







# NTHU ECS 2025

Organizer: QDs & Life Materials Lab

NTHU ECS Student Chapter

- 2025 Q+Q Conference - Fall



Saturday, 6 September 2025, 13:30 Location: Delta 401, NTHU

Quantum Dots & Life-Enviro Materials Lab Dep. of Materials Science & Engineering, NTHU, Taiwan



Delta 401, NTHU, Taiwan September 6 2025



## **CALL FOR ABSTRACTS**

NTHU ECS Student Chapter -2025 Q+Q Conference-Fall (September 6, 2025)

Please see the information below for details about the symposia and manuscript submission requirements.

Abstracts are due no later than Thursday, 28 August 2025 at 11:59 PM National Standard Time (NST).

NTHU ECS Student Chapter – 2025 Q+Q Conference-Fall will highlight four key areas of focus reflecting rapid advances in the field:

- Quantum Dot Synthesis and Advanced Materials Development
- Photoluminescent Quantum Dot Color Conversion (QDCC) for Next-Generation Applications
- Quantum Dot–Enabled Sensing Platforms and Optoelectronic Devices
- Electroluminescent Quantum Dot Devices (QD-EL) and Emerging Display Technologies
- Submission Deadline 25/08/28



Delta 401, NTHU, Taiwan September 6 2025



# 2025 Q+Q CONFERENCE-FALL PLANNING DEADLINES

2025 Q+Q Conference-Fall | NTHU, TW | September 6, 2025

2023 Q+Q Conference-i all   NTTIO, TW   September 0, 2023		
Description	Deadlines	
Committee Organized	August 1, 2025	
Call for Papers Planning Approved & Announcement	August 7, 2025	
Open for Abstract Submission	August 7, 2025	
Final Call for Papers (Reminder of Submission)	August 21, 2025	
Deadline of Abstract Submission	August 28, 2025	
Organizers Complete Abstract Scheduling	August 29, 2025	
Announcement of Selected Papers and Agenda	August 30, 2025	
Organizers Complete Arrangement of Conference (Including Meals, Drinks, Meeting Room etc.)	August 30, 2025	
Presentation File Submitted (Including Print-out file )	September 4, 2025	
2025 Q+Q Conference-Fall	September 6, 2025	



Delta 401, NTHU, Taiwan September 6 2025



# 2025 Q+Q CONFERENCE-FALL SCHEDULE

2025 Q+Q Conference-Fall | NTHU, TW | September 6, 2025

Opening, 13:30-13:40				
13:30	-13:40 Pro	of. Hsueh-Shih Chen	Opening	
Oral Sess	Oral Session A - Emissive QDs & Devices, 13:40-14:20			
		Chair: Tyng-Woei J	lang	
A-1 Oral	13:40-14:00	Hsuan-Yu Lee	Exploring Thiol Passivation on InP Quantum Dots and Its Impact on Cellular Viability	
A-2 Oral	14:00-14:20	<i>Invited Speaker-</i> Yu-Sian Lin	Advanced Display Technology: Demonstration of a 0.085-inch Ultra-Small Micro QLED Panel	
Poster Session A, 14:20-14:40				
P-1 Poster	14:20-14:21	Nai-Chun Chung	Study on Electroluminescent Quantum Dot Light-Emitting Diode Device	
P-2 Poster	14:21-14:22	Jian-Jun Fang	Spectral Linewidth Broadening in Indium Phosphide Quantum Dots: Roles of Ripening and Secondary Nucleation	
P-3 Poster	14:22-14:23	Kuan-Chi Lee	Quantum Dots Photoresist for High Resolution Color Conversion	
P-4 Poster	14:23-14:24	Wei-Lun Wu	Study of Red and Green InP Quantum Dot Synthesis	
<b>Break</b> 14:24-14:40				



Delta 401, NTHU, Taiwan September 6 2025



# 2025 Q+Q CONFERENCE-FALL SCHEDULE

2025 Q+Q Conference-Fall | NTHU, TW | September 6, 2025

Oral Sess	sion B - QDs Sei	nsing Devices $I$ , 1	4:40-15:20
Chair: Yu-Sian Lin			
B-1 Oral	14:40-15:00	<i>Invited Speaker-</i> Kapil Patidar	Surface Passivation Enables High-Efficient PbS Quantum- Dot Solar Cells
B-2 Oral	15:00-15:20	Wang-Wei Ko	Zinc Acetate-Assisted Solid-State Ligand Exchange for Higher-Detectivity SWIR PbS Quantum Dot Photodetectors
Poster Session B, 15:20-16:00			
P-5 Poster	15:20-15:21	Jian-Zhi Lan	Effect of Diphenylphosphine Concentration on the Optical Properties of CuInSe <sub>2</sub> Quantum Dots
P-6 Poster	15:21-15:22	Ting-Yen Lin	Reproductivity of the Electroluminescent Quantum Dot Light-Emitting Diode
P-7 Poster	15:22-15:23	Yun-Wu Chan	Study of interactions between InP QD and solvent when diluted
P-8 Poster	15:23-15:24	Cheng-Yu Wu	Preliminary Study on the Effect of Precursor Ratios on the Optical Properties of PbS Quantum Dots
Break and Afternoon Tea			

15:24-16:00



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## 2025 Q+Q CONFERENCE-FALL SCHEDULE

2025 Q+Q Conference-Fall | NTHU, TW | September 6, 2025

Oral Session C – QDs Color Conversion & QDs Sensing Devices $II$ , 16:00-16:40			
Chair: Kapil Patidar			
C-1 Oral	16:00-16:20	<i>Invited Speaker-</i> Tyng-Woei Jang	Enhancing the Color Conversion Efficiency of Quantum Dot/Polymer Films through Improved Dispersion of TiO <sub>2</sub> Scattering Particles via SiO <sub>2</sub> Encapsulation
C-2 Oral	16:20-16:40	Hsueh-Pin Lu	Study on Metal-Doped Copper Indium Diselenide Quantum Dots for 1350 nm SWIR Photodetection.
Vote and Awards 16:40-17:00			

#### Vote and Awards, 16:40-17:00

16:40-17:00 Organizer & Committee Vote and Awards

## General Guidelines for Speakers

- 1. PREPARATION. Considerable time should be devoted to preparing your presentation. The presentation time for oral presenters is 15 minutes for the talk + 5 minutes for Q&A (20 minutes total). For poster presenters, the format is a 1-minute brief introduction accompanied by an A3 print-out poster displayed on the meeting room wall.
- 2. UPLOADING YOUR PRESENTATION: All presenters are required to upload their presentation PPT and provide a printed copy to the committee members at least two days before the conference. Please note that authors will not be allowed to use their own computers in the session rooms.







## Oral Session A - Emissive QDs & Devices

Date: Saturday, 6 September, 2025

Time: 13:40 - 14:00

Location: Delta Building Room 401

#### A-1. Exploring Thiol Passivation on InP Quantum Dots and Its Impact on **Cellular Viability**



Graduate Student (3rd Grade) Hsuan-Yu Lee National Tsing Hua University (NTHU)

#### **Abstract**

Indium phosphide (InP) quantum dots (QDs) have attracted increasing attention due to their low toxicity, tunable luminescence across the visible to near-infrared spectrum, narrow emission bandwidths, and excellent optical properties. Compared to cadmium-based QDs, InP QDs are considered more biocompatible as they are free of heavy metals. In this study, we employed a post-synthetic surface modification strategy with using dodecanethiol (DDT) on InP/ZnSe/ZnSeS/ZnS QDs followed by ligand exchange with mercaptopropionic acid (MPA) to produce water-dispersible QDs. We evaluated the cytotoxicity of these QDs by performing MTS and CCK-8 assays on mouse embryonic fibroblast (MEFs) and human mesenchymal stem cells (h-MSCs), treated with varying mole ratios of DDT to InP QDs. Our results show that DDT/InP QDs mole ratio at 9000 yielded the highest cell viability of 143%. Furthermore, both cell types exhibiting near 100% survival under DDT modified conditions, confirming the favorable biocompatibility of the modified InP QDs. This work highlights the critical role of surface passivation with using thiol in mediating cellular responses and provides a useful guideline for optimizing QD surface chemistry for biological and biomedical applications.

Keywords: Quantum dots, Indium phosphide, Dodecanethiol, Cell viability, MTS assay, CCK-8 assay









## Oral Session A - Emissive QDs & Devices

Date: Saturday, 6 September, 2025

Time: 14:00-14:20

Location: Delta Building Room 401

#### A-2. Invited Speaker - Advanced Display Technology: Demonstration of a 0.085-inch Ultra-Small Micro QLED Panel



PhD student (3<sup>rd</sup> Grade) Yu-Sian Lin National Tsing Hua University (NTHU)

#### **Abstract**

Augmented reality (AR) and virtual reality (VR) near-eye displays are regarded as emerging technologies that seamlessly integrate virtual information into daily life, enabling more convenient and immersive experiences. However, current near-eye display technologies such as microLEDs and micro OLEDs face significant challenges: microLEDs require complex mass-transfer processes, while micro OLEDs suffer from limited brightness, making it difficult to simultaneously achieve high resolution, high brightness, and scalable fabrication. Quantum dots (QDs) have emerged as a promising solution due to their sizetunable emission wavelengths, narrow emission linewidths, high brightness, and excellent stability as inorganic nanocrystals, positioning them as strong candidates for nextgeneration near-eye displays. In this study, quantum dot light-emitting diodes (QLEDs) with enhanced performance were developed through film quality optimization. Furthermore, a QLED device was successfully integrated onto a CMOS backplane with an active area of 1.5 × 1.5 mm<sup>2</sup> (0.085 inch). By employing substrate surface treatment, a micro-QLED with a resolution of ~1664 pixels per inch (PPI) was realized, demonstrating a significant step toward high-resolution, high-brightness microdisplays for future AR/VR applications.

**Keywords:** Quantum dot light-emitting diode, CdSe, spin-coating, CMOS integration









## Oral Session B - QDs Sensing Devices I

Date: Saturday, 6 September, 2025

Time: 14:40- 15:00

Location: Delta Building Room 401

#### B-1. Invited Speaker - Surface Passivation Enables High-Efficient PbS **Quantum-Dot Solar Cells**



PhD student (3<sup>rd</sup> Grade) **Kapil Patidar** National Tsing Hua University (NTHU)

#### **Abstract**

The n-type quantum dot (QD) active layer is the core component of lead sulfide QD solar cells (PbS QDSCs); for the next generation of photovoltaics, decreasing the number of interfacial defect states and enhancing the charge transfer promising strategies. To understand the PbS-PbX<sub>2</sub> active layer surface, several parameters were optimised, such as spin coating parameter, concentration and solubility in BTA and DMF of the active layer. Devices fabricated using PbS-PbX<sub>2</sub> QD at 300 mg/ml in BTA:DMF ratio 4:1 achieve a higher power conversion efficiency (PCE) of 5.24% with FF 40%. To achieve controlled and highquality PbS-EDT or Self-assembled monolayers (SAMs) assembly, this study presents an effective strategy to eliminate the sensitivity of SAM/PbS-EDT growth to polycrystalline ITO by depositing an amorphous molybdenum tri/di-oxide (MoO<sub>x</sub>) thin layer on top. The application of MoO<sub>x</sub> can homogenize surface roughness and circumvent issues related to preferential grain orientation and distinct grain boundaries associated with ITO. This results in a more uniform and denser SAM/PbS-EDT coverage compared to direct growth on bare ITO. This progress highlights the importance of refining the ITO surface microstructure to facilitate favorable SAM/PbS-EDT formation and subsequently construct high-performance PbS QDSCs.

**Keywords:** lead sulfide, quantum dot solar cell, MoO<sub>2</sub>, MoO<sub>3</sub>, ligand exchange







## Oral Session B - QDs Sensing Devices I

Date: Saturday, 6 September, 2025

Time: 15:00- 15:20

Location: Delta Building Room 401

# B-2. Zinc Acetate-Assisted Solid-State Ligand Exchange for Higher-Detectivity SWIR PbS Quantum Dot Photodetectors



Graduate student (2<sup>nd</sup> Grade) **Wang Wei Ko**National Tsing Hua University (NTHU)

#### **Abstract**

Lead-sulfide (PbS) quantum dots are excellent candidates for short-wave infrared (SWIR) photodetection and imaging. Solid-state ligand exchange (SSLE) provides a low-threshold route to fabricate QD solids, but achieving the precise surface passivation needed for optimal device performance remains difficult. In this work, we introduce zinc acetate (ZnAc) into the SSLE process—at a high loading of 40 wt % relative to tetrabutylammonium iodide (TBAI)—to improve both the film morphology and electronic coupling in QD layers. A suite of thin-film and photodetector characterizations shows that ZnAc addition drives more complete removal of oleate ligands and reduces trap densities. Photodetectors built from ZnAc-treated QD films exhibit substantially higher detectivity than untreated devices. These results offer a straightforward path toward low-cost, low-threshold QD SWIR detectors and imagers with enhanced performance.

**Keywords:** Photodiode, PbS QD, Metal Passivation, Solid State Ligand Exchange (SSLE)







# Oral Session C -QDs Color Conversion & QDs Sensing Devices ${\rm II}$

Date: Saturday, 6 September, 2025

Time: 16:00- 16:20

Location: Delta Building Room 401

C-1. Invited Speaker - Enhancing the Color Conversion Efficiency of Quantum Dot/Polymer Films through Improved Dispersion of TiO2 **Scattering Particles via SiO2 Encapsulation** 



PhD Candidate (4<sup>th</sup> Grade) Tyng-Woei Jang National Tsing Hua University (NTHU)

#### **Abstract**

Quantum dot (QD) materials offer tunable emission wavelengths, high color purity, and compatibility with solution-based processing, making them promising for next-generation display technologies. Quantum dot color converters (QDCCs) provide advantages such as long lifetime, wide color gamut, high efficiency, and energy savings, making them suitable for miniLED or microLED displays. However, enhancing the light conversion efficiency (LCE) of QDCCs remains a significant challenge. In this study, silica-coated titanium dioxide (TiO<sub>2</sub>) nanoparticles were introduced to improve blue light scattering and absorption, thereby enhancing the overall efficiency of QDCCs. The optimized silica coating process, achieved via the Stöber reaction, significantly improved the colloidal stability and dispersion of TiO<sub>2</sub> nanoparticles. Results showed that incorporating SiO2-coated TiO2 increased the LCE of QDCC films by 154.6% compared to films without TiO<sub>2</sub> and by 49.7% compared to films with uncoated TiO<sub>2</sub>. These findings demonstrate that SiO<sub>2</sub>-coated TiO<sub>2</sub> nanoparticles effectively enhance QDCC performance, offering a promising strategy for high-efficiency quantum dot-based color conversion displays.

**Keywords:** Quantum-dots; Color conversion; Light scattering particles; Nanoencapsulation;

Silica coating: QD-LED







# Oral Session C – QDs Color Conversion & QDs Sensing Devices ${\rm I\hspace{-.1em}I}$

Date: Saturday, 6 September, 2025

Time: 16:20-16:40

Location: Delta Building Room 401

C-2. Study on Metal-Doped Copper Indium Diselenide Quantum Dots for 1350 nm SWIR Photodetection.



Graduate student (2<sup>nd</sup> Grade) **Hsueh-Pin Lu**National Tsing Hua University (NTHU)

#### **Abstract**

Copper indium diselenide (CISe) quantum dots (QDs) are promising candidates for optoelectronic applications due to their low toxicity and strong infrared (IR) emission. Compared with traditional heavy-metal-based QDs such as Pb- or Cd-based systems, CISe QDs and metal doped CISe QDs provide a safer and more environmentally friendly alternative. In this study, we synthesized Ag-doped CISe QDs with emission centered at approximately 1350 nm, demonstrating their potential as short-wave infrared (SWIR) light sources for applications in photodetectors, bioimaging, and optical communication. The synthesis process involved precise control of QD size, composition, and precursor selection, along with dopant incorporation to modulate the band structure and achieve the desired emission wavelength. Although the 1350 nm emission has been established, further investigation is needed to optimize the absorption characteristics of these QDs. Overall, our findings suggest that metal-doped CISe QDs hold significant promise as efficient SWIR optoelectronic materials.

**Keywords:** Metal-doped CISe Quantum Dots, Short-wave Infrared (SWIR) Emission, 1350 nm Luminescence, Heavy Metal-free Nanomaterials, Optoelectronic Devices, Photodetectors, Bandgap Engineering









Date: Saturday, 6 September, 2025

Time: 14:20-14:40

Location: Delta Building Room 401

# P-1. Study on Electroluminescent Quantum Dot Light-Emitting Diode Device



Graduate student (2<sup>nd</sup> Grade)

Nai-Chun Chung

National Tsing Hua University (NTHU)

#### **Abstract**

The demand for environmentally benign and high-performance display technologies has promoted extensive research on indium phosphide (InP) quantum dot light-emitting diodes (QLEDs). However, the long-chain native ligands of InP quantum dots limit charge transport and hinder device efficiency. In this work, we systematically investigated ligand exchange processes aimed at improving surface passivation, and carrier injection. Shorter or more conductive ligands were introduced to replace the insulating native ligands, leading to enhanced hole/electron transport. The optimized InP QLEDs demonstrated substantial increases in luminance and external quantum efficiency (EQE) compared to control devices. These results emphasize the essential role of surface chemistry engineering in advancing the performance of InP-based electroluminescent devices.

**Keywords:** *InP* Quantum Dots, Quantum Dot Light-Emitting Diodes, Ligand Exchange, Surface Chemistry, Electroluminescence









Date: Saturday, 6 September, 2025

Time: 14:20-14:40

Location: Delta Building Room 401

P-2. Spectral Linewidth Broadening in Indium Phosphide Quantum

**Dots: Roles of Ripening and Secondary Nucleation** 



Graduate student (2<sup>nd</sup> Grade) **Jian-Jun Fang**National Tsing Hua University (NTHU)

#### **Abstract**

Indium phosphide (InP) quantum dots (QDs) are regarded as environmentally friendly alternatives to Cd- or Pb-based QDs. Despite their high photoluminescence quantum yield (PLQY), their broader full width at half maximum (FWHM) compared with CdSe remains a major challenge for display applications. In this work, we studied the cause of spectral broadening rather than its solution. InP seeds were kept at 280 °C for 60 min to track the changes in particle size and defect states. The results show that both large and small particles increased, together with more defects and a wider FWHM. These findings suggest that ripening and secondary nucleation can happen at the same time, leading to growth of large particles and formation of new small ones. This study shows how ripening, nucleation, and defect formation interact during InP growth, and gives useful insights for reducing the emission linewidth in future work.

**Keywords**:Indium phosphide (InP),Full width at half maximum (FWHM), Ripening, Secondary nucleation, Defect formation







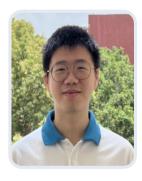


Date: Saturday, 6 September, 2025

Time: 14:20-14:40

Location: Delta Building Room 401

# P-3. Quantum Dots Photoresist for High Resolution Color Conversion



Graduate student (2<sup>nd</sup> Grade) **Kuan-Chih Lee**National Tsing Hua University (NTHU)

#### **Abstract**

Patterned quantum dot color converters (QDCCs) convert blue light to green and red light at the pixel level, thus having potential applications in combination with micro-LED and OLED. Lithography is a promising method to fabricate the QDCCs, however, it is still a challenge to achieve highly luminescent and stable patterned QD-photoresist (PR) thick films. A strategy is developed to fabricate high-performance patterned QDCCs using the lithography process. The QDs are modified by replacing their native hydrophobic ligands to achieve compatibility with PRs. The present work might shed light on improving the performance of patterned QDCCs and accelerate their applications in new types of display technology.

Keywords: Quantum-dots, Photoresist, Color coversion, CdSe QDs









Date: Saturday, 6 September, 2025

Time: 14:20- 14:40

Location: Delta Building Room 401

#### P-4. Study of Red and Green InP Quantum Dot Synthesis



Graduate student (1st Grade)
Wei-Lun Wu
National Tsing Hua University (NTHU)

#### **Abstract**

In recent years, Indium phosphide (InP) quantum dots (QDs) have been of research interest due to their size-tunable emission wavelength and environmentally friendly features. In this work, the red and green InP QDs synthesis standard operation procedure (SOP) was conducted. For the red InP synthesis, it showed the photoluminescence (PL) at 607 nm, with quantum yield (QY) 94.5% and full width at half maximum (FWHM) 39 nm. As for the green InP synthesis, it showed PL at 530 nm, with QY 77.6% and FWHM 39 nm. The reproduced experiment provided the information about the nucleation and growth for the InP core, and elaborated how the ZnSe or ZnS shell affected the PL properties of InP QDs. In the future, the SOP for 520 nm green InP synthesis will be further optimized, and the research for blue InP QDs synthesis will be conducted.

Keywords: InP Quantum Dots, Photoluminescence, FWHM, Quantum Yield









Date: Saturday, 6 September, 2025

Time: 15:20-16:00

Location: Delta Building Room 401

# P-5. Effect of Diphenylphosphine Concentration on the Optical Properties of CulnSe2 Quantum Dots



Graduate student (1st Grade) **Jian-Zhi Lan**National Tsing Hua University (NTHU)

#### **Abstract**

CuInSe2 quantum dots (QDs) functionalized with Oleylamine(OLA) and Diphenylphosphine(DPP) ligands were synthesized via a hot-injection method using Copper( I ) iodide (CuI), Indium acetate (InAc), Se powder, Octadecene(ODE), OLA, and DPP as precursors, with varying DPP concentrations. UV-Vis absorption and photoluminescence (PL) spectroscopy were employed to investigate the effect of DPP concentration on the optical properties and size distribution of the QDs.

**Keywords:** CuInSe<sub>2</sub> quantum dots, Diphenylphosphine ligands, Hot-injection, Optical properties









Date: Saturday, 6 September, 2025

Time: 15:20- 16:00

Location: Delta Building Room 401

# P-6. Reproductivity of the Electroluminescent Quantum Dot Light-Emitting Diode



Graduate student (1st Grade) **Ting-Yen Lin**National Tsing Hua University (NTHU)

#### **Abstract**

Since the discovery of quantum dots, research of their applications has continued to grow. Among them, quantum dot light-emitting diodes (QLEDs) have been gaining attention because of their potential of high performance in display. In this work, QLEDs, with CdSe quantum dot as the emissive layer, were successfully fabricated by the SOP established by the lab members. Compared to other research, the performance of the device made by us is relatively low. In future work, I will find the possible problem of my device by analyzing the film quality with AFM and the charge carrier mobility with electron/hole only devices.

**Keywords**: Quantum Dot Light-Emitting Diodes, CdSe Quantum Dots, Electroluminescence.









Date: Saturday, 6 September, 2025

Time: 15:20- 16:00

Location: Delta Building Room 401

# P-7. Study of interactions between InP QD and solvent when diluted



Graduate student (1st Grade) **Yun-Wu Chan**National Tsing Hua University (NTHU)

#### **Abstract**

The InP QD is a promising material for QDPR. It's low toxicity brings hope to the appearance of safe QD display product. However, the fabrication of QDPR is faced with a problem that can severely damage its PL intensity. Right after the QD surface ligands is exchanged from oleic acid (OA) to mono-2-(Methacryloyloxy)ethyl succinate (MMES). The QD would be dissolved by PGMEA in preparation for quantum dot photoresist (QDPR) fabrication. When QD diluted by PGMEA, it starts to degrade in a short period of time (<one hour). The mechanism is still unknown. The analysis of solvent, ligand and QD is the key to solve this problem. Through analysis from different characterization device and the investigation into QD properties, we may solve this problem.

**Keywords:** Quantum dots/InP/ Dilution/Degradation/Ligand exchange









Date: Saturday, 6 September, 2025

Time: 15:20- 16:00

Location: Delta Building Room 401

# P-8. Preliminary Study on the Effect of Precursor Ratios on the Optical Properties of PbS Quantum Dots



Graduate student (1st Grade) **Cheng-Yu Wu**National Tsing Hua University (NTHU)

#### **Abstract**

In this preliminary stage of my laboratory training, I focused on learning the synthesis and characterization of PbS quantum dots under the guidance of a junior student. By systematically varying the ratios of precursors, I observed changes in the absorption peaks and quantum yield (QY) of the resulting samples, providing insights into the relationship between reaction conditions and optical properties. Via data visualization and analysis, which allowed me to interpret trends and compare results more effectively.

Keywords: PbS quantum dots, optical properties, precursor ratio







# Acknowledgement

#### **Special Thanks**

 Advisor: Prof. Hsueh-Shih Chen (陳學仕 教授), National Tsing Hua University (NTHU), Taiwan

### **Organization Chair**

 Yu-Sian Lin (林育賢), PhD Student, National Tsing Hua University (NTHU), Taiwan

### **Organization Committee (PhD)**

- Yu-Sian Lin (林育賢), PhD Student, National Tsing Hua University (NTHU), Taiwan
- Tyng-Woei Jang (張庭瑋), PhD Candidate, National Tsing Hua University (NTHU), Taiwan
- Kapil Patidar (高品翊), PhD Student, National Tsing Hua University (NTHU), Taiwan

#### **Organization Committee (Master)**

- Nai-Chun Chung (鐘乃鈞), Graduate Student, National Tsing Hua University (NTHU), Taiwan
- Kuan-Chih Lee (李冠志), Graduate Student, National Tsing Hua University (NTHU), Taiwan









# Acknowledgement

Description	Member	Contribution
Organization Chair	Yu-Sian Lin (林育賢)	Symposium Organizer
Organization Committee (PhD)	Yu-Sian Lin (林育賢)	<ul><li>Conference Organization</li><li>Program Scheduling</li><li>Abstract Review</li><li>Agenda Preparation</li></ul>
	Tyng-Woei Jang(張庭瑋)	Abstract Review
	Kapil Patidar(高品翊)	Abstract Review
Organization Committee (Master)	Nai-Chun Chung(鐘乃鈞)	<ul><li>Agenda Preparation</li><li>Conference Materials and Catering</li></ul>
	Kuan-Chih Lee(李冠志)	Conference Materials and Catering

