



Extraordinary AAB Meeting & Transferable Skills Course
(a.k.a Final Workshop)

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1. Event Description

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.

Discussions with experts from academia and industry on the status and future directions of III-Sb technologies, as outlined in the Grant Agreement, Annex 1 for this event, were distributed and placed in the agendas of both the Second Industry and Career Day (held in March 2024 at IQE) and this event.

The agenda of this training event included a three-hour workshop on Intellectual Property and its exploitation by the Technology Transfer Office from the University of Warwick, three invited talks on antimonide detector technologies, and final presentations from the QUANTIMONY ESRs to the AAB on the progress of their PhDs.

The invited speakers were:

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

The event had a total of 30 attendees, including: the 13 of the project's ESRs, 3 invited speakers, 2 representatives from external organizations, and 11 attendees from consortium member organizations (see attendance list in section 2 for details).

Transferable Skills Training - Workshop on IP and Exploitation:

Expert personnel from the Technology Transfer Office of the University of Warwick imparted to the Consortium's ESRs a workshop on the basics of Intellectual Property and its exploitation, divided in three content blocks:

Session 1. Intellectual Property:

The first session analysed the different types of IP and the concept of ownership (considering its variance depending on jurisdiction). A key topic introduced was patentability, how patents are enforced/defended, the process of filing a patent and the differences between publications and patents. The IP

section finalised with notes on the rising importance of know-how and tips on how to start talking about IP with the technology transfer services.

Session 2. Commercialising IP

The second session focused on equipping participants with essential knowledge about the role of IP in business development. Key topics included understanding the potential uses and value of IP, conducting effective market research, and developing a minimum viable product or meaningful prototype. Additionally, the session covered securing investment, the purpose behind it, and crafting a strong business plan. Participants also learned about available organizational resources for support with their business ideas.

3. Practice:

As a practice session for closing the training, the ESRs wrote a basic business plan for a technology that was randomly selected out of the papers published by the consortium members. This was done so that so that they could have a practical taste of thinking about their research in a commercial sense.

2. Event Agenda & attendance list

Extraordinary Transferable Skills Training and Academic Advisory Board Meeting 24^h -25th April 2024

Scarman House, University of Warwick,
Coventry, United Kingdom

Transferable skills training

Wednesday 24 th April, Scarman House, University of Warwick		
10:00-13:00 GMT	Transferrable skills training	UoW Technology Transfer Office
Lunch		

Academic advisory board meeting and ESR talks

Wednesday 24 th April, Scarman House, University of Warwick		
14:00-14:45 GMT	Impact ionization study in Sb-containing APDs	Dr. Xin Yi, Heriot-Watt University
Work package 3 - Material and device Fabrication		
14:45-15:15	ESR 3 - Novel III-Sb quantum materials for photovoltaics	Malte Schwarz, Technical University of Madrid
15:15-15:45	ESR 4 - III-Sb charge-storage devices for non-volatile random access memories	Xiuxin Xia, Lancaster University
Coffee Break		
16:00-16:30	ESR 5 - Telecoms-wavelength GaSb quantum ring single-photon LEDs	Gizem Acar, Lancaster University
16:30-17:00	ESR 10 - Development of antimony based interband cascade nanostructures and superlattices	Borislav Petrovic, Julius-Maximilians-Universität Würzburg
Dinner, Private Dining Rooms, Warwick University Campus		

Thursday 25 th April, Scarman House, University of Warwick		
09:00-09:45 GMT	AlGaAsSb for high-performance near-infrared avalanche photodiodes	Dr. Jo Shein Ng, Sheffield University
Work package 6 - Scale up and road to market		
09:45-10:15	ESR 12 - Industrial aspects and upscaling of III-Sb MOCVD technology	Hajrudin Husejini, AIXTRON SE
10:15-10:45	ESR 13 - Wafer engineered long wave infrared photodiodes	Chen Liu, IQE PLC
Coffee Break		
11:00-11:30	ESR 14 - Multiband quantum transport in III-Sb based devices	Takuma Sato, nextnano GmbH
Work package 5 - Theory and simulation		
11:30-12:00	ESR 8 - Magnetic properties of novel III-Sb nanostructures	Julian Zanon, Eindhoven University of Technology
Lunch		
13:00-13:45	Thin film growth of some unusual antimonides: ZnSb, MnSb and SrMnSb₂	Dr. Gavin Bell, University of Warwick
13:45-14:15	ESR 11 - Multiscale simulation of novel III-Sb quantum materials and devices	Anh-Luan Phan, University of Rome Tor Vergata
14:15-14:45	ESR 9 - Evolutionary inverse design numerical approaches for improved III -Sb devices	Lucie Leguay, TU Berlin
Coffee break		
Work package 4 - Structural and Functional Analysis		
15:00-15:30	ESR 1 - Spin-photon interfaces and filters based on tunable III- Sb nanostructures and heterostructures	Giulio Barbieri, Instituto de Micro y NanoTecnología, CSIC
15:30-16:00	ESR 6 - Advanced electron microscopy of III-V antimonides	Francisco Alvarado Cesar, University of Warwick
16:00-16:30	ESR 7 - Atomic scale characterization of III-Sb quantum materials	Aurelia Trevisan, Eindhoven University of Technology
Close of meeting		

Attendance list – Third Annual AAB Meeting & Transferable Skills Training

First Name	Last Name	Organisation	Type of Organisation
Benito	Alén	IMN-CSIC	Consortium Member
Borislav	Petrovic	University of Wuerzburg	Consortium Member
Aurelia	Trevisan	Eindhoven University of Technology	Consortium Member
Anh Luan	Phan	University of Rome Tor Vergata	Consortium Member
Iwan	Davies	IQE	Consortium Member
Fabian	Hartmann	University of Wuerzburg	Consortium Member
Malte	Schwarz	ISOM-UPM Madrid	Consortium Member
Lucie	Leguay	TU Berlin	Consortium Member
Julian	Zanon	Eindhoven University of Technology	Consortium Member
Jose	Ulloa	ISOM-UPM	Consortium Member
Gizem	Acar	Lancaster University	Consortium Member
Xiuxin	Xia	Lancaster University	Consortium Member
Chen	Liu	IQE plc	Consortium Member
Manus	Hayne	Lancaster University	Consortium Member
Bernd	Schineller	AIXTRON SE	Consortium Member
Paul	Koenraad	TU/e	Consortium Member
Francisco	Alvarado Cesar	University of Warwick	Consortium Member
Hajrudin	Husejni	Aixtron	Consortium Member
Giulio	Barbieri	IMN CSIC	Consortium Member
Ana M	Sanchez	University	Consortium Member
Matthias	Auf der Maur	University of Rome Tor Vergata	Consortium Member
Gavin	Bell	Warwick University	Consortium Member
Xin	Yi	Heriot-Watt University	External organisation
Jo	Shein	Sheffield University	External organisation
Jose Manuel	Llorens	IMN-CSIC	Consortium Member
Stefan	Birner	nextnano GmbH	Consortium Member
Heorhii	Yehiazarian	nextnano GmbH	Consortium Member
Takuma	Sato	nextnano GmbH	Consortium Member
Herbert	Maczko	nextnano GmbH	Consortium Member
Richard	Beanland	Warwick University	Consortium Member