



Periodical Training Activities Report (3/3)

Deliverable 2.6 - PUBLIC

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Executive Summary

The Report on Periodic Training Activities is Deliverable 2.6 of the QUANTIMONY project. It is the last of the three reports on scientific and transferable skills training activities that must be uploaded in M16, M28 and M40, as described in our DoA for Work Package 2: “Training and Supervision”.

This deliverable has been drafted by the Head of the Academic Advisory Board & Supervisory Board as well as Leader of Work Package 2, Manus Hayne (ULANC) and the Network Coordination Office of the project.

This document reflects the execution of the training and secondment plans, the completion of the final PCDPs, and reports on the training activities organised by the consortium, as well as on the external training activities attended by the ESRs.

I. ESRs PhD Progress

By September 2024, ten ESRs have finished their recruitment and fulfilled the initially planned 36 months training period within QUANTIMONY. Three ESRs will complete 36 months by November. ESR2, Fernanda Malato completed 23 out of 36 months at ICMM-CSIC (Spain) before accepting a job in a company in Netherlands. Simone Privitera took her ESR position on September 2023 aiming to complete a 14 months training period at IMN-CSIC (Spain). Both situations were agreed by the Management Board and the REA Project Officer, and communicated to the Supervisory Board. Simone completed seven months of training within QUANTIMONY before winning a three-year Marie Curie scholarship in Barcelona in April 2024. Since this happened after month 36 of project execution, no further recruitment has been implemented according to QUANTIMONY contingency plan.

By September 2024, the QUANTIMONY ESR cohort have completed 492 out of 504 person-months initially planned. By the end of the project this figure will result in a 98.21 % completion of the recruitment plan:

RECRUITMENT		ENROLMENT		RECRUITMENT/ENROLMENT/PERSON MONTHS			
				2021	2022	2023	2024
ESR1 - CSIC	Giulia Barbieri	UPM					100%
ESR2 - CSIC	Fernanda Malato	UPM				64%	
ESR2 - CSIC	Simone Privitera	UPM					5%
ESR3 - UPM	Malte Schwarz	UPM					96%
ESR4 - ULANC	Ku-Gin Kim	ULANC					100%
ESR5 - ULANC	Gizem Acar	ULANC					100%
ESR6 - UOW	Francisco C. Alvarado	UOW					94%
ESR7 - TUE	Aurelia Trevisan	TUE					100%
ESR8 - TUE	Julian Zeman	TUE					100%
ESR9 - TUB	Janis Legutky	TUB					94%
ESR10 - UWUE	Borislav Petrovic	UWUE					100%
ESR11 - UNITOV	Anh Loan Phan	UNITOV					100%
ESR12 - AIXTRON	Huzefa Hajrudin	ITWM BACHEN					100%
ESR13 - IQE	Chen Liu	CARDIFF					100%
ESR14 - nextnano	Takuma Sato	TUM (new)					100%

Table 1- ESR date of recruitment and PM progress in green. University and date of enrolment in a PhD program in yellow.

II. Secondment Plan execution

Each ESR had to go on secondments **to the laboratory of other beneficiaries or partners for a total period of around 7 months**. We carefully designed this important aspect of QUANTIMONY to allow all ESRs to benefit from the complementary expertise of diverse participants in different countries. The initial plan shown in Table 1 was jeopardized by the impact of COVID 19 during the first two years of QUANTIMONY. This notwithstanding, the cohort of ESRs has travelled frequently, not only to foster cross-fertilizing ideas and career development, but to carry on collaborative work towards the completion of the scientific objectives of the project, as detailed in the scientific deliverables.

Table 1.2a: Recruitment Deliverables per Beneficiary. Planned start month: 06. Duration (months): 36						
ESR No.	Recruiting Participant	Research Theme	Secondment Beneficiary/Partner (Months)			
1	CSIC (ES)	Spin-Photon Interfaces	NEXTNANO (1)	TiberLab (1)	ULANC (3)	TUE (2)
2	CSIC (ES)	Synchrotron Nanoprobes	Bruker(2)	ESRF (2)	MAX-IV (2)	TPS (2)
3	UPM (ES)	Solar Cells	Fluxim (2)	UWUE (2)	ULANC (2)	UOW (2)
4	ULANC (UK)	III-Sb Memory Arrays	IQE (2)	UWUE (2)	UOW (2)	CSIC/LSF (1)
5	ULANC (UK)	Single Photon LED	NEXTNANO (1)	TUE (2)	CSIC (2)	TUB (2)
6	UOW (UK)	TEM Microscopy	LMA(2)	UCA (2)	TUE (2)	CSIC/LSF (1)
7	TUE (NL)	STM/APM Microscopy	AIXTRON (2)	ULANC (2)	UOW (2)	CSIC/LSF (1)
8	TUE (NL)	Magnetic ETB Methods	QuantCAD (2)	UWUE (2)	UNITOV (2)	TUB (2)
9	TUB (DE)	Inverse Design Methods	TiberLab (2)	ULANC (2)	TUE (2)	UNITOV(2)
10	UWUE (DE)	MWIR Lasers	nanoplus (3)	NEXTNANO (1)	UPM (2)	CSIC/LSF (1)
11	UNITOV (IT)	III-Sb multiscale simulation	NEXTNANO (1)	TUE (2)	TUB (4)	
12	AIXTRON (DE)	Reactor Design	IQE (3)	TUB (2)	UCardiff (2)	
13	IQE (UK)	Wafer Tech/LWIR Detectors	NEXTNANO (1)	UWUE (2)	UCardiff (2)	UOW (2)
14	NEXTNANO (DE)	Nanodevice simulation	UWUE (2)	ULANC (2)	UNITOV (2)	TUB (2)

Table 2- Secondment Plan as in Grant Agreement

The list of executed secondments is presented in Table 3. Most of the ESRs (8/14) visited at least three different network nodes covering different disciplines and four of them visited four different nodes. The

overall number of secondments reached 55.1 person-months (out of 103 initially planned). Out of them, as initially planned, ~ 82% involved an international secondment, ~38% an interdisciplinary training and ~36% a research experience in a different sector. Thanks to the multi-sectoral composition of our network, ten out of fourteen ESRs were able to perform intersectoral secondments shown in bold.

Table 3- Secondment plan executed

Secondment Plan Executed								
		M1	M2	M3	M4	M5	M6	Completion
ESR1 - CSIC	Giulio Barbieri	nextnano	TUB	UWUE				51%
ESR2 - CSIC	Fernanda Malato	ESRF		UOW				50%
ESR3 - UPM	Malte Schwarz	ESRF	Fluxim	UWUE				81%
ESR4 - ULANC	XiuXin Xia	ESRF	UOW					29%
ESR5 - ULANC	Gizem Acar	nextnano	CSIC					28%
ESR6 - UOW	Francisco C. Alvarado	ESRF	TUE	UCA				46%
ESR7 - TUE	Aurelia Trevisan	ULANC		ESRF	UOW			63%
ESR8 - TUE	Julian Zanon	UWUE		QuantCAD		UNITOV	TUB	81%
ESR9 - TUB	Lucie Leguay	nextnano	UNITOV	ULANC	TUE			46%
ESR10 - UWUE	Borislav Petrovic	nanoplus			nextnano			58%
ESR11 - UNITOV	Anh-Luan Phan	nextnano	TUE	TUB		UPM		87%
ESR12 - AIXTRON	Husejini Hajrudin	TUB						6%
ESR13 - IQE	Chen Liu	U Cardiff						87%
ESR14 - nextnano	Takuma Sato	UNITOV	nextnano lab	ULANC	UWUE			32%
	WP1: Fabrication	WP2: Characterization		WP3: Theory		WP4: Up-Scale		

Whenever the initial secondment plan had to be changed to cope with the actual scientific needs of the ESR work and /or different contingencies, the ESRs were instructed to fill a dedicated secondment change request form asking for permission from the Head of the Supervisory Board, Manus Hayne (ULANC). Given the length of time between proposal submission, grant agreement, ESR recruitment and execution of the secondment plan, such changes are to be expected. By September 2024, there had been five secondment change requests, all of which were fully justified in terms of ESR’s research projects and training, and approved by both the Head of the Supervisory Board and the REA Project Officer. A secondment change request was not required for uncompleted secondments. Evidently, none of the ESRs completed 100% of their secondments, and the average was 53%, so in retrospect it was clear that the original plan, which committed an average of 20% of the ESRs time to secondment was too ambitious, especially given the unforeseen complications of the COVID pandemic.

III. Personal Career Development Plans (PCDP)

ESRs are required to have a personal career development plan (PCDP) to guide and also to document their research and training to help achieve career goals. PCDPs are checked twice a year by a Progress Committee (PC) and two times during the project execution by the Academic Advisory Board (AAB) as is foreseen in the QUANTIMONY training and supervision programme. PCs are composed of an International Supervisory Team (formed by the main supervisor, the local co-supervisor, and an international supervisor), an inter- sectoral supervisor and an ESR acting as Chair.

The PCDP is a core aspect of MSCA-ITNs, and the EC provides a template for it, which was included as Attachment 4 of the QUANTIMONY Consortium Agreement. The PCDP template used in QUANTIMONY is adapted from the EC model, and has been approved by the Academic Advisory Board (AAB). There are three PCDP templates, one for the initial PCDP, one for reviews and one for the final PCDP. The idea is that the initial PCDP is appended by the reviews and the final PCDP to document the ESR’s career goals and plans, how these are progressing, and to create a dossier of the activity of an ESR. The review template has fields where seminars, conferences, courses etc. can be added. The intention is that it will be a resource when preparing a CV, completing a job questionnaire or writing a fellowship application.

The PCDP preparation and review process, as organised by the AAB, was as follows:

1. The PCDP template is completed by the ESR, reviewed by the local supervisors, and iterated as required. It is then sent the international supervisor for comment and signed by the ESR and main supervisor.
2. Progress Committee (PC) meetings are held online and consist of a short talk (20 mins) by the ESR, followed by questions and discussion. Any comments of the PC on the initial PCDP are immediately added to the document and finally signed by the PC chair.
3. The signed PCDPs are gathered by the AAB Head and the QUANTIMONY Network Coordination Office to ensure that they are centrally recorded as complete.
4. In the case of the first and third PCDP review, the AAB reviews the PCDPs and issues a report for each ESR that is sent to the main supervisor for consideration. These reviews must be uploaded to the participants portal as Deliverables 2.1 and 2.3.

The 14 QUANTIMONY ESRs submitted their initial Personal Career Development Plan (PCDP) on December 2021, their first review on April 2022, the second review on November 2022, the third review on April 2023, and the final PCDP version on October 2023. The PCDPs were discussed by the AAB in May 2022 and in June 2023. Their reflections and recommendations, as well as the signed PCPD portfolios were uploaded as Deliverables 2.1 and D2.2 in June 2022 and 2023 respectively.

Table 4- PCDP review processes for project duration

	Y1		Y2		Y3
	Initial PCDP	Review PCDP	Review PCDP	Review PCDP	Final PCDP
PC Review	DONE	DONE	DONE	DONE	DONE
AAB review		DONE		DONE	

Incidences and PCDP Amendments:

Incidences such as changes in secondment plans, ESR resignations or changes of main supervisors have been treated within the AAB and according to its internal procedures for such cases.

IV. Training Activities

Table 5 below lists the participation of ESRs and beneficiaries in both consortium and externally-organised training activities. All ESRs have attended all the consortium events organized since their recruitment, as well as a total of 76 external training activities, of which 10 are trainings and 66 are participations in conferences/workshops for either networking purposes or as speakers.

Table 5- Participation to training activities of ESRs and Beneficiaries

		Participation to training activities													
		CSIC1	CSIC2	UPM	ULANC	UOW	TUE	TUB	UWUE	UNITOV	AIXTRON	IQE	nextnano	total/cat	
Quantimony event	KickOff Meeting	2	2	2	3	1	3	1	3	1	1	2	2	23	
	1st IISb W. ESR Checkpoint	1	2	1	2	2	2	1	3	2	2	2	3	23	
	Industry Day - AIXTRON	4	3	4	11	1	4	1	1	2	3	2	7	43	
	Transf. Skills Training & AAB I -ULANC	3	2	2	5	2	2	1	2	2	2	2	4	29	
	Summer School I -UPM	5	1	16	6	1	2	1	2	2	1	1	1	39	
	2nd III-Sb W. & ESR CheckPoint -TUE	4	1	2	4	1	5	1	1	2	2	1	4	28	
	Winter School -TUB	4	2	2	5	1	2	4	2	1	1	1	7	32	
	Transf. Skills Training & AAB II -ULANC	4	2	2	5	1	3	1	2	1	1	2	1	25	
	Open School - IQARUS- CSIC	3	2	3	3	3	4	1	2	2	2	2	2	29	
	3rd III-Sb W, & ESR Checkpoint - UNITOV	5	0	1	4	2	3	1	2	3	2	1	5	29	
	Industry & Career Day - IQE	4	0	3	2	1	2	1	1	2	2	4	5	27	
	Final Workshop -OUW	3	0	2	3	4	3	1	2	2	2	2	4	28	
External	training activity/course	1	1	2			1			4			1	10	
	conference/Workshop-attendance/networking	3	5	2	1			5	1	4				21	
	conference/Workshop- oral participation	3		1	15	4	3	8	5			1	5	45	
	other														
Total/node		49	23	45	69	24	44	23	29	30	21	23	51	TOTAL	431

Table 6 shows the training outputs as reported in the self-reporting tabs of the Funding and Tenders Portal. These numbers are used by EC officials for statistical purposes but also help us determine the quality of our training program.

Training outputs in F&T Portal	
Output	Number
Training	12
Participation in a conference	50
Participation in a workshop	16
Participation in an event other than a conference or a workshop	365
Other	

Table 6- Training outputs reported in the F&T portal

1. Training Activities organized by the consortium

During the implementation of QUANTIMONY’s training program there were 17 training activities organised by the consortium, distributed in 12 different events.

Table 7- Training activities organised by the consortium

Network Activities Schedule					
Title	Date & Duration	Type	Type of Skills imparted (reported to the F&T portal)	N. of ESRs	Total attendants
1 st Annual III Sb Workshop	9 Dec 2021- 1d	Hybrid	Technical research skills - III- Sb semiconductors; fabrication aspects	14	31
1/3 ESR Checkpoint	7-8 Dec 2021- 1.5d	Hybrid	Career development, general knowledge in the research field of III Sb semiconductors, technical research skills	14	31
Industry Day @AIXTRON	18 March 2022- 1d	online	Entrepreneurship, commercialisation of research outputs, technical research skills.	14	57
1/2 Transferrable Skills Meeting	20-21 April 2022-1.5d	Hybrid	Transferable Skills: project management, reserach ethics, impact communication	14	16
1/2 AAB review Meeting	21-22 April 2022-1.5d	Hybrid	Annual AAB meeting	14	35

Summer School	11-15 July 2022- 4.5d	Hybrid	Technical research skills: multidisciplinary aspects of modern III Sb technology. Characterisation techniques with focus on optical properties and methods.	14	72
2nd Annual III Sb Workshop	28 Oct 2022 - 1d	Hybrid	Technical Research skills - III - Sb semiconductors; characterisation aspects	14	34
2/3 ESR Checkpoint	26-27 Oct 2022 - 1.5d	Hybrid	Career development, general knowledge in characterisation of III Sb semiconductors, technical research skills	14	34
Winter School	27 Feb- March 3 2023 - 4.5d	Hybrid	Technical Research Skills: modelling of non-volatile memories	14	61
2/2 Transferrable Skills Meeting	19-20 April 2023 - 1.5d	In person	Transferable Skills: writing funding proposals, career advice	14	16
2/2 AAB review Meeting	20-21 April 2023 - 1.5d	Hybrid	Annual AAB meeting	14	33
3rd Annual III Sb Workshop	16 -18 October 2023 - 1d	Hybrid	Technical Research skills - III - Sb semiconductors; simulation tools	14	16
3/3 ESR Checkpoint	16 -18 October 2023 - 1.5d	Hybrid	Career development, General knowledge in characterisation of III Sb semiconductors, Technical Research Skills	14	16
Industry Day @ IQE	14 March 2024 - 1d	Online	Career development (CV and Interview training), Entrepreneurship, technical research skills: Large-scale industrialisation challenges	14	34
Extraordinary Transferable Skills Training	24 April 2024- 0.5d	Hybrid	Transferable Skills: Commercialisation of research outputs and intellectual property rights	13	13
Extraordinary Annual AAB Meeting	24-25 April 2024 - 1.5d	Hybrid	Annual AAB meeting	13	30
IQARUS	1-3 July 2024 - 3d	In person	International Workshop on Quantum Antimonides Research & Upscaling - General Knowledge on the Research Field.	13	46

The [1st III-Sb Annual Workshop & ESR Checkpoint](#) (7-9 December 2021), was organised by Jülius-Maximilian University in Würzburg and hosted as a hybrid online/onsite event due to COVID restrictions.

This was the first of a series of four annual training events for our doctorate students, each providing hands-on training in different aspects of the QUANTIMONY research programme. Their objective was to broaden general knowledge of III-Sb science and technology among our doctorate students, facilitating their understanding of the state-of-the-art and of technical challenges, and to encourage multidisciplinary collaboration within the network.

This first training event was an introduction to the field, and included lectures about past and present III-Sb technologies and the challenges posed by their fabrication, as well as and presentations by the 14 doctoral students of the network on their research topics.

List of speakers:

- Prof. Dr. Michael Heuken (Vice President Advanced Technologies at AIXTRON)
- Dr. Martin Kamp (Würzburg University)
- Dr. Stefan Birner (nextnano GmbH)



Figure 2- Lab visits at Würzburg University

The event attendants went to practical demonstrations and lab visits at the nanofabrication facilities available at Würzburg University and nearby consortium members nextnano GmbH and nanoplus

GmbH.

The Industry Day at AIXTRON (18 March, 2022), organised by AIXTRON as an online event due to COVID restrictions in place at the company's premises. This event brought representatives of our project partners' spin-offs, SMES and large companies, as well as external companies to share with our PhD students their experience in diverse application fields. The discussions gave great insights into the opportunities and challenges of the modern semiconductor industry and what is demanded in high-level Tech positions.

List of speakers:

- Dr. Bernd Schineller (AIXTRON SE)
- Dr. Lutz Bruegemann (Bruker AXS GmbH)
- Dr. Robert Weih (nanoplus Nanosystems and Technologies GmbH)
- Dr. Zhi Gang Yu (QuantCAD LLC.)
- Dr. Urs Aeberhard (Fluxim AG)
- Dr. Alex Robson (Lancaster Material Analysis Ltd.)
- Dr. Thomas Grange (nextnano Lab SAS)
- Dr. Joachim Rest (Laytec AG)
- Dr. Martin Strassburg (ams OSRAM)

The Transferable Skills Training & AAB meeting (20 -22 April, 2022) took place as a hybrid online – onsite event hosted by Lancaster University.

The first Transferable Skills Trainings (20 to 21st April) consisted of three half-day training modules on Research Project Management, Impact communication and Research Ethics. They were imparted by Dr. Katy Mahoney, an expert Researcher Coach from Vitae (CRAC Ltd.). Online and onsite attending ESRs listened to presentations, discussed, debated and worked on collaborative online/paper tools.

The AAB meeting gave the chance for ESRs to present their research work and their training plans up until date to the consortium, in a series of 30-minute presentations. The meeting also included the following guest speakers:

- Prof Mike Wale (Department of Electronic and Electrical Engineering, UCL)
- Prof Tao Wang (Department of Electronic and Electrical Engineering, U. Sheffield)
- Dr Andy Marshall (Department of Physics, Lancaster University)



Image 2 - Onsite attendants to the AAB meeting at Lancaster University

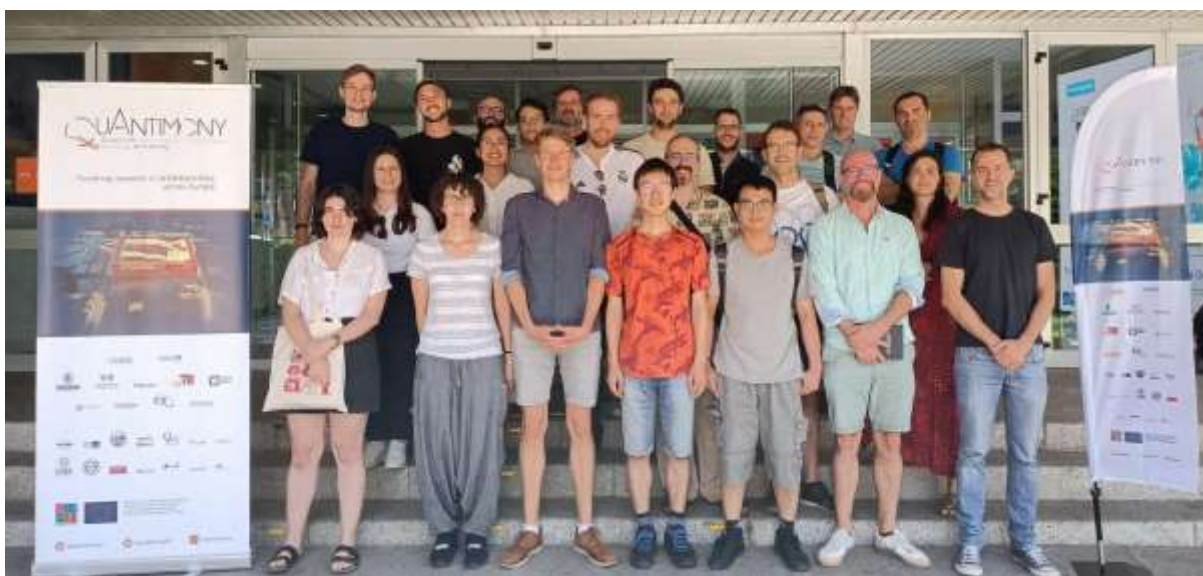
The Summer School on III Sb applications: solar cells (11-15 July 2022) was organised by the Universidad Politécnica de Madrid as a hybrid event, with online lectures and tutorials open to non-consortium members and broadcasted online, and afternoon lab and simulation sessions exclusive to QUANTIMONY's ESRs. The school provided training and insight into the fundamentals of photovoltaics and the role of antimonides. Renowned experts in the field of photovoltaics presented tutorials and talks introducing the fundamentals of the field, its challenges and the most recent advances in key areas covering Silicon, III-V and multi-junction solar cells and emerging technologies.

The invited speakers were:

- Prof. Carlos Algora (Solar Energy Institute, UPM)
- Prof. Franz-Joseph Haug (PV-lab - EPFL, Switzerland)
- Prof. Stephane Collin (C2N -CNRS, France)
- Prof. Mircea Guina (Optoelectronics Research Center, Tampere University)
- Prof. Ned Ekins-Daukes (University of New South Wales Sydney)
- Dr. Victor López Richard (Universidade Federal de Sao Carlos)
- Dr. Urs Aeberhard (Fluxim AG)
- Dr. Jerónimo Buencuerpo (IPVF/C2n -CNRS)
- Dra. Alicia Gonzalo (Universidad Carlos III)
- Dr. Diego Alonso (Imperial College London)
- Dr. Íñigo Ramiro (Universidade Nova de Lisboa)
- Dra. Raquel Caballero (UAM)

The lab sessions on Fluxim's Setfos and SolCore were held exclusively for Quantimony's ESRs.

Image 3- Summer School attendants



The 2nd III-Sb Workshop and ESR Checkpoint (26-28 October 2022) were organised as hybrid event by Eindhoven University of Technology. The workshop focused on characterization of III-Sb materials by different techniques and their structural, electronic and magnetic properties and included practical demonstrations in nano-characterization techniques available on-site. The ESR Checkpoint allowed ESRs to present the progress of their research to the consortium.

The workshop's speakers were:

- Prof Paul Koenraad (Technical University of Eindhoven)
- Prof Michael Flatté (University of Iowa)
- Prof. Claudia Fleischmann (imec, KU Leuven)
- Dr Martin Paul Geller (University of Duisberg)
- Dr Andrew Marshall (Lancaster University)

The event's attendants also had the chance to visit the premises of ASML, the world's leading provider to the semiconductor industry.



Fimage 4 - Visit to ASML in Eindhoven

[The Winter School on III-Sb applications: non-volatile memories – a modelling perspective](#) (27 Feb - 3 March 2023) focused on the design and scalable production of a new III-Sb patented memory device (ULTRARAM™). There was a combination of specialised onsite and online lectures opened to non-consortium attendants, and hands-on simulation sessions as well as live demonstrations of the latest TCAD/EDA tools organised by the Technical University of Berlin. The event provided an excellent opportunity for networking with leaders in the field.

List of speakers:

- Manus Hayne, Lancaster University
- Dieter Bimberg, Technische Universität Berlin
- Petr Klenovský, Masaryk University, Brno
- Wladek Grabinski, MOS-AK Association (EU)
- Vihar Georgiev, James Watt School of Engineering, Glasgow
- Uwe Bandelow, WIAS Berlin
- Claudia Draxl, Humboldt Universität Berlin
- Rabea Pons, Comsol, Göttingen
- Mathieu Luisier, ETH Zürich
- Thomas Hammerschmidt, Interdisciplinary Centre for Advanced Materials Simulation (ICAMS)
- Marc Bescond, Faculté des Sciences de Saint Jérôme, NQS group, Marseille
- Chetan Gupta, Micron Technology (R&D)
- Jannik Wolters, Deutschen Zentrum für Luft- und Raumfahrt / TU Berlin



Image 5- Q&A session at the Winter School

The 2nd Annual AAB meeting & Transferable Skills training (19-21 April 2023) The second Annual AAB meeting and Transferable Skills Training took place as a hybrid online–onsite event hosted by Lancaster University.

The Transferable Skills Training (19-20 April) consisted of two training modules on *Career Choices* (1 day) and *Making effective grant applications* (half-day). They were imparted respectively by Dr. Alina Congrave and Dr Helen Hampson, expert Researcher Coaches from Vitae (CRAC Ltd.). Online and onsite attending ESRs listened to presentations, discussed, debated and worked on collaborative online/ paper tools.

The AAB meeting gave the chance for ESRs to present their research work and their training plans up until date to the consortium, in a series of 30-minute presentations. The meeting also included presentations by the following guest speakers:

- Dr Manoj Kesaria (Cardiff University)
- Prof Dr Jaime Gómez Rivas (Eindhoven University of Technology)
- Dr Javier Palomares (Institute of Material Sciences of Madrid ICMM- CSIC)



Figure 6- Group photo at 2nd Annual AAB meeting

The 3rd III-Sb Workshop and ESR Checkpoint (October 16-18, 2023) took place as a hybrid event at

the Centro di Congressi Cavour in Rome, hosted by the Tor Vergata University. The workshop focused on various aspects of simulation tools, including machine learning, k-p-based modeling, and BTE/drift-diffusion simulations. It also featured a hands-on session with the nextnano, TiberCad, and QuantCad simulation software tools. The ESR Checkpoint allowed ESRs to present the progress of their research to the consortium.

The workshop's speakers were:

- Prof Alesion Gagliardi (Munich University -TUM)
- Prof Michael Flatté (QuantCAD)
- Dr Michele Goano (Politecnico di Torino)
- Dr Alessandro Pecchia (CNR – ISMN)



Figure 7-closing session of ESR Checkpoint in Rome

[The Industry and Career Day @IQE](#) (Mar 14, 2024) was organised by IQE plc. as fully online event due to access restrictions to the company's premises. This second edition of the Industry and Career Days brought together Early-Stage Researchers (ESRs), PhD students, and industry representatives from various sectors—including spin-offs, SMEs, and larger companies—to discuss cutting-edge semiconductor technologies and career opportunities.

The event covered a wide range of topics relevant to the semiconductor industry, such as III-V epitaxial wafer market opportunities, advancements in antimonide epitaxy, and in-situ monitoring for quantum epitaxy. Participants benefited from insights into the challenges of industrial-scale semiconductor research and technology, with a particular focus on techniques like SIMS and other quantum device analysis tools. A dedicated session on career planning, led by IQE HR, addressed crucial elements of career development, such as CV preparation and interview skills for high-level tech positions.

The speakers for this event were:

- Dr. Iwan Davies (IQE plc)
- Dr. Qiang Li (Cardiff University)
- Prof. Richard Beanland (Integrity Scientific)
- Dr. Marcello Binetti (LayTec GmbH)
- Dr. Peter Hodgson (Quinas Ltd)

- Dr. Alison Chew (Loughborough Surface Analysis Ltd).

The Extraordinary Annual AAB Meeting & Transferable Skills Course (April 24-25, 2024) According to the QUANTIMONY Grant Agreement, Annex 1, University of Warwick had to organize on M41 the Final QUANTIMONY Workshop to provide a structured project wrap-up in the form of an "international, 2-day workshop where ESRs could present key project findings to the broader scientific community to raise awareness of new III-Sb semiconductor technology options and to encourage research and development in III-Sb quantum materials and devices". However, the Consortium's Management Board, in agreement with the SB Head, decided that the Open School, to be initially held on M32, shall be celebrated on the last year of the project as a three-day international workshop, and that it would be more beneficial for the ESRs to present their progress to the AAB and their peers in Warwick in preparation for the said Open School. This also allowed us to organize a dedicated soft skill training session focusing on Intellectual Property (IP) rights and their exploitation—a topic that had not been addressed in previous training events.

Thus, an Extraordinary AAB Meeting & Transferable Skills Course was hosted by the University of Warwick in Coventry, UK, on April 24th and 25th, 2024, as a hybrid event. It was organized following the format and structure of similar events organised in April 2022 and 2023 by Lancaster University, but there was no revision of the PCDPs by the AAB, given that ESRs were approaching the end of their recruitment periods.

The first day (24 April) began with a Transferable Skills Training session focused on Intellectual Property (IP) and its exploitation, delivered by experts from the Technology Transfer Office of the University of Warwick. This 3-hour workshop covered essential topics such as types of IP, patentability, commercialization, and the importance of know-how. ESRs engaged in hands-on activities, including drafting a basic business plan for selected research projects.

The Academic Advisory Board (AAB) Meeting gave ESRs the opportunity to present their research progress to the consortium. Presentations focused on various aspects of III-Sb technology, with contributions from both ESRs and guest speakers. The meeting featured talks on advanced topics like antimonide photodetectors, materials fabrication, and quantum transport in III-Sb devices.

Invited speakers to this event were:

- Dr. Xin Yi (Heriot-Watt University)
- Dr. Jo Shein Ng (Sheffield University)
- Dr. Gavin Bell (Warwick University)



Figure 8 - UOW lab visit

IQARUS – International Workshop on Quantum Antimonides Research & Upscaling (1-3 July, 2024) As per the QUANTIMONY Grant Agreement, Annex 1, the Open School was intended to take place on the summer of 2023 and have a duration of 5 days. Furthermore, it should have a large lecture component and be open to participation from the wider research and industrial community, building towards the launch of a specialist conference series, either stand alone or as a parallel session of a major semiconductor conference. The Consortium's Management Board and Supervisory Board agreed to organize the Open School the last year of ESR recruitment instead of 2023 to allow ESRs more time to have more mature results. It was also agreed to organize the event as a stand-alone workshop, and

encourage outside participation without enforcing participation fees.

The Open School was finally organized by CSIC as the 3-day International Workshop named “IQARUS: International Workshop on Antimonides Research and Upscaling”. It took place on site exclusively at the Kursaal Congress Center in San Sebastián, Spain, from July 1st to 3rd, 2024. A dedicated website (<https://iqarus.org>) and visual identity were developed for IQARUS to increase its visibility before and after the event and to ensure seamless participation and organization. The three-day event showcased presentations on cutting-edge research and developments in antimonide quantum materials, with contributions from 12 renowned invited speakers, oral presentations from the 13 ESRs from the consortium and a poster session that provided an interactive platform for discussing ongoing research.

In a unique approach to the organization, ESRs were actively involved in the planning and execution of the event, gaining practical experience by suggesting and inviting speakers.

The invited speakers for IQARUS were:

- Ramón Aguado (Instituto de Ciencia de Materiales de Madrid, ICMM-CSIC)
- Carlos Algora (Universidad Politécnica de Madrid)
- Dieter Bimberg (CIOMP Changchun & TU Berlin)
- Christopher Broderick (Tyndall National Institute)
- Denis Cándido (University of Iowa)
- Daniel Fernández Reyes (Universidad de Cádiz)
- Fernando González Posada (University of Montpellier)
- Teemu Hakkarinen (University of Tampere)
- Fabian Hartmann (University of Wuerzburg)
- Manoj Kesaria (University of Cardiff)
- Marcin Motyka (University of Wroclaw)
- David Ramos (IR-Nova AB)
- Rainer Timm (University of Lund)
- Robert Weih (Nanoplus GmbH)



Figure 9- QUANTIMONY consortium and IQARUS attendants at the Kursaal

The event had 46 total attendants; 27 from QUANTIMONY beneficiary organisations, 5 from partner organisations, 12 invited speakers and 3 other participants. Representatives from 9 external organisations attended the event.

Participation of Partner Organisations and external organisations in consortium events

The following tables show that there was a good level of participation of partner and external organisations in the trainings events organised by the consortium during the 3 years of project execution, both as speakers (S) and as attendants (A). 14 of 16 partner organisations and 51 external organisations have attended at least 1 consortium event.

Table 8- Participation of PO members in consortium events

	Partner Organisations Participation															
	Bruker	nanoplus	LMA	Tiberlab	QuantCAD	Fluxim	Max IV	ESRF	NSRRC	Ucardiff	UCA	UFSCAR	nextnanoLab	TUM	Quinas	RWTH
KickOff Meeting			S	S	S	S		S		S	S	S				
1st IISb W. ESR Checkpoint		S						A		A		A			A	
Industry Day - AIXTRON	S	S	S		S	S		A		A	A				S	
Transf. Skills Training & AAB I -ULANC																
Summer School I -UPM						S		A		A		S			A	
2nd III-Sb W. & ESR CheckPoint -TUE								A		A		A				
Winter School -TUB		A										A				
Transf. Skills Training & AAB II -ULANC					A					S					A	
Open School - iQARUS- CSIC		S			A					S	S				A	
3rd III-Sb W, & ESR Checkpoint - UNITOV				S	S											S
Industry & Career Day - IQE		A								S						S
Final Workshop -OUW																

	External Organisations Participation													
	KickOff	1 III-Sb W	Ind Day 1	transf Skills I	AAB meeting	Summer Sc.	2 III Sb W.	Winter S.	transf Skills II	II AAB meeting	IQARUS	3 III Sb W	Ind Day 2	Final W.
OSRAM (EAB)			S										S	
Laytec			S						S					
Vitae				S										
University College London					S									
University of Sheffield					S									S
Imperial College London						S								
UAM						S								
U. Carlos III						S								
Tampere U						S								
U. New South Wales						S								
IPVF						S								
EPFL, Switzerland						S								
C2N - CNRS						S								
Universidade Nova Lisboa						S								
Yachay Tech						A								
CIMAV						A								
Escuela Politécnica Nacional (Ecuador)						A								
Sistemas de Seguridad S.A.						A								
IMEC							S							
U Duisburg Essen							S							
Masaryk University								S						
MOS-AK Association								S						
James Watt School of Engineering								S						
WIAS Berlin								S						
Humboldt Universität Berlin								S						
ETH Zürich								S/A						
Faculté des Sciences de Saint Jérôme								S						
Micron Technology								S						
Iiitdm Chennai (India)								A						
Ajou University (Korea)								A						
Global Academy of Technology, Bangalore								A						
Fraunhofer Institute HHI								A						
University of Oulu								A						
University of Glasgow / IBM research								A						
Acharya Nagarjuna University								A						
Photin								A						
Comsol								S						
ICAMS								S						

Politecnico di Torino														
CNR – ISMN												S		
Integrity Scientific													S	
LSA ltd.													S	
Heriot-Watt University)														S
Tyndall National Institute											S			
University of Iowa											S			
University of Montpellier											S			
University of Tampere											S			
University of Wroclaw											S			
IR - Nova AB											S			
Lund University											S			
University College Cork											A			

Table 9 – External organisations attending consortium events

2. External Training activities attended

ESRs are encouraged to attend external training events, workshops and seminars, either organised by their hosting institution or externally organised activities.

Participation is reported to the Network Coordination Office via online report forms. The next table contains the attendance to external training activities reported by ESRs since their enrolment until October 1st 2024: be it conferences (either attended for networking purposes or as speakers), workshops or trainings.

Name of participant	Institution	Type of activity	Type of attendance	Event name	Date and duration	Description	Attendants	Target public
Fernanda Malato Praxedes	CSIC- ICMM	Participation to a conference	Attendance/networking	Carac Symposium	29/11/2021 - 1 day	Carac Symposium, supported by Nanoelec/Characterisation program and its attached PAC-G platform, is the annual event dedicated to characterisation	100	Scientific Community ;
Fernanda Malato Praxedes	CSIC- ICMM	Participation to a workshop	Attendance/networking	III Jornada para Doctorandos y Doctorandas del CSIC	28/10/2021 - 1 day	Lectures online about the transversal themes like professional carrer.	1300 (views)	Other ;
Anh-Luan Phan	UNITOV	Participation to a training/supervision/network activity	Attendance/networking	Intellectual Property for research: Live lecture 2022	24/02/22 - 1 day	This lecture gives a clear overview of the various issues related to the Intellectual Property, which may be useful for the research career.	50	Scientific Community ;
Borislav Petrovic	UWUE	Participation to a conference	Attendance/networking	Deutsch MBE (DEMBE)	10/14/21 - 2 days	Attending the conference, listening to other speakers.	30	Scientific Community ;
Fernanda Malato Praxedes	CSIC- ICMM	Participation to a workshop	Attendance/networking	III Jornada para Doctorandos y Doctorandas del CSIC	28/10/2021 - 1 day	Lectures online about the transversal themes like professional carrer.	1300 (views)	Other ;
Fernanda Malato Praxedes	CSIC- ICMM	Participation to a training/supervision/network activity	Attendance/networking	Trainning "Become a researcher"	10/01/2022 -2 days	On-line training on bibliography reviews, writing papers, oral presentations, ethics, and activities management. Event promoted by InnovaXN.	52	Scientific Community ;
Anh-Luan Phan	UNITOV	Participation to a training/supervision/network activity	Attendance/networking	Intellectual Property for research: Live lecture 2022	24/02/22 - 1 day	This lecture gives a clear overview of the various issues related to the Intellectual Property, which may be useful for the research career.	50	Scientific Community ;

Fernanda Malato	CSIC- ICMM	Participation to a conference	Attendance/ networking	ESRF User Meeting 2022	07/02/2022 - 3 days	community with online lectures, training, and poster presentations. The program of the User Meeting explored broad topics such as climate change, gender equality,	150	Scientific Community ;
Malte Schwarz	UPM	Participation to a training/supervision/ network activity	Attendance/ networking	Meeting of Spanish National Project "Quantimomics"	03/03/2022 - 1 day	Meeting of Spanish National Project "Quantimomics" with 2 beneficiaries and 1 partner from Quantimomy Network	15	Scientific Community ;
Fernanda Malato	CSIC- ICMM	Participation to a workshop	Attendance/ networking	ESRF Science Day 2022	21/03/2022	the presentation of lectures around the themes: Biomedical Imaging, Energy Storage, New Capabilities at ESRF-EBS, Structural Biology, Fundamental Research and Industrial Research.	150	Scientific Community ;
Julian Zanon	TUE	Participation to a conference	Attendance/ networking	APS March meeting 2022	03/13/2022 - 03/18/2022 - 6 days	I attended to different tutorials and talks.	10000	Scientific Community ;Industry;
Julian Zanon	TUE	Participation to a conference	Attendance/ networking	NWO Physics@Veldhoven	01/25/2022 - 01/26/2022 - 2 days	I attended (virtually) to difference talks,	2000	Scientific Community ;Industry;
Malte Schwarz	UPM	Participation to a workshop	Attendance/ networking	IRIDA: Maskless Direct Writing and 3D Lithography: Capabilities and Applications	44655	Pushing the limits of direct write laser lithography, photolithography, direct laser writing,.	20	Scientific Community ;Industry;
Gizem Acar	ULANC	Participation to a conference	Oral	Semiconductor and Integrated OptoElectronics (SIOE) Conference	12/04/2022- 3days	I gave a talk about my project. The title was "Telecoms-wavelength LEDs: Combining GaSb quantum rings and Bragg (anti) reflectors for enhanced emission".	200	Scientific Community ;
Anh-Luan Phan	UNITOV	Participation to a training/supervision/ network activity	Attendance/ networking	Raman Spectroscopy Training Course	04/29/22-4 days	Free short course about Raman spectroscopy	unknown	Scientific Community ;
José M. Llorens	CSIC-IMN	Participation to a workshop	Oral	14th Annual Meeting Photonic Devices (AMPD)	28/04/2022 - 2	The Zuse Institut Berlin gathers every year experts and colleagues on advanced topics related to photonic devices. We presented our latest results on the design of a microcavity to enhance the emission of single-photon sources. The application is in the field of quantum photonic technologies.	70	Scientific Community ;Industry;
Giulio Barbieri	CSIC-IMN	Participation to a workshop	Attendance/ networking	Entrepreneurial competences for researchers: developing a business model	18/05/22 - 2 hours	Interactive online training.	10	Scientific Community ;

Borislav Petrovic	UWUE	Participation to a conference	Oral	DGKK/DEMBE	16.08.2022-3 days	Oral presentation of "InAsSb/GaAsSb/InAsSb W-shaped quantum wells for Interband Cascade Lasers"	120	Scientific Community ;Industry;
Malte Schwarz	UPM	Participation to a workshop	Attendance/networking	Raman Spectroscopy Training Course	28/04/2022, 12/05/2022, 26/05/2022, 14/06/2022, 1h per date, online	brief overview of Raman scattering, cover practical considerations for making measurements (special focus on spectrometers and detectors), explore some of its many variants and look at some current applications.	60	Scientific Community ;
Gizem Acar	ULANC	Participation to a conference	Oral	UK semiconductors conference 2022	06/07/2022- 2 days	I gave a talk on Telecoms-wavelength GaSb quantum ring LEDs with a DBT	appr 300	Scientific Community ;
Xiuxin Xia	ULANC	Participation to a conference	Oral	UK Semiconductor Conference 2022	6th July to 7th July -2 days	I was selected for a oral presentation regarding ultram scaling work progress at electronic device symposium.	500	Industry;Scientific Community ;
Borislav Petrovic	UWUE	Participation to a conference	Oral	mirsens-5th international workshop on opportunities and challenges in mid-infrared laser based gas sensing	07/04/22-07/06/22 - 3 days	Participation-given talk: "InAsSb/GaAsSb/InAsSb W-shaped Quantum Wells for Interband Cascade Laser"	100	Scientific Community ;Industry;
Takuma Sato	nextnano GmbH	Participation to a workshop	Poster	5th International workshop on opportunities and challenges in mid-infrared laser-based gas sensing	July/04-06, 2022 - 3 days	Presented our ongoing software development and collaboration with UWUE in the form of a poster. Networking with PhD students and professors specialized in the mid-infrared light source and photodetectors.	50	Scientific Community ;Industry;
Takuma Sato	nextnano GmbH	Participation to a conference	Poster	EPS Forum 2022	June 2-3, 2022	Talks from technology industry, Nobel Laureates in Physics, Presentation of my research and exchange with other Ph.D. students in physics in the Europe	300	Scientific Community ;Industry;Civil Society;
Takuma Sato	nextnano GmbH	Participation to a conference	Poster	International Quantum Cascade Lasers School & Workshop 2022	23-28 of August, 2022	Presented the ongoing Quantimony project as a poster	100	Scientific Community ;Industry;
Lucie Leguay	TUB	Participation to a conference	Oral	DPG Meeting (Regensburg)	05-09-22 3d	short talk	-	Scientific Community ;
Aurelia Trevisan	TUE	Participation to a workshop	Attendance/networking	Raman Spectroscopy Training Course	04/28/2022, 05/12/2022, 05/26/2022, 6/14/2022 - 1 hour in each day	Workshop on Raman spectroscopy	50	Scientific Community ;
Aurelia Trevisan	TUE	Participation to a training/supervision/network activity	Attendance/networking	Raman Spectroscopy Training Course	04/28, 05/12, 05/26, 6/14/2022	I attended the 4 lectures	no	Scientific Community ;

Aurelia Trevisan	TUE	Participation to a conference	Attendance/networking	Physics@Veldhoven	01/25/2022 - 1 day	I attended several talks	2000	Scientific Community ;
Malte Schwarz	UPM	Participation to a training/supervision/network activity	Invitee	European School On Nanosciences & Nanotechnologies 2022, Grenoble, France	08/28/2022 - 14 days	Summer School in Grenoble on Nanotechnologies. 1 week of lectures, 1 week of practicals	50	Scientific Community ;
Giulio Barbieri	CSIC-IMN	Participation to a conference	Attendance/networking	The EPS Forums 2022	02/06/22-2 days	research opportunities in large companies and start-ups, and encourage a dialogue with representatives of the industry sector.	300	Scientific Community ;
Anh Luan Phan	UNITOV	Participation to a conference	Attendance/networking	NUSOD 2022	09/12/22- 5 days	The NUSOD conference connects theory and practice in optoelectronics. This year the conference was organized as a virtual event.	200	Scientific Community ;
Anh Luan Phan	UNITOV	Participation to a workshop	Attendance/networking	How to build a successful research career	09/21/22- 1 day	The workshop covers many tips and tricks for early-stage researchers who are seeking for the proper ways to build their research careers.	120	Scientific Community ;General public;
Takuma Sato	nextnano GmbH	Participation to a conference	Oral	The 83th JSAP Autumn Meeting 2022	20-23, September 2022	Present the ongoing research project in an oral session and discuss with participants	6000	Scientific Community ;Industry;
Anh Luan Phan	UNITOV	Participation to a workshop	Attendance/networking	Fundamentals of Spectroscopy – Free Training Course	09/22/22- 1 day	overview of optical spectroscopy, starting with a review of light-matter interactions relevant to spectroscopy, covering the underlying physics of common spectroscopic terms	don't know	Scientific Community ;
Takuma Sato	nextnano GmbH	Participation to a training/supervision/network activity	Attendance/networking	TUM Kick-off seminar	2022-November, from 14 to 16	Seminars on good scientific practices and scientific presentation in conference talks and poster sessions, as well as networking opportunity with other TUM PhD students	80	Scientific Community ;
Francisco Alvarado	UOW	Participation to a conference	Poster	RMS - Microscopy of Semi-Conducting Materials	3-04-23 - 4 days	presented a poster	200	Scientific Community ;
Takuma Sato	nextnano GmbH	Participation to a conference	Oral	International Workshop on Computational Nanotechnology	June 12-16, 2023	Presented the ongoing project in an oral session on quantum electron transport. Reported how we set up the Green's function basis from the 8-band k.p solutions.	130	Scientific Community ;Industry;

Borislav Petrovic	UWUE	Participation to a conference	Poster	International Nano-Optoelectronics Workshop	07/16/23 - 10 days	Presenting a poster on Advantages of AlGaAsSb claddings in Interband Cascade Lasers.	100	Scientific Community ;
Anh-Luan Phan	UNITOV	Participation to a training/supervision/network activity	Mentor	MASSP - Math and Science Summer Program	07/24/23 - 14 days	This is a summer camp for Vietnamese high-school students (mentees) about science subjects like math, physics, chemistry, architecture, computer science,	70	Scientific Community ;
Borislav Petrovic	UWUE	Participation to a conference	Oral	Photonica 2023	08/28/23 - 5 days	Gave oral presentation "Interband cascade lasers: Advantages of bulk AlGaAsSb claddings"	100	Scientific Community ;
Borislav Petrovic	UWUE	Participation to a conference	Oral	Yucomat 2023	09/03/23 - 6 days	Gave oral presentation "Contrasting bulk to superlattice claddings in interband cascade lasers"	100	Scientific Community ;
Giulio Barbieri	CSIC-IMN	Participation to a conference	Oral	UK Semiconductors 2023	12/07/2023 - 2 Days	12 min presentation by the title: Linking structural, optical, and magneto-optical properties of InAsSb/GaAs quantum dots through genetic optimization algorithms	150	Scientific Community ; Industry;
Giulio Barbieri	CSIC-IMN	Participation to a workshop	Poster	iNOW2023 (International Nano-Optoelectronics Workshop)	22/07/2023 - 6 days	Poster presentation, title: InAs/InP quantum dots grown by solid source MBE with emission at 1550nm	80	Scientific Community ;
Simone Privitera	CSIC-IMN	Participation to a training/supervision/network activity	Attendance/networking	CSIC Jornada para predoctorales	45149	Different workshops and talks for first year PhD students hired at CSIC	50	Scientific Community ;
Anh-Luan Phan	UNITOV	Participation to a workshop	Attendance/networking	The state of the semiconductor market in Europe and the world	01/29/2024- 1.5 hours	Market Trends Webinar Series of the global semiconductor industry, with a particular focus on Europe.	unknown	Industry; General public; Scientific Community ;
Lucie Leguay	TUB	Participation to a conference	Poster	QD2024	18/03/24 - 5 days	Poster presentation about the Optimization of UV LED design using evolutionary algorithms	400	Scientific Community ;
Lucie Leguay	TUB	Participation to a conference	Oral	Photonics West	27/01/24 - 6 days	Oral presentation about the electronic structure of GaSb/AlGaSb quantum dots formed by local droplet etching.	3000	Scientific Community ; Industry;
Lucie Leguay	TUB	Participation to a conference	Poster	IEEE Photonics Conference, Orlando, USA	12/11/23 - 5 days	Poster presentation on the Optimization of UV LED design using evolutionary algorithms.	500	Scientific Community ; Industry;
Lucie Leguay	TUB	Participation to a conference	Poster	FisMat conference, Milan, Italy	04/09/23 - 5 days	Poster presentation on the Optimization of UV LED design using evolutionary algorithms.	1500	Scientific Community ;
Lucie Leguay	TUB	Participation to a conference	Poster	Photonica, Belgrade, Serbia	45166	Poster presentation on the optimization of UV LED design using evolutionary algorithms.	300	Scientific Community ;

Lucie Leguay	TUB	Participation to a conference	Oral	DPG spring meeting, Dresden, Germany	26/03/23 - 5 days	Oral presentation on the theoretical study of GaSb/AlGaSb quantum dots.	5000	Scientific Community ;Industry;
Lucie Leguay	TUB	Participation to a conference	Oral	DPG meeting, Regensburg, Germany	04/09/22 - 5 days	Oral presentation on the theoretical study of GaSb/AlGaSb quantum dots.	5000	Scientific Community ;Industry;
Giulio Barbieri	CSIC-IMN	Participation to a conference	Poster	12th International Conference on Quantum Dots	18/22/24 - 5 days	Poster on our characterization on GaSb/AlGaSb QDs grown by local droplet etching and emitting at 1.5um at cryogenic temperatures. In particular, we show the results of polarization resolved ensemble magnetoPL, supported by nextnano simulations of the system.	150	Scientific Community ;
Chen Liu	IQE plc	Participation to a conference	Poster	UK Semiconductor Conference	07/08/2024 - 2 days	Give a poster presentation about LWIR InAs/GaSb T2SL simulation	200	Scientific Community ;
Malte Schwarz	UPM	Participation to a conference	Poster	IEEE PVSC 2024		Poster presentation and attending 5 workshops / talks	1000	Scientific Community ;Industry;
Aurelia Trevisan	TUE	Participation to a conference	Oral	International Conference on the Physics of Semiconductors	28/07/2024-02/08/2024 - 6 days	Oral presentation on the work on Sb as an iso-electronic dopant in GaAs	500	Scientific Community ;
Francisco Alvarado Cesar	UOW	Participation to a conference	Oral	32nd International Materials Research Congress	18/08/2024 - 4 days	I gave an oral presentation about my research on ULTRARAM structures	20	Scientific Community ;
Francisco Alvarado Cesar	UOW	Participation to a conference	Poster	Microscopy of Semi-Conducting Materials Conference 2023	03/04/2023 - 3 days	I presented my work in quantum rings that is a collaboration with ESR5 Gizem Acar	20	Scientific Community ;
Francisco Alvarado Cesar	UOW	Participation to a conference	Poster	UK Semiconductors 2024	08/07/2024 - 2 days	I presented my work in advanced electron microscopy of ultraram memories	30	Scientific Community ;
Xiuxin Xia	ULANC	Participation to a conference	Oral	UK Semiconductors 2021	07/06/22-2 days	Oral presentation at the The UK Semiconductors Conferences which was established in 2006 and we are the UK's annual conference in Semiconductor Research.	1000	Scientific Community ;Industry;
Xiuxin Xia	ULANC	Participation to a conference	Oral	UK semiconductors 2022	07/06/22 2 days	Oral presentation at the The UK Semiconductors Conferences which was established in 2006 and we are the UK's annual conference in Semiconductor Research.	1000	Scientific Community ;Industry;

Xiuxin Xia	ULANC	Participation to a conference	Oral	UK Semiconductors 2023	07/12/23-2days	Oral presentation at UKS 2023. The UK Semiconductors Conferences was established in 2006 and are the UK's annual conference in Semiconductor Research.	1000	Scientific Community ;Industry;
Xiuxin Xia	ULANC	Participation to a conference	Oral	UK Semiconductors 2024	07/08/24-2days	Oral presentation at UKS 2023. The UK Semiconductors Conferences was established in 2006 and are the UK's annual conference in Semiconductor Research.	1000	Scientific Community ;Industry;
Xiuxin Xia	ULANC	Participation to a conference	Oral	WOCSDICE - EXMATEC 2023	05/22/23-3days	Oral presentation at WOCSDICE - EXMATEC 2023.	500	Scientific Community ;Industry;
Gizem Acar	ULANC	Participation to a conference	Oral	The annual 36th Semiconductor Integrated OptoElectronics Conference (SIOE)	4/4/2023-2 days	I gave a talk titled "Cavity effects in type-II GaSb quantum ring devices at telecommunication wavelengths". It was a collaboration work with Warwick University	300	Scientific Community ;
Gizem Acar	ULANC	Participation to a conference	Oral	The annual 37th Semiconductor Integrated OptoElectronics Conference (SIOE).	2/4/2024-3 days	I gave two talks are titled as "Novel GaSb Quantum Ring Light Emitting Diodes (QR-LED) with Distributed Bragg Transmitter (DBT) Operating at Telecommunication Wavelengths" and "Advances in Room-Temperature Single-Photon LEDs Using GaSb/GaAs Quantum Rings".	300	Scientific Community ;
Gizem Acar	ULANC	Participation to a workshop	Oral	WOCSDICE-EXMATEC 2023	21/05/2023-5 days	I gave a talk about Enhancing the efficiency of type-II GaSb quantum ring devices at telecommunication wavelengths using cavity effects.	200	Scientific Community ;
Gizem Acar	ULANC	Participation to a conference	Oral	The UK Semiconductor Conference 2023	12/07/2023- 2 days	I gave a talk on Exploring Cavity-Enhanced Emission from Type-II GaSb Quantum Ring Devices at Telecommunication Wavelengths as collaboration work with Warwick Uni.	400	Scientific Community ;
Gizem Acar	ULANC	Participation to a conference	Oral	The UK Semiconductor Conference 2024	8/7/2024-2 days	I gave a talk on Advancing Quantum Photonics: Innovating Single-Photon LEDs with GaSb Quantum Rings at Telecoms Wavelengths	400	Scientific Community ;
Aurelia Trevisan	TUE	Participation to a conference	Oral	Conference on the Physics and Chemistry of Surfaces and Interfaces	15/01/2023 to 19/01/2023 - 5 days	I presented my X-STM work on a ULTRARAM sample with both a short oral presentation and a poster	100	Scientific Community ;

Aurelia Trevisan	TUE	Participation to a conference	Attendance/ networking	NWO Physics	4-5 April 2023 - 2 days	I attended several talks	2000	Scientific Community ;
Aurelia Trevisan	TUE	Participation to a workshop	Oral	IQARUS	1st-3rd July 2024 - 3 days	I gave a talk on my work on my X-STM results on Sb-based material and I presented a poster on my work on GaAsGe	50	Scientific Community ;
Gizem Acar	ULANC	Participation to a conference	Oral	SPIE Photonics West 2024 Conference	27/01/2024-5 days	I gave a talk on "Towards GaSb/GaAs quantum-ring single-photon LEDs: recent progress	1500	Scientific Community ;Industry;
Gizem Acar	ULANC	Participation to a conference	Poster	The 12th International Conference on Quantum Dots	18/03/2024-5 days	I did poster presentation on Type-II GaSb Quantum Rings for Telecom-Wavelength LEDs as collaboration work with Warwick University.	500	Scientific Community ;
Manus Hayne	ULANC	Participation to a conference	Oral and poster	36th International Conference on the Physics of Semiconductors (ICPS), Ottawa	07/28/24 - 6 days	Talk and poster	800	Scientific Community ;
Xiuxin Xia	ULANC	Participation to a workshop	Attendance/ networking	Nano-characterisation workshop	05/15/24-1days	Full day attendance for demonstration, hand on experience and lectures from Bruker.	20	Scientific Community ;