West region in Cork and Kerry, and a student body of 18,000.</p>



**Dublin City University
(DCU)**

www.dcu.ie

DCU is regarded as one of the world's leading and Ireland's fastest growing universities with a strong reputation for World Class Research with top class facilities. The core areas of leading research activities include information technology and the digital society, advanced manufacturing and materials, health technologies as well as educational research and innovation.

A key element of DCU's vision is to be a globally-significant university that is renowned for its discovery and translation of knowledge to society, a commitment that is central to the new Research and Innovation Strategy.



**National University of
Galway
(NUI Galway)**

www.nuigalway.ie

NUI Galway is world-renowned as an expert research-led institution. The university emphasises inter-disciplinary research programmes, and collaborations with industry partners in areas of strategic importance, both regionally and nationally. NUI Galway makes a meaningful contribution internationally, nationally, and to the region, in a number of key research themes including predominantly biomedical science & engineering, informatics & computing as well as environmental & energy based research activities.

The dynamic community and a vibrant ecosystem at NUI Galway attracts researchers, academics, entrepreneurs and students of the highest calibre with cutting-edge biomedical and engineering facilities at their disposal.



**University College
Cork (UCC)**

www.ucc.ie

University College Cork (UCC) is an internationally competitive, research-led university that plays a key role in the development of Ireland's knowledge-based economy. It is Ireland's first five-star University with internationally-recognised research in science, food, engineering, medicine, business, law, social sciences and the humanities. UCC is ranked in the top 2% of universities worldwide based on the quality of its research outputs and peer esteem indicators, and was the first University to be named The Sunday Times University of the Year for two consecutive years — 2016 and 2017 — in the 15-year history of the award.

The institutional research strategy focuses on creating and supporting world-leading clusters of researchers, building on the research strengths of the University, and is aligned with key Government strategies including the Strategy for Higher Education to 2030 (Hunt Report), and Ireland's Strategy for Research and Development, Science and Technology, Innovation 2020.



**Trinity College Dublin
(TCD)**

www.tcd.ie

Trinity is recognised as a top international centre for research and a world leader in Nanotechnology, Information Technology, Immunology, Mathematics, Engineering, Psychology, Politics, English and many more areas. Ranked 1st in Ireland, and 104th in the world, with researchers who attract €70 million annually in external funding, the university provides a world-class teaching and research facility. At the heart of Trinity's vision lies the engagement in research with the quality, intensity, depth, diversity, and openness that leads to fundamental breakthroughs and new understandings.

Trinity's tradition of independent intellectual inquiry has produced some of the world's finest, most original minds including the writers Oscar Wilde and Samuel Beckett (Nobel laureate), the scientists William Rowan Hamilton and Ernest Walton (Nobel laureate), the political thinker Edmund Burke, and the former President of Ireland and UNHCR Mary Robinson.

2.4 Research Areas

Independent thinking to complete leading edge research and develop solutions to solve societal challenges is a core skill for internationally leading scientists, and therefore to ensure that fellows develop this skill, each will complete a clearly defined Research Project with one of the IPIC Principal Investigators (PIs). The Research Project Plan is developed during the preparation of the application and ideally spans more than one of our research disciplines to help fellows develop their ability to work across multiple disciplines.

As with all MSCA programmes, mobility is an integral part of *Sparkle*, including mobility in the Research Area that a fellow pursues. However, Research Projects must align with IPIC's core scientific research programme focussed on the development of game-changing optoelectronic integration technologies, which will also help fellows leverage the benefits of the wider research programme and to explore synergies (Figure 1.2). The research programme utilises our deep domain expertise in key underpinning disciplines, namely: theory and growth of III-V and III-Nitride materials, optoelectronic device design and fabrication, high speed microelectronics, photonic integration and packaging, biophotonics and communications systems. It is structured into four inter-disciplinary research themes that meet monthly to discuss the research programme and fellows will be invited to participate in these meetings:

- **Monolithic and Heterogeneous Integration:** 'Printed photonics on anything' explores new ways to combine photonics and electronics on multiple substrates with unprecedented simplicity and cost-effectiveness using transfer printing.
- **Packaging and Hybrid Integration:** 'Breaking the packaging cost barrier' develops optical and electrical wafer scale assembly and packaging processes and low cost cooling technologies.
- **Communications:** 'Coherent everywhere: migration of coherent communications to the network edge' is addressing the question, can we build a coherent transceiver for €10 and, if so, how will it transform metro-scale access network design?
- **Biomedical:** 'World's smallest integrated imaging system for guided surgery' is developing new innovations in micro-scale cameras and surgical platform integration technologies, multi-

spectral diagnostic imaging and in-body optical powering and data transmission to address this need and deliver a number of world firsts.

- **Photonic Quantum technologies:** We explore efficient ways to achieve efficient hybrid photonic integration for quantum computing applications, including artificial atom quantum light sources, ultra- low loss waveguides and addressing novel challenges such as cryogenic packaging.

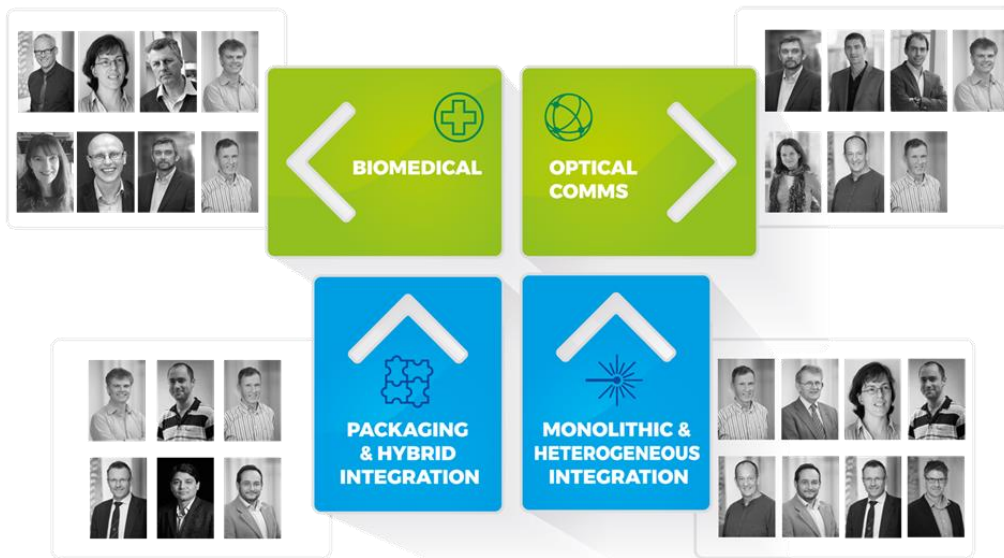


Figure 1.2 Research Themes and their participating Principle Investigators

Within the context of the Research Themes, applicants can choose the Research area and Principal Investigator to develop a research project of common interest. These will evolve with time and will be updated on the IPIC website - the current map of Research Areas and PIs is presented in Figure 1.3. Further details on the Research Areas and the PIs are available at www.ipic.ie.

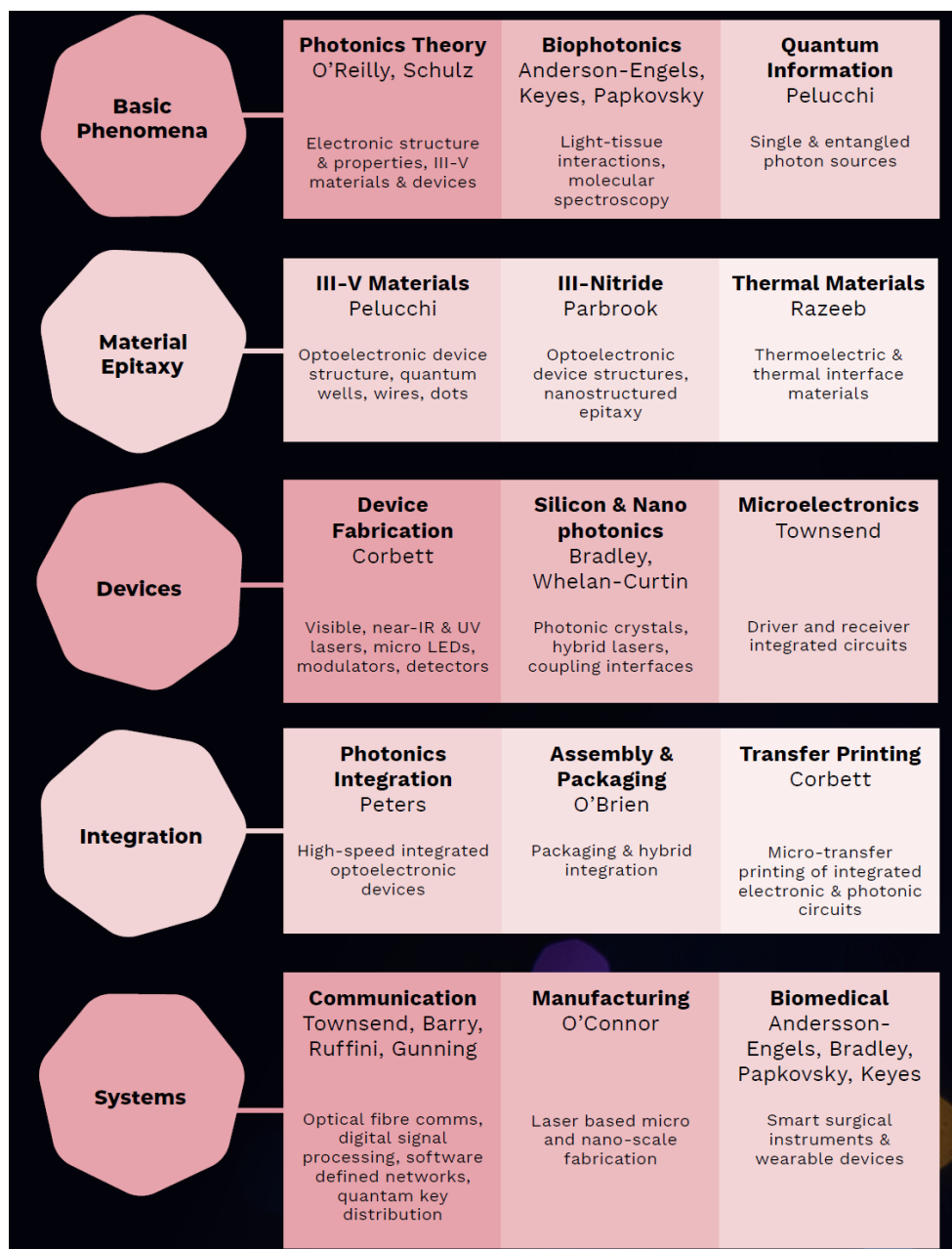


Figure 1.3 Research Areas and Principle Investigators (subject to change)

2.5 About Marie Skłodowska-Curie Actions

Marie Skłodowska-Curie Actions (MSCA), named after the double Nobel Prize winning Polish-French scientist famed for her work on radioactivity, aim to support researchers at all stages of their careers, irrespective of age and nationality, and to equip researchers with the necessary skills and international experience for a successful career, either in the public or the private sector. Mobility, training and career development are core principles of MSCA.

2. About the Fellowships

Sparkle offers 27 two-year fellowships and as mobility is a core principle of the programme, each fellow has the freedom to choose their Academic Supervisor from the 17 IPIC PIs located across the six academic partners (Tyndall, MTU, DCU, NUIG, TCD and UCC) based at Cork, Dublin or Galway.

2.1 Personalised Career Development Plan (PCDP)

Each fellow will have a Personalised Career Development Plan that will be prepared in advance of the commencement of their fellowship. It will include the planned activities during their secondment and a comprehensive training plan composed of three elements: general skills, translational skills and dissemination and public engagement. This will be provided through the following:

- Courses or modules delivered by academic partners (minimum of 3 to be completed)
- Courses delivered by the fellow's secondment partner
- SPARKLE Autumn School (minimum of 1 to be attended)
- International conferences (minimum of 2 papers to be presented)
- IPIC Seminar Series (minimum of 5 to be attended)
- Annual IPIC Industry Workshop (minimum of 1 to be attended)
- IPIC EPE programme (minimum of 4 activities to be completed)

All training modules are offered at Tyndall/IPIC or from our industry partners as onsite or online events. Progress against the plan will be reviewed regularly with the Academic Supervisor and the Programme Manager (PM).

2.2 Courses and Training Modules

In addition to developing the technical skills to complete leading edge research and generate novel ideas, the capability to turn scientific breakthroughs into technology and products that meet market needs is essential to ensure that fellows will drive future game changing innovations right through to market deployment. To achieve this, fellows' training plans may include fabrication, assembly and manufacturing challenges and the importance of how materials, devices and systems are designed to meet the required performance and end-user's needs. This will be reinforced during their secondment where they will have access to the companies' experienced scientists and engineers, as well as their laboratories and advanced manufacturing equipment.

In addition each fellow will complete at least one of four intensive advanced training courses detailed here:

- **Compound Semiconductor Device Fabrication (1 week)** - a hands-on fabrication based course with taught sessions on photolithography, etching, metal deposition, thermal treatments etc. that form the full compound semiconductor device fabrication process. Participants then apply these learnings by fabricating a light emitting device in Tyndall's semiconductor training laboratory.

- **Photonics Packaging (1 week)** - a hands-on course based in Tyndall's Packaging Lab, covering the theory and practice of photonic integrated circuit design and packaging, photonic wire-bonding and 3D printing, electronics packaging, foundry services and reliability testing.
 - **Biophotonics Summer School (1 week)** – an intensive high quality school held on the Swedish island of Ven, covering everything from the basics of lasers through to their application in medicine. The school includes leaders from across the world such as Prof. Richard Richardson (UC Davis) on pathology, Prof. Jes Broeng (DTU) on innovation in photonics, and Prof. Sune Svanberg (Lund) on Spectroscopy in Life Science. The 2018 school included participants from 16 countries and had 43% female participation.
- IPIC Pre-Commercialisation Programme** – designed to help researchers explore the potential commercialisation of their research through a start-up company, including activities such as market exploration, with the plan to secure commercialisation funding and/or pre-seed investment at the end of the programme. This is delivered in partnership with NDRC, currently ranked as sixth best University Business Accelerator in the World, whose supported companies have raised €192 million in follow-on investment and employ almost 1,000 people directly.

2.3 International Conferences

Fellows will present their work at leading international meetings and conferences, with each fellow expected to present a paper at least at one Europe-based conference and at one outside Europe, in the field of their project. Fellows are also expected to present a poster at the annual IPIC Industry Workshop, which will be attended by the majority of IPIC's industry partners, thereby giving them an opportunity to engage with many companies to disseminate their work and explore future career opportunities.

2.4 Secondment

Fellows will spend up to 6 months on secondment with a relevant industry partner to further their training and development, under the guidance of an industrial co-supervisor. This will expand the interdisciplinary and intersectoral nature of each fellow's research project and give you direct experience of working in a leading industrial research environment. During the secondment fellows may be based at a different geographic location to their academic host, either in Ireland or overseas in France, Germany, Spain, UK, Belgium, Netherlands or the US (see Figure 2.1). The training objectives to be achieved during the secondment will be agreed in advance and detailed in the PCDP.



Figure 2.1 Potential secondment partners

2.5 Autumn School

The school focuses on transferable skills through workshops, on-line learning and bespoke training courses delivered by internal and external providers. Fellows will attend the school once during their 2 year fellowship.

	Session 1	Session 2	Session 3
Topic	Communications & Public Engagement	Careers in Industry	Careers in Academia
Part 1	<p>Know your audience Who are you communicating with? What do you want to communicate? Pitching your talk at the right level</p> <p>Writing for the General Public How to craft a story Balancing scientific content with easy to understand language</p>	<p>Open Science Mobility across disciplines & sectors Career ambitions – do they need to change? IP management & commercialisation</p> <p>Organisational cultures beyond academia How to navigate the industrial R&D environment</p>	<p>Proposal writing Writing skills and career stages</p> <p>Publishing your work Journal and proceedings writing Strategic and informed publishing IP and Patenting – understanding protected publishing</p> <p>Mentorship and leadership</p>
Part 2	<p>Radio & TV interviews seminar Tips from journalists and scientists on how to approach a radio/TV interview How to handle questions</p> <p>Practical Workshop Improving your presence on social media Blogging; Video recording: Plan and storyboard a video</p>	<p>Understanding markets & identifying of new opportunities Industrial R&D Project management from the lab to product Know your customer – internal and external</p> <p>Entrepreneurship, starting or joining a start-up venture Creating your own opportunity Developing entrepreneurial skills</p>	<p>Funding opportunities National and International funding opportunities. Industry partnerships in a modern funding environment</p> <p>Career action plan Building an R&D profile Mentorship and networking International R&D Careers</p>

Table 2.1 Autumn School structure

2.6 IPIC Seminar Series

We invite leading academic and industrial researchers from across the globe to present their latest research. Our seminars to date:

Topic	Speaker
High Density Optical Interconnect Technology	Tom Marrapode Director, Advanced Interconnect Technology Development, Molex Optical Solutions Group, US
Applications of Optoelectronics in Facebook Hyperscale Data	Katharine Schmidtke Optical Technology strategy at Facebook
Advances in System Embedded Photonics for Hyperscale Data Centre, HPC and 5G environments	Dr Richard Pitwon University of St Andrews, UK
Porphysomes: Multimodality photonic and non-photonic nanoparticles for cancer theranostics	Dr. Brian C. Wilson University of Toronto
Photonics for Disaggregated DataCenter and Computercom Architectures	Dr Nikos Pleros Aristotle University of Thessaloniki
Silicon CMOS ASICs Incorporating III-V Devices	Prof. Eugene A. Fitzgerald Singapore MIT Alliance for Research and Technology
Challenges in the Design of Ultra-wideband Optical Fibre Communications	Dr. Lidia Galdino University College London
Light, Nanomaterials and Nanotechnology	Prof. Christophe Couteau Charles Delaunay Institute CNRS, University of Technology of Troyes

Table 2.2 IPIC seminar series lectures

Further information and session recordings can be found on:

<https://www.ipic.ie/seminar-series/>

2.7 Annual IPIC industry workshop

IPIC's Annual Industry Workshop brings together colleagues from academic centres across Ireland and our industry collaborators. It provides a great opportunity to network with our partners, to present ongoing research projects and get insights into the emerging start-up scene. The programme is completed by a poster session for PhD and Postdoc presenters.

2.8 IPIC EPE programme

Science, technology and research play a critical role in addressing the economic, social and environmental problems that we see facing the world today. This needs the support of an engaged public which appreciates the importance of science, encourages young people (our future leaders) to take science, technology, engineering and mathematics (STEM) subjects, and has the appropriate level of engagement with, and influence upon, the researchers.

Engaging with the public is of increasing strategic importance for higher education, to strengthen relevance, responsiveness and accountability and to build trust. Institutions also need to be open and transparent about what they are spending public money on – and why.

Our Education and Public Engagement programme aims to:

1. Explain science, technology, engineering and math's (STEM) breakthroughs
2. Promote STEM subjects in particular physics, engineering & photonics in education.
3. Encourage female participation in STEM subjects
4. Highlight career opportunities
5. Improve our science communication skills as scientists and researchers
6. Inspire the next generation to explore science-related careers
7. Help with the teaching and learning of STEM subjects

Fellows need to complete 2 EPE activities a year (4 in total).

3 Eligibility Criteria

Applications must fulfil all of the eligibility criteria that cover the applicant, Research Project Plan and secondment.

3.1 Applicant Eligibility

Applicants must be an experienced researcher of any nationality, age, fluent in English (written and spoken) and must either at the date of recruitment or by the deadline date of the open call, hold a doctoral degree or have at least 4 years of full-time equivalent research experience. In addition, applicants must not have resided or carried out their main activity, such as work or study, in the Republic of Ireland for more than 12 months in the 3 years immediately before the deadline date of the open call. The only exception is for individuals who are reintegrating into Europe or restarting their research career: in this case, applicants must not have resided or carried out their main activity in Ireland for more than 3 of the previous 5 years.

3.2 Research Project Eligibility

To be considered admissible, proposals must: (i) be written in English, (ii) describe the research project to be carried out during the 2-year fellowship, and the applicant's motivation for applying and potential benefits to their career advancement, (iii) be within the research area defined by IPIC and relevant to an identified *Sparkle* Principal Investigator (PI) who has provided an endorsement letter, (iv) include a secondment with one of IPIC's industry partners or industry

host proposed by fellow, with a mandatory letter of commitment from the secondment company and supervisor, (v) include an optional ethics statement (if relevant) and (vi) adhere to the ethical rules of the host organisation and EU H2020 research programme.

3.3 Secondment

Secondment to a suitable industry partner, located anywhere in the world, is a mandatory requirement of *Sparkle* fellowships and must be relevant to the applicant's project and career development. The duration of the secondment will be between 3 to 6 months and can be a single period or divided into shorter mobility periods. At the application preparation stage, the proposed Academic Supervisor and *Sparkle* Programme Manager will assist applicants to secure a high quality secondment host. They will also support you obtain the mandatory letter of commitment from the secondment organisation to include in your application.

3.4 Ethics

Sparkle will comply with H2020 ethical principles and relevant national, EU and international legislation, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights. Applicants whose projects flag ethical issues must provide additional information and documentation in the Ethics Self-Assessment section of the proposal, where you will describe how the proposal meets the EU and national legal and ethics requirements of Ireland and other countries (secondments) where the task raising ethical issues is to be carried out. The *Sparkle* Ethics Committee will review proposals that raise ethical issues, while formal ethical approval for all projects must be obtained from the host academic organisation prior to project commencement.

4. How to apply

The process of preparation an application and how it is reviewed is detailed below and summarised in Figure 4.1.

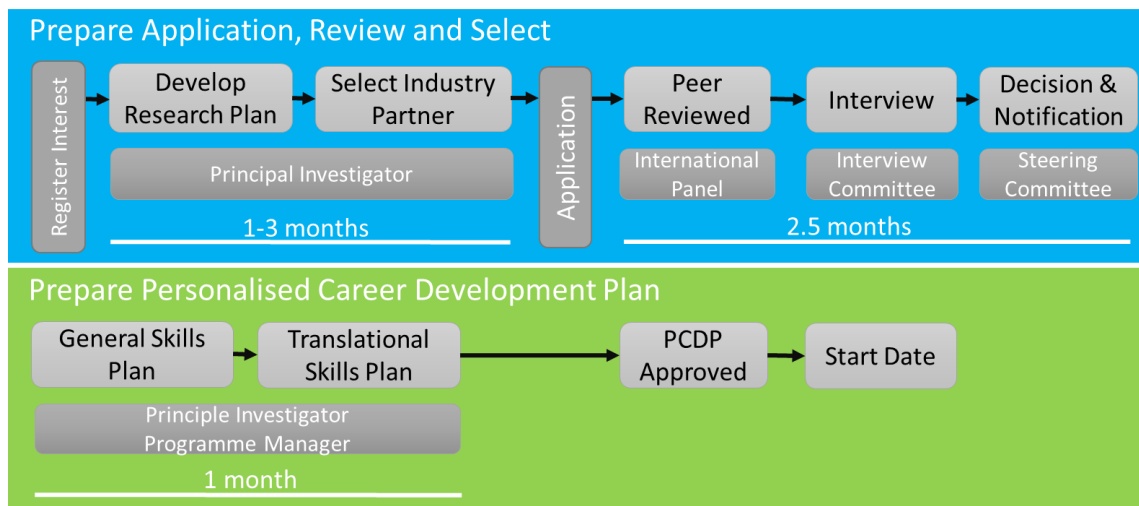


Figure 4.1 Sparkle application submission and review process

4.1 Preparing an application

The steps to prepare an application are as follows:

(all documents available to download from <https://www.ipic.ie/sparkle/>)

1. Register your interest to apply to the programme on the *Sparkle* website (Complete register interest form and send to sparkle@ipic.ie .)
2. Identify your preferred Research Area/Principal Investigator and enter into a discussion with them to develop a Research Project Plan that is presented in the Sparkle Application Form (available to download from the website)
3. Once the Research Plan is complete, select your preferred industry partner to complete a secondment with in discussion with the PI and PM. The PI and PM will approach the company and secure their agreement to host you should your application be successful
4. Obtain a letter of endorsement for your project from you supervising PI
5. Complete the remaining parts of the Application Form and submit it all documents by emailing to sparkle@ipic.ie

Application Checklist:

Please ensure to have all of the below documents for your completed application submission:

- Registered Interested Form submitted to sparkle@ipic.ie.
- Application Form completed in Full
- Letter of Endorsement from Supervisor
- Letter of Support from Industry Secondment partner

4.2 Review and Selection Process

There is one rolling Open Call to the programme with seven Cut-Off dates, where applications received in the period since the previous Cut-Off date are reviewed, ranked and the top ranked applications funded. This process is detailed in Table 4.1.

Stage	Action
1. Eligibility Check	After each Cut-Off date, applications are checked for eligibility within 2 weeks.
2. Ethics Check	Applications that include ethical issues are reviewed by the <i>Sparkle</i> Ethics Committee, which checks to ensure that any identified issues have been satisfactorily addressed in the application. If this is the case the committee then declares that the proposal is either (i) eligible as presented, (ii) requires additional information before a decision, or (iii) non-fundable under the <i>Sparkle</i> programme. Proposals with ethical clearance proceed to the next stage of the evaluation process, and any comments and/or recommendations included in the Panel Report. Those without ethical clearance are declared ineligible and applicants provided with the explanation of the grounds for ineligibility.
3. International Peer-Review	All eligible applications undergo an external international peer-review by three experts selected from an International Panel of Experts. The International Peer Review Panels evaluate each proposal against the evaluation criteria. This is followed by a remote consensus meeting by the three reviewers, attended by the PM, where they discuss the individual scores and agree the final score.
4. Ranking of Applications	Applicants are ranked by the PM on the basis of their scores from the IPRP, in descending order of scores. The PM then compiles an Evaluation Summary Report (ESR) for each application, which is be sent to the applicant, and will include the scores per evaluation criterion, the final score, and the reviewers' comments, such as strengths and weaknesses of the proposal. Between 10 and 12 of the top scoring candidates are then be invited to the next phase – a competency interview.
5. Interviews	The <i>Sparkle Interview Committee</i> (IC) consists of 3 members with diverse expertise and competence. It includes one senior PI, at least one female member and one member from the non-academic sector, i.e. industry. A Tyndall HR representative, together with the PM, also sit in on interviews and write the Interview Report (IR), including the interview score as agreed by the IC. The final application score is then calculated based on the written proposal (50% weighting) and the interview (50% weighting), a minimum threshold of 70% overall must be met for candidates to be deemed appointable.
6. Final Funding Decision	The top 5-6 scoring candidates (depending on the call round) are presented to the <i>Sparkle Steering Committee</i> who endorse the final funding decision based on the Review and Interview Panel scores and recommendations. The PM then informs the successful candidates (and their Academic Supervisors), after which the host academic partner HR department will issue a formal letter of offer. All other applications receive feedback on the outcome and their score, while 2-3 applicants are placed on a reserve list.

Table 4.1 Review and Selection process

4.3 Redress Procedure

All applicants have a right to the redress procedure if they believe that the results of the evaluation process or eligibility checks are incorrect at each stage of the selection process, within 15 working days of receiving feedback of the evaluation outcome. The redress form must be submitted to the PM, which will then be examined by the Redress Committee. This is chaired by the Project Coordinator, and composed of two independent IPIC/*Sparkle* representatives who were not previously involved in the evaluation process and are not proposed supervisors in any applications to the specific call round.

All requests for redress will be treated confidentially and the Redress Committee will either reject or accept the request. If there is clear evidence that a shortcoming has occurred, which may have impacted the funding decision, the application will be reassessed by a new IPRP, and an interview may be arranged depending on that IPRP score. If the new final score is above that of the lowest score funded in the round, the application will be funded, otherwise it will not be funded. Decisions of the Redress Committee are final.

4.4 Assessment Criteria

All eligible applications received by the Cut-Off date will be evaluated by three independent experts (i.e. the IPRP), on its scientific merits. Each expert will work independently and evaluate the proposal on the basis of the criteria presented in Table 4.2, which are in line with the MSCA Individual Fellowships programme. For each of the evaluation criteria, a number of sub-criteria will be used to help the expert reviewers decide on the quality of the proposal and the project. Evaluation scores will be awarded for “Excellence”, “Impact”, and “Quality and Efficiency of the Implementation”, with each assigned a score of between 0 and 5 (see Table 4.3), and explanatory comments added. This will all be captured in an Individual Evaluation Report (IER).

Excellence	Impact	Quality and efficiency of the implementation
Quality and credibility of the research project; level of novelty, appropriate consideration of multidisciplinary and gender aspects	Potential to enhance the future career prospects of the fellow and intersectorial level of the application	Coherence and effectiveness of the work plan , including appropriateness of the allocation of tasks and resources
Quality and appropriateness of training and of the two way transfer of knowledge between the fellow and the host	Potential impact on advancing the research and/or delivering economic impact through the commercialisation of the project technology	Appropriateness of the management structure and procedures , including risk management
Quality of supervision and of the integration in the PI, institution and secondment partner	Quality of the proposed measures to exploit and disseminate the project results	Appropriateness of the institutional environment (infrastructure)
Potential of the researcher to reach or re-enforce professional	Quality of the proposed measures to communicate	

maturity/independence during the fellowship	the project activities to different target audiences	
Weighting of Scores		
50%	30%	20%
Priority in case of <i>ex aequo</i>		
1	2	3
Overall Threshold of 70% will be applied to Total Weighted Score 3.5/5		

Table 4.2 Evaluation criteria

Score	Description
5	Excellent - Proposal successfully addresses all relevant aspects of the criterion, any shortcomings are minor
4	Very Good - Proposal addresses the criterion well, but a small number of shortcomings are present
3	Good - Proposal addresses the criterion well, but a number of shortcomings are present
2	Fair - Proposal broadly addresses the criterion, but there are significant weaknesses
1	Poor - The criterion is inadequately addressed, or there are serious inherent weaknesses
0	Proposal fails to address the criterion or cannot be assessed owing to missing or incomplete information

Table 4.3 Scoring system

4.5 Interviews

Interviews are conducted in English, via videoconferencing, and last up to 1 hour. The interview focuses on the applicant's overall potential to become a world leading researcher, your creativity, level of independent thinking and motivations, in addition to presentation and communication skills. Applicants are asked to present a short 10 minute PowerPoint presentation on their application, including an overview of the Research Project Plan, and your career development and training objectives. The presentation will be followed by a 30 minute Questions and Answers session, during which the Interview Panel ask questions relating to the application, and the motivation and ambitions of the candidate.

The candidate then has 5 minutes to ask any questions they may have on the programme and next steps. On completion of the interview, the Interview Committee scores each criterion between 0 to 5, in line with the proposal scoring system (Table 4.4). This activity is supported by the PM and a member of Tyndall HR, who observe each interview but do not take part in the discussions, and draft the Interview Report (IR). The scores are then added, applying the weightings listed in Table 4.3, and the report reviewed, approved and signed by the Interview Committee.

Presentation (0-5)	Questions and Answers session (0-5)
Quality of presentation content and organisation	Ability to respond to questions raised by expert reviewers in the Evaluation Summary Report
Quality of presentation delivery	Motivation, evaluated by knowledge of candidate on SPARKLE supervisor and research area
Quality of communication skills	Ambition, evaluated by quality of candidates' motivation and career ambitions
Weighting of Scores	
35%	65%

Table 4.4 Interview award criteria and scoring

When the interviews are complete, the PM adds up the weighted scores from the IPRP and interview processes to generate the final score for each applicant (written proposal 50% weighting and the competency interview 50% weighting), a minimum threshold of 70% overall must be met for candidates to be deemed appointable. The top 5 or 6 scoring applicants are then presented to the *Sparkle* Steering Committee, who endorse the final funding decision, including the placement of the next 2 or 3 ranked applicants on a reserve list (provided that there are sufficient candidates above the threshold score).

6. Employment

Following approval of the final funding decision, successful candidates are offered a contract of employment for the duration of the fellowship from the host academic partner. Fellows are employed under the same employment conditions as other externally funded researchers employed at the university. Applicants wishing to know the terms and conditions associated with the employment contracts should contact the host university HR department.

Employment contracts will be in line with Irish Law and the Terms of Employment (Information) Acts 1994 and 2001.

5.1 Visa information for non-EU/EEA researchers

Non-EU/EEA nationals require permission to work and/or study in Ireland. As a Sparkle fellow, you will be able to avail of a range of services offered by the EURAXESS office in Ireland.

EURAXESS provide free advice to researchers and their families coming to work/study in Ireland, this includes information on a range of issues and issues that may affect researchers, such as immigration, visas, employment law, healthcare, childcare, social services, and life in Ireland.

Further information is available directly from the EURAXESS office at <https://www.euraxess.ie/>

5.2 Financial aspects

Fellows will receive a gross salary (living and mobility allowances are included) of €40,000 per annum and those with a family will receive €45,400 per annum. Please note that salaries received by the fellow will be liable for taxes and/or other deductions. Information on Irish taxation can be found at the Office of Revenue Commissioners website at www.revenue.ie. Contributions towards the cost of conducting the research (e.g. consumables, travel) and towards training/development activities will be provided by the *Sparkle* programme.

The mobility and family allowances are a constituent of the Fellow's salary in addition to the living allowance, and is provided to compensate for the cost of the required personal and household relocation of the Fellow and their dependents.

Family is defined as persons linked to the Fellow by (i) marriage, or (ii) a relationship with equivalent status to a marriage recognised by the legislation of the country where this relationship was formalised; or (iii) dependent children who are actually being maintained by the Fellow. Qualification for this allowance is at the time of recruitment.

7. Living in Ireland

Ireland has been renowned for music, literature and art for centuries. It's world-famous for its friendly citizens and warm welcomes. Stroll West Cork's beaches, hike the peaks of Kerry, surf the waves off Sligo, dance to a traditional band in Galway or gallery-hop around Dublin. Explore centuries-old castles and millennia-old passage tombs. Rated by leading travel guides as one of the top holiday destinations in the world, Ireland is also rated as one of the world's safest countries by the Global Peace Index.

Further information on moving to and living in Ireland can be found here:

- https://www.citizensinformation.ie/en/moving_country/moving_to_ireland/coming_to_live_in_ireland/

8. Contact Details

All details of the Sparkle programme and contact information are available on the website - www.ipic.ie/sparkle/

If you require further details or points of clarification please contact the Sparkle Programme Manager, Elisabeth Wintersteller who is running a support helpdesk for all applicants and fellows throughout the programme, via email at sparkle@ipic.ie. The helpdesk will support information such as:

- The application
- Eligibility criteria
- Submission procedure
- Suitability of a proposed Research Project