

Curriculum Vitae Rajesh Kumar Ulaganathan



Assistant Professor Grade-I

Centre for Nanotechnology

Indian Institute of Technology Roorkee (IITR), Roorkee-247667, Uttarakhand, India

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Scientific Expertise

Nanofabrication Skills:

- ❖ Experienced in the operation of lithography systems including the **JEOL 9500FS Electron Beam Lithography** and *photolithography* such as the **MLA 150 Maskless Aligner** and **Mask Aligner EVG-620**, along with proficiency in **Shadow Mask Patterning**. Skilled in working within Clean Room environments spanning from **Class 10-100 to 100-1000**.
- ❖ Demonstrated expertise in device fabrication, leveraging a diverse range of **van der Waals two-dimensional (2D) materials**, including Transition Metal Dichalcogenides (TMDs), Indium Selenide (InSe), Germanium Sulfide (GeS), ternary materials like Hafnium Sulfoselenide (HfSSe), **2D perovskites**, **Nanoribbons** (MoS₂), **Nanowires** (Silicon Nanowire), and **Quantum dots**.
- ❖ Proficient in the exfoliation of 2D materials, adept at **stacking multi-2D van der Waals heterostructures**, and skilled in the **transfer of 2D materials** onto versatile substrates.

Device Designs and Knowledge:

- ❖ Proficient in designing and fabricating **Field-Effect Transistors (FET)**, **Photodetectors (PDs)**, for optoelectronic applications.
- ❖ Experienced in creating **Flexible Devices** with an emphasis on bendable and stretchable electronics.
- ❖ Familiar with the design and implementation of **FET-Biosensors** for biomedical sensing applications.
- ❖ Knowledgeable in the design and fabrication of **Photovoltaic devices** for efficient energy conversion.

Materials Growth Ability and Instruments Familiarity:

- ❖ Experienced in **Chemical Vapor Transport (CVT)**, **Bridgman Techniques** for the Growth of Single Crystalline 2D Materials.
- ❖ Operated the **Chemical Vapor Deposition (CVD)** and **Pulsed Laser Deposition (PLD)** techniques for the growth of MoS₂ nanoribbons and thin films.
- ❖ Skilled in **Solution Growth** techniques for the synthesis of **2D Perovskite materials**.
- ❖ Conducted **Cryogenic Probe Measurements** for analyzing electronic properties at low temperatures.
- ❖ Worked on **Source Measure Units** for comprehensive **electrical and optical property analysis**.
- ❖ Operated equipment of **E-beam and Thermal Evaporator** for thin film coatings.
- ❖ Proficient in **Atomic Force Microscopy** for surface imaging and characterization.
- ❖ Skilled in **Scanning Electron Microscopes** for detailed structural and elemental analysis.
- ❖ Conducted **Photoluminescence and Raman Spectroscopy** experiments for material characterization and optical property analysis.

Research Interest

- ❖ Development and **Single Crystal Growth of Novel 2D Materials and 2D Perovskites**.
- ❖ van der Waals **stacking of 2D Materials** for **p-n junction devices**.
- ❖ Advanced processing of 2D materials for technological applications includes **Transistors, Photodetectors, Photovoltaics, and Sensors**.
- ❖ **Flexible, lightweight, and foldable electronics**, with 2D-based materials, for energy and environmental applications.
- ❖ **Cost-effective and stable 2D Devices**.

Professional Experiences (8.3 Years)

Current Position		
Assistant Professor Grade-I, (2 M)		India
Head of Nanomaterials and Devices Laboratory (NANOMADE)		
Centre for Nanotechnology, Indian Institute of Technology Roorkee (IITR)		
Full-Time Research & Teaching: Growth of Novel Low-Dimensional Materials and their Device Applications		Sep.2024-Present
Previous Employment: (8.1 Y)		
Research Specialist (1.3 Y), <i>Novel Material Development and Crystal Growth</i>		Taiwan
Institute of Physics, Academia Sinica (AS)		
Full-Time Research: Growth of Novel Low-Dimensional Materials and their Applications in Optoelectronic Devices.		Jun.2023-Aug.2024
Co-teaching: Experimental and Theoretical (Science & Practices of Single Crystal Growth) to Ph.D. Students		
Senior Postdoctoral Researcher (2.2 Y), <i>Photovoltaic Materials and Systems Group</i>		Denmark
Department of Electrical and Photonics Engineering, Technical University of Denmark (DTU)		
Full-Time Research: Integration of 2D-TMDs and their Heterostructures in Novel Optoelectronic Devices.		Apr.2021-May.2023
Co-supervision: Thesis works of Master and Bachelor Students.		
Postdoctoral Researcher (2.8 Y), <i>Novel Single Crystal Materials Group</i>		Taiwan
Center for Condensed Matter Sciences, National Taiwan University (NTU)		
Full-Time Research: Emergent Materials Development and Crystal Growth for Energy Applications.		Aug.2018-Mar.2021
Postdoctoral Researcher (1 Y), <i>Nanomaterials and Devices Group</i>		Taiwan
Department of Materials Science and Engineering, National Taiwan University		
Full-Time Research: Novel 2D Atomic Materials for Energy Research Platform: Material Synthesis, Device Fabrication, and Mechanism Research.		Aug.2017-Jul.2018
Postdoctoral Researcher (1 Y), <i>Nanoscale Materials and Bioanalytical Chemistry Group</i>		Taiwan
Department of Chemistry, National Taiwan University		
Full-Time Research: Innovation Application and Design of Devices with New One-dimensional and 2D Nanomaterials.		Aug.2016-Jul.2017

Education

Doctor of Philosophy (Ph.D.) – CHEMISTRY/NANOSCIENCE AND TECHNOLOGY		Taiwan
Department of Chemistry, National Taiwan University		
TIGP-Nanoscience & Technology Program, Institute of Physics, Academia Sinica		Sep.2010-Jun.2016
Thesis Entitled: Novel two-dimensional materials and their Applications in Transistors, Photodetectors, and Light-Emitting Devices. (Supervisor: Prof. Yit-Tsong Chen).		
Awarded: Popular Poster Award for Thesis		
Master of Technology (M.Tech.) – NANOTECHNOLOGY		India
Centre for Nanotechnology, Indian Institute of Technology Roorkee		
Sep.2008-Jun.2010		
Thesis Entitled: Semiconductor Nanoparticles and their Interaction with Organic Dyes. (Supervisor: Prof. K. R. Justin Thomas)		
Cleared GATE: Graduate Aptitude Test in Engineering for Technical Postgraduate Programs.		
Bachelor of Technology (B.Tech.) – BIOTECHNOLOGY		India
Department of Biotechnology, Anna University		
Awarded: Distinction with First Class		Sep.2004-May2008

Honors & Awards

2024 Plum Blossom Card, Senior Professional Researcher (Permanent Resident Status)	NIA, Taiwan
2024 Junior Research Investigators, Research Paper Award (Public Talk, Medal, & Cash NT\$-100000)	IoP, Taiwan

2022	Inspire Faculty Award , Independent Research Starting Grant	DST, India
2021	Global Talent Award , Skilled Researcher (Taiwan Golden VISA Entry)	TGC, Taiwan
2020	Honorable Mention Award , Best Poster Presentation (Certificate)	NTU, Taiwan
2019	Young Researcher Award , Researcher Award (Certificate, Medal, & Cash NT\$-5000)	TTS, Taiwan
2017	Postdoc. Visiting Grant , Researcher Travel Grant (Grant NT\$-80000)	MOST, Taiwan
2016	Popular Poster Award , Ph.D. Best Thesis Poster Presentation (Certificate)	NTU, Taiwan
2016	Travel Grant , Student International Travel Grant (Grant NT\$-60000)	AS, Taiwan
2008	Distinction Award , Excellence in Undergraduate Program (Certificate)	AU, India

[NIA-National Immigration Agency, IoP-Institute of Physics, DST-Department of Science and Technology, TGC-Taiwan Gold Card, NTU-National Taiwan University, TTS-Taiwan Tamil Sangham, MOST-Ministry of Science and Technology, AS- Academia Sinica, AU-Anna University, MoE- Ministry of Education, and MHRD-Ministry of Human Resource and Development]

Fellowships

2010	Taiwan Scholarship , To Pursue a Doctorate.	MoE, Taiwan
2010	TIGP Fellowship , To Pursue a Doctorate.	AS, Taiwan
2010	MHRD Fellowship , To Pursue a Postgraduate.	MHRD, India

Invited Talks, Seminars & Lectures

2024	"van der Waals Stacking of 2D materials", Anna University	India
2023	"2D Materials and its Future", KOREA TECH	South Korea
2023	"Low-Dimensional Materials and its Application", Indian Institute of Technology Kharagpur	India
2022	"Nanoscience and Nanotechnology", Chung Yuan Christian University	Taiwan
2021	"Atomically Thin Material for High-Performance Optoelectronic Devices," Indian Institute of Science	India
2021	"Graphene and its Future Electronic Devices", Chung Yuan Christian University	Taiwan
2021	"Light and Matter Interaction in Novel 2D Atomically Thin Films" SKOLTECH	Russia
2020	"Growth of Single Crystals: Vapor, Liquid, Solid Phase", Chung Yuan Christian University	Taiwan

Project Supervised

Co-Supervised Master & Bachelor Students @DTU:

2023	Bachelor Thesis: " <i>Controllable Doping in Two-Dimensional Materials</i> " - Peter Frederik Jensen.
2023	Master Thesis: " <i>Fermi-Level Depinning of Wafer-Scale MoS₂ Using Functionalized CVD Graphene</i> "- Angelos.
2023	Master Thesis: " <i>Sb₂S₃ Thin-Film Solar Cells</i> " - Alexandra Tsekou.
2023	Special Course: " <i>Ultrathin and Ultra-Light Solar Cells based on van der Waals Materials</i> "- Rasmus & Malthe.

International Collaborators

Professor Xuan GAO - Case Western Reserve University	U.S.A.
Reader Alex ROZHIN & Raghavan MURUGESAN - Aston University	U.K.
Professor Tim BOOTH & Peter BOGGLID - Technical University of Denmark	Denmark
Associate Research Scientist Raman SANKAR - Academia Sinica	Taiwan
Assistant Professor Chang-Yu LIN - Chung Yuan Christian University	Taiwan
Assistant Professor Surendra B. ANANTHARAMAN - Indian Institute of Technology Madras	India

International Visits

Case Western Reserve University - Department of Physics, Ohio	U.S.A.
MRS Spring Meeting and Exhibit - Phoenix, Arizona	U.S.A.
International Nanotechnology Conference and Expo, Baltimore	U.S.A.
International Conference and Expo on Nanoscience & Molecular Nanotechnology, Rome	Italy
SF Nano Annual Meeting, Paris	France

4th European Congress on Graphene & 2D Materials, Paris
Korea Tech- Department of Mechatronics
Anna University - Crystal Growth Centre

France
South Korea
India

Journal Peer-Reviewer

ACS Applied Material & Interfaces (IF- 9.5)	ACS Publisher
Ultrasonics-Sonochemistry (IF- 8.4)	Elsevier Publisher
Chemosphere (IF- 8.8)	Elsevier Publisher
Nanoscale (IF- 6.7)	RSC Publisher
Ceramic International (IF- 5.2)	Elsevier Publisher
Analytical & Bioanalytical Chemistry (IF- 4.3)	Springer Publisher
Journal of Nanomaterials (IF- 3.791)	Hindawi Publisher
Materials Today Communications (IF- 3.8)	Elsevier Publisher
Advanced Photonics Research (IF- 3.7)	Wiley Publisher
Optik (IF- 3.1)	Elsevier Publisher
Applied Physics A (IF- 2.7)	Springer Publisher

Research Publications {38+7¹}

Published Articles: 38 {Citations-2480+, h-index 22 and i10-index 29}

 <https://urajeshiitr.wixsite.com/rajesh-kumar>

 <https://scholar.google.com.tw/citations?user=G0n3Pg8AAAAJ&hl=en>

[Advanced Materials (1), Advanced Functional Materials (4), ACS Nano (1), Nano Letters (4), ACS Applied & Material Interfaces (5), Nanoscale (6), Advanced Electronic Material (1), ACS Sensors (1), 2D Materials (1), Applied Surface Science (2), Journal of Material Chemistry C (1), Advanced Material Interfaces (1), Bulletin of the Chemical Society of Japan (1), Nanomaterials (1), Materials Advances (1), Physical Review B (3), Analyst (1), Catalysts (1), Biomicrofluidics (1), & AIP Advances (1)]

* Corresponding Author (3) & [±] Review Articles (2)

1. J. -H. Lee, S. Lee, Y. Choi, L. Gries, R. Klingeler, K. Raju, **R. K. Ulaganathan**, R. Sankar, M.-J. Seong, K.-Y. Choi, "Optical Probe of Magnetic Ordering Structure in Mn-substituted NiPS₃" *Advanced Functional Materials*, **2024**, 2405153. (IF-18.5)
2. D. Kumar, N. T. Hoang, Y. S. Y. Choi, K. Raju, **R. K. Ulaganathan**, R. Sankar, "Interplay between Magnetic and Lattice Excitations and Emergent Multiple Phase Transitions in MnPS₃-xSx" *Physical Review B*, **2024**, (IF-3.2)
3. R. Kalaivanan, B. D. S. Chandana, **R. K. Ulaganathan**, S. M. Ganesan, K.-Y. Choi, I. P. Muthuselvam, R. Sankar*, "Structural, Magnetic and Electronic Properties of GdAsSe Single Crystal: Experimental and Theoretical Studies" *Physical Review B*, **2024**, 109, 184420. (IF-3.2)
4. V. Krishnamoorthy, H. K. Bangolla, C.-Y. Chen, Y.-T. Huang, C. M. Cheng, **R. K. Ulaganathan**, R. Sankar, K.-Y. Lee, H.-Y. Du, L.-C. Chen, K.-H. Chen, R.-S. Chen, "Efficient Hydrogen Evolution Reaction in 2H-MoS₂ Basal Planes Enhanced by Surface Electron Accumulation" *Catalysts*, **2024**, 2302469. (IF-3.8)
5. G. Ghimire, **R. K. Ulaganathan**, A. Tempez, O. Chenko, R. R. Unocic, J. Heske, D. I. Miakota, C. Xiang, M. Chaigneau, K. S. Thygesen, T. Booth, D. B. Geohegan, S. Canulescu, "Quasi 1D MoS₂ Nanoribbons with Enhanced Edge Nonlinear Response and Photoresponsivity" *Advanced Materials*, **2023**, 2302469. (IF-27.4)
6. **R. K. Ulaganathan**, P. K. Roy, S. M. Mhatre, R. C. Murugesan, W.-L. Chen, M.-H. Lai, A. Subramanian, C.-Y. Ling, Y.-M. Chang, A. Rozhin, C.-T. Liang, R. Sankar, "High-Performance Photodetector and Angular-Dependent Random Lasing from Long-Chain Organic Diammonium Sandwiched 2D Hybrid Perovskite Non-linear Optical Single Crystal" *Advanced Functional Materials*, **2023**, 2214078. (IF-18.5, Citations-2)
7. H. K. Bangolla, M. Y. Fakhri, C.-H. Lin, C.-M. Cheng, Y.-H. Lu, T.-Y. Fu, P. **R. K. Ulaganathan**, R. Sankar, R.-S. Chen*, "Electrical and Optoelectronic Anisotropy and Surface Electron Accumulation in ReS₂ Nanostructures" *Nanoscale*, **2023**, 15, 19735. (IF-5.8)

8. H. K. Bangolla, Y.-C. Lee, W.-C. Shen, **R. K. Ulaganathan**, R. Sankar, H.-Y. Du*, Ruei-San Chen*, "Photoconduction Properties in Tungsten Disulfide Nanostructures" *Nanomaterials*, 2023, 13, 2190. (IF-4.4)
9. D. I. Miakota, G. Ghimire, **R. K. Ulaganathan**, M E. Rodriguez, S. Canulescu, "A novel Two-step Route to Unidirectional Growth of Multilayer MoS₂ Nanoribbons" *Applied Surface Sciences*, 2023, 619, 156748. (IF-6.3, Citations-5)
10. **R. K. Ulaganathan***, R. C. Murugesan* C. -Y. Lin, A. Subramanian, W.-L. Chen, Y.-M. Chang, A. Rozhin and R. Sankar*, "Stable Formamidinium Based Centimeter Long Two-Dimensional (2D) Lead Halide Perovskite Single Crystal for Long-Live Optoelectronic Application" *Advanced Functional Materials*, 2022, 32, 2112277. (IF-18.5, Citations-11)
11. C.-Y. Lin, **R. K. Ulaganathan***, A. Subramanian, H.-C. Weng, Y.-J. Chang, R. C. Murugesan, R. Sankar, and A. Rozhin, "Extended Air, Light, and Heat Resistive Organolead Halide Perovskite Single-Crystalline Microrods for High-Performance Photodetector" *Materials Advances*, 2022, 3, 8771-8779. (IF-5.2, Citations-1)
12. **R. K. Ulaganathan***, C.-Y. Lin*, R. Sankar*, Raghavan Chinnambedu Murugesan, Ambika Subramanian, Alex Rozhin and Shaik Firdoz, "A Silicon-Based Two-Dimensional Chalcogenide of p-type Semiconducting Silicon Telluride Nanosheets for Ultrahigh Sensitive Photodetector Applications" *Journal of Material Chemistry C*, 2021, 9, 10478-10486. (IF-5.7, Citations-5)
13. C. R. P. Inbaraj, R. J. Mathew, **R. K. Ulaganathan**, R. Sankar, M. Kataria, H. Y. Lin, Y. T. Chen, M. Hofmann, C. H. Lee, Y. F. Chen, "A Bi-anti-ambipolar Field Effect Transistor" *ACS Nano*, 2021, 15, 8686-8693. (IF-15.8, Citations-26)
14. P. Perumal, **R. K. Ulaganathan**, R. Sankar, L. Zhu*, "Staggered Band Offset Induced High-Performance Optoelectronic Devices: Atomically Thin Vertically Stacked GaSe-SnS₂ van der Waals p-n Heterostructures" *Applied Surface Science*, 2021, 535, 147480. (IF-6.3, Citations-15)
15. **R. K. Ulaganathan**, R. Sankar, C. Y. Lin, R. C. Murugesan, K. Tang, F. C. Chou* "High-performance Flexible Broadband Photodetectors Based on 2D Hafnium Selenosulfide Nanosheets" *Advanced Electronic Material*, 2020, 6, 1900794. (IF-5.3, Citations-24)
16. **R. K. Ulaganathan**, P. K. Roy, R. C. Murugesan, S. Mhatre, H. I. Lin, W. L. Chen, Y. F. Chen, Y. M. Chang, R. Sankar, F. C. Chou, C. T. Liang*, "Unprecedented Random Lasing in 2D Organolead Halide Single-Crystalline Perovskite Microrods" *Nanoscale*, 2020, 12, 18269-18277. (IF- 5.8, Citations-19)
17. C. R. P. Inbaraj, R. J. Mathew, **R. K. Ulaganathan**, R. Sankar, M. Kataria, H. Y. Lin, H. Y. Cheng, K. H. Lin, H. I. Lin, Y. M. Liao, F. C. Chou, Y. T. Chen, C. H. Lee, Y. F. Chen*, "Modulating Charge Separation with Hexagonal Boron Nitride Mediation in Vertical Van der Waals Heterostructures" *ACS Applied & Material Interfaces*, 2020, 12, 26213-26221. (IF-8.3, Citations-13)
18. A. S. Kumar, K. Premasiri, M. Gao, **R. K. Ulaganathan**, R. Sankar, F. C. Chou, X. P. A. Gao*, "Electron-Electron Interactions in 2D Semiconductor InSe" *Physical Review B*, 2020, 001300. (IF-3.2, Citations-6)
19. **R. K. Ulaganathan**, K. Yadav, R. Sankar, F. C. Chou, Y. T. Chen*, "Hybrid InSe Nanosheets and MoS₂ Quantum Dots for High-Performance Broadband Photodetectors and Photovoltaic Cells" *Advanced Material Interfaces*, 2019, 6, 1801336. (IF-4.3, Citations-31)
20. C. R. P. Inbaraj, V. K. Gudelli, R. J. Mathew, **R. K. Ulaganathan**, R. Sankar, H. Y. Lin, H. I. Lin, Y. M. Liao, H. Y. Cheng, K. H. Lin, F. C. Chou, Y. T. Chen, C. H. Lee, G. Y. Guo, Y. F. Chen*, "Sn-doping Enhanced Ultra-high Mobility In_{1-x}Sn_xSe Phototransistor" *ACS Applied & Material Interfaces*, 2019, 11, 24269-24278. (IF-8.3, Citations-18)
21. **R. K. Ulaganathan**, Y. H. Chang, D. Y. Wang, S. S. Li*, "Light and Matter Interaction in Two-Dimensional Atomically Thin Films" *Bulletin of the Chemical Society of Japan*, 2018, 91, 761-771. (IF-3.3, Citations-22) - "Journal Cover Page"
22. K. Premasiri, S. K. Radha, S. Sucharitakul, **R. K. Ulaganathan**, R. Sankar, F. C. Chou, Y. T. Chen, X. P. A. Gao*, "Tuning Rashba Spin-Orbit Coupling in Gated Multilayer InSe" *Nano Letters*, 2018, 7, 4403-4408. (IF-9.6, Citations-65)
23. Y. Li, T. M. Wang, H. Wang, Z. P. Li, Y. W. Chen, D. West, R. Sankar, **R. K. Ulaganathan**, F. C. Chou, C. Wetzel, C. Y. Xu, S. B. Zhang, S. F. Shi*, "Enhanced Light Emission from the Ridge of Two-dimensional InSe Flakes" *Nano Letters*, 2018, 18,

5078-5084. (IF-9.6, Citations-36)

24. C. R. P. Inbaraj, R. J. Mathew, G. Haider, T. P. Chen, **R. K. Ulaganathan**, R. Sankar, K. P. Bera, Y. M. Liao, M. Kataria, H. I. Lin, Y. T. Chen, C. H. Lee, Y. F. Chen*, "Ultra-high Performance Flexible Piezo Potential Gated $\text{In}_{1-x}\text{Sn}_x\text{Se}$ Phototransistor" *Nanoscale*, **2018**, 10, 18642-18650. (IF-5.8, Citations-15)
25. Y. Li, T. Wang, M. Wu, T. Cao, Y. W. Chen, R. Sankar, **R. K. Ulaganathan**, F. C. Chou, C. Wetzel, C. G. Xu, S. G. Louie, S. F. Shi*, "Ultrasensitive Tunability of the Direct Bandgap of 2D InSe Flakes via Strain Engineering" *2D Materials*, **2018**, 5, 021002. (IF-4.5, Citations-86)
26. C. J. Kuo, H. C. Chiang, C. A. Tseng, C. F. Chang, **R. K. Ulaganathan**, T. T. Ling, Y. J. Chang, C. C. Chen, Y. R. Chen, Y. T. Chen*, "Lipid- Modified Graphene-Transistor Biosensor for Monitoring Amyloid- β Aggregation" *ACS Applied & Material Interfaces*, **2018**, 10, 12311-12316. (IF -8.3, Citations-22)
27. C. A. Tseng, C. C. Chen, **R. K. Ulaganathan**, C. P. Lee, H. C. Chiang, C. F. Chang, Y. T. Chen*, "One-Step Synthesis of Antioxidative Graphene-Wrapped Copper Nanoparticles on Flexible Substrates for Electronic and Electrocatalytic Applications" *ACS Applied & Material Interfaces*, **2017**, 9, 25067-25072. (IF-8.3, Citations-23)
28. C. Y. Lin*, **R. K. Ulaganathan**, R. Sankar, F. C. Chou, "Ambipolar Behaviors of Few-layered InSe Field-Effect Transistors" *AIP Advances*, **2017**, 7, 075314. (IF-1.4, Citations-12)
29. K. Yadav, A. C. Chou, **R. K. Ulaganathan**, H. D. Gao, H. M. Lee, C. Y. Pan, Y. T. Chen*, "Targeted and Efficient activation of Channelrhodopsins Expressed in Living Cells via Specifically-bound Upconversion Nanoparticles" *Nanoscale*, **2017**, 9, 9457-9466. (IF-5.8, Citations-29)
30. A. Anand, C. R. Liu, A. C. Chou, W. H. Hsu, **R. K. Ulaganathan**, Y. C. Lin, C. A. Dai, F. G. Tseng, C. Y. Pan, Y. T. Chen*, "Detection of K^+ Efflux from Stimulated Cortical Neurons by an Aptamer-Modified Silicon Nanowire Field-Effect Transistor" *ACS Sensors*, **2017**, 2, 69-79. (IF - 8.2, Citations-43)
31. **R. K. Ulaganathan**, Y. Y. Lu, C. J. Kuo, S. R. Tamalampudi, R. Sankar, K. M. Boopathi, A. Anand, K. Yadav, R. J. Mathew, C. R. Liu, F. C. Chou, Y. T. Chen*, "High Photosensitivity and Broad Spectral Response of Multi-layered Germanium Sulfide Transistors" *Nanoscale*, **2016**, 8, 2284-2292. (IF-5.8, Citations-150) - "Citations above 150."
32. P. Perumal, **R. K. Ulaganathan**, R. Sankar, Y. M. Liao, T. M. Sun, M. W. Chu, F. C. Chou, Y. T. Chen, M. H. Shih, Y. F. Chen*, "Ultra-thin Layered Ternary Single Crystals $[\text{Sn}(\text{S}_x\text{Se}_{1-x})_2]$ with Bandgap Engineering for High-performance Phototransistors on Versatile Substrates" *Advanced Functional Material*, **2016**, 26, 3630-3638. (IF-18.5, Citations-82)
33. S. Sucharitakul, **R. K. Ulaganathan**, R. Sankar, F. C. Chou, Y. T. Chen, C. Wang, C. He, R. Hef, X. P. A. Gao*, "Screening Limited Switching Performance of Multilayer 2D semiconductor FETs: the case for SnS" *Nanoscale*, **2016**, 8, 19050-19057. (IF-5.8, Citations-65)
34. S. Sucharitakul, N. J. Goble, **R. K. Ulaganathan**, R. Sankar, Z. A. Bogorad, F. C. Chou, Y. T. Chen, X. P. A. Gao*, "Intrinsic Electron Mobility Exceeding $10^3 \text{ cm}^2/(\text{V s})$ in Multilayer InSe FETs" *Nano Letters*, **2015**, 15, 3815-3819. (IF-9.6, Citations-392) - "Highly cited paper placed top 1% in the field of Physics-Citations above 400."
35. R. D. Nikam, A. Y. Lu, P. A. Sonawane, **R. K. Ulaganathan**, K. Yadav, L. J. Li, Y. T. Chen*, "Three-Dimensional Heterostructures of MoS_2 Nanosheets on Conducting MoO_2 as an Efficient Electrocatalyst to Enhance Hydrogen Evolution Reaction" *ACS Applied & Material Interfaces*, **2015**, 7, 23328-23335. (IF-8.3, Citations-154) - "Citations above 150."
36. S. R. Tamalampudi, Y. Y. Lu, **R. K. Ulaganathan**, R. Sankar, C. D. Liao, K. M. Boopathi, C. H. Cheng, F. C. Chou, Y. T. Chen*, "High Performance and Bendable Few-Layered InSe Photodetectors with Broad Spectral Response" *Nano Letters*, **2014**, 14, 2800-2806. (IF-9.6, Citations-748) - "Citations above 750."
37. K. K. Sriram, C. L. Chang, **R. K. Ulaganathan**, C. F. Chou*, "DNA Combing on Low-pressure Oxygen Plasma Modified polysilsesquioxane Substrates for Single-molecule Studies" *Biomicrofluidics*, **2014**, 8, 052102. (IF-2.6, Citations-12)
38. ¹B. R. Li, C. C. Chen, **R. K. Ulaganathan**, Y. T. Chen*, "Advances in Nanowire Transistors for Biological Analysis and Cellular Investigation" *Analyst*, **2014**, 139, 1589-1608. (IF-3.6, Citations-63)

[†] Under Review & On-Going Publications {7}:

39. J. Yan, H. Takeda, **R. K. Ulaganathan**, K. Raju, R. Sankar, M. Yamashita, "Field-Angle Dependence of Phonon Thermal Hall Effect" (Under Review: Nature Physics).
40. P. V. Pham, A. Kumar, T.-H. Mai, **R. K. Ulaganathan**, R. I. Stanchev, R. K. Gupta, R. Sankar. "Infrared Photodetectors: Breakdown the Limit in Detection" (Under Review: Nature Photonics).
41. T.-H. Wu, C.-E. Hsu, **R. K. Ulaganathan**, R. Sankar, Z. Li, C.-C. Lee, C.-S. Chang, K.-H. Lin*, "Anisotropic Screening of excitons in van der Waals Materials" (Under Review: Advance Science).
42. H. K. Bangolla, C.-Y. Chen, C.-M. Cheng, K.-Y. Lee, L.-C. Chao, **R. K. Ulaganathan**, R. Sankar, R.-S. Chen* "Spatially Separated Bipolar Transport and Surface Electron Accumulation in Tungsten Diselenide Nanostructures" (Under Review: Applied Surface Science).
43. N.-X. Li, C. R. P. Inbaraj, R. Sankar, Hsia Yu Lin, **R. K. Ulaganathan**, R. J. Mathew, Y.-T. Chen, Y.-F. Chen*, "Negative Differential Resistance in Trichalcogenide Based Broken-Gap n-n Heterostructures" (Submitted: ACS Applied Energy Materials).
44. **R. K. Ulaganathan***, R. C. Murugesan* C. -Y. Lin, A. Subramanian, A. Rozhin and R. Sankar* "Millimeter-Sized Chiral 2D Perovskite Single Crystal Photodetector with High Performance and Efficient Stability" (In Preparation).
45. G. Ghimire, **R. K. Ulaganathan**, O. Chenko, C. Piccinini, B. Munkhbat, Y. Pilhun, E. Lee, K. P. Dhakal, J. Kim, D. I. Miakota, S. Canulescu, R. R. Unocic, J. Heske, D. I. Miakota, C. Xiang, M. Chaigneau, K. S. Thygesen, T. Booth, D. B. Geohegan, S. Canulescu, "Raman, Differential & Reflectance Anisotropy and Polarization Sensitive Photodetection from 1D MoS₂ Nanorods" (In Preparation).

Conferences & Symposium Meetings (27)

1. **R. K. Ulaganathan***, P. K. Roy, C.-T. Liang, R. Sankar*, "High-Performance Photodetector and Angular-Dependent Random Lasing from Long- Chain Organic Diammonium Sandwiched 2D Hybrid Perovskite Non-linear Optical Single Crystal" International Workshop on Transport and Optics in Topological Systems (TOTS-2024), Taipei, Taiwan.
2. D. I. Miakota, G. Ghimire, F. L. Larsen, R. Malureanu, **R. K. Ulaganathan**, S. Canulescu "Alkali-assisted synthesis of multilayer crystalline MoS₂ nanoribbons with 2D edges, and Schottky barrier observation on MoS₂ nanoribbon-Au/Cr junction" 2D Transition Metal Dichalcogenides-2024, Hongkong.
3. A. Subramanian, V. Thirunavukkarasu, **R. K. Ulaganathan***, R. Sankar, W. S. Lew, C.-Y. Lin, "Photoconduction Properties in Germanium Sulfide Nanosheets on Rigid and Flexible Substrates" 8th IEEE Electron Devices Technology & Manufacturing Conference-2024, Bangalore, India.
4. G. Ghimire, **R. K. Ulaganathan**, D. I. Miakota, S. Canulescu, "MoS₂ Nanostructures with Tailored Dimensionality." Materials Research Society (MRS) Spring Meeting & Exhibit-2023, San Francisco, United States.
5. **R. K. Ulaganathan**, G. Ghimire, D. I. Miakota, S. Canulescu, "pMoO_x-nMoS₂ Heterojunction Assembly for Tunable and Efficient Optoelectronic Devices." 4th European Congress on Graphene & 2D Materials-2022, Paris, France.
6. G. Ghimire, **R. K. Ulaganathan**, D. I. Miakota, S. Canulescu, "Quasi One-Dimensional MoS₂ Nanoribbons" 12th European Conference and Exhibition in Graphene and 2D Materials-2022, Aachen, Germany.
7. G. Ghimire, **R. K. Ulaganathan**, D. I. Miakota, S. Engberg, S. Canulescu, "Light Harvesting in MoS₂ Semiconducting Homostructures" 12th Hybrid European Kesterite Workshop-2022, Lyngby, Denmark.
8. D. I. Miakota, G. Ghimire, F. F. Bertoldo, **R. K. Ulaganathan**, R. U. Raymond, B. G. David, S. L. J. Engberg, F. B. Fabian, K. S. Thygesen, S. Canulescu, "Laser-assisted Synthesis of 2D Quantum Materials and Heterostructures" 16th International Conference on Laser Ablation, Matsue, Japan.
9. T. P. Lu, M. X. Loi, J. J. Yeh, A. Subramanian, P. H. Chiu, C. H. Wu, H. W. Liu, **R. K. Ulaganathan**, C. Y. Lin, "Electrical

Characteristics of InSe-based Field-effect Transistors” International Conference on Applied System Innovation (IEEE)-2022, Nantou, Taiwan.

10. D. I. Miakota, G. Ghimire, **R. K. Ulaganathan**, R. U. Raymond, B. G. David, S. L. J. Engberg, S. Canulescu, “A Potential Approach to Grow Vander Waals Heterostructures based on Pulsed laser Deposition of Solid Oxide Precursors for Thin Film Photovoltaics” European Materials Research Society (EMRS)-2022, France.
11. D. I. Miakota, G. Ghimire, **R. K. Ulaganathan**, R. U. Raymond, B. G. David, S. L. J. Engberg, F. B. Fabian, K. S. Thygesen, S. Canulescu, “Two-Dimensional Tungsten Disulfide Monolayers Synthesized from Solid Oxide Precursor Grown by Pulsed Laser Deposition” Materials Research Society (MRS) Fall Meeting-2021, Boston, United States.
12. **R. K. Ulaganathan**, R. Sankar, F. C. Chou*, “High-Performance Flexible Broadband Photodetectors Based on 2D Hafnium Selenosulfide Nanosheets” CCMS Annual Meeting 2020, Taipei, Taiwan-“Honorable Mention Award.”
13. A. Kumar, **R. K. Ulaganathan**, R. Sankar, F. C. Chou, X. Gao*, “Effect of Oxygen Adsorption on Electron Transport in Few-Layer InSe FETs” American Physical Society (APS) Annual Meeting-2019, March 4-8th, Boston, United States.
14. **R. K. Ulaganathan**, T. P. Chen, C. M. Raghavan, R. Sankar, C. W. Chen, F. C. Chou*, “Stable Two-dimensional Ruddlesden-Popper Hybrid Lead Iodide Perovskites for Optoelectronic Applications” Annual Meeting of Centre of Atomic Initiatives for New Materials-2018, November 16th, Taipei, Taiwan.
15. K. Viraj, S. Sucharitakul, **R. K. Ulaganathan**, R. Sankar, F. C. Chou, X. Gao*, “Tuning Spin-orbit coupling in Few-layer InSe” American Physical Society (APS) Annual Meeting 2018, March 5-9th, Los Angeles, United States.
16. Chang-Yu Lin*, **R. K. Ulaganathan**, Raman Sankar, and Fang-Cheng Chou, “The Metal-Contacts on Graphene-like Layered Materials” IEEE ICASI-2017, May 13-17th, Sapporo, Japan.
17. **R. K. Ulaganathan**, Y. T. Chen*, “Novel two-dimensional materials for the Transistor, Photodetector, and Light-emitting Device Applications” Annual Graduate Symposium, Department of Chemistry-2016, June 11th, Taipei, Taiwan - “Awarded Best Thesis Poster.”
18. S. Sucharitakul, M. Liu, **R. K. Ulaganathan**, R. Sankar, F. C. Chou, Y. T. Chen, X. Gao*, “Few-Layer III-VI and IV-VI 2D Semiconductor Transistors” American Physical Society (APS) March Meeting-2016, March 14-18th, Baltimore, United States.
19. **R. K. Ulaganathan**, Y. T. Chen*, “High Photosensitivity and Broad Spectral Response of Multi-layered Germanium Sulfide Transistors” Materials Research Society (MRS) Meeting and Exhibit-2016, March 28th-April 1st Phoenix, United States.
20. **R. K. Ulaganathan**, Y. T. Chen*, “Optoelectronics and Energy-Related Applications of Two-Dimensional Materials” International Nanotechnology Conference and Expo-2016, April 4-6th, Baltimore, United States.
21. **R. K. Ulaganathan**, Y. T. Chen*, “New Two-Dimensional Semiconductor and Their Potential Opto-Electronic Applications” SF Nano Annual Meeting-2016, December 12-14th, Paris, France.
22. **R. K. Ulaganathan**, Y. Y. Lu, C. J. Kuo, S. R. Tamalampudi, R. Sankar, F. C. Chou, Y. T. Chen*, “High Photosensitivity and Broad Spectral Response of Multi-layered Germanium Sulfide Transistors” 11th International Conference and Expo on Nanoscience & Molecular Nanotechnology-2016, October-20-22nd, Rome, Italy.
23. **R. K. Ulaganathan**, Y.T. Chen*, “A Highly Photoresponsive Multi-Layered Germanium Sulfide Photodetector” Annual meeting of Nanoscience and Nanotechnology Program-2016, May, Taipei, Taiwan- “Selected as a Top 10 Best Poster.”
24. S. Sucharitakul, N. Goble, **R. K. Ulaganathan**, R. Sankar, F. C. Chou, Y. T. Chen, X. Gao*, “Field-effect vs. Hall Mobility in Back-gated Multi-layered InSe FETs” American Physical Society (APS) March Meeting-2015, March 2-6th, San Antonio, United States.
25. **R. K. Ulaganathan**, Y. T. Chen*, “A Novel Two-dimensional Misfit Layered Material for Nanoelectronics Devices” Annual meeting of Nanoscience and Nanotechnology Program 2015, May, Taipei, Taiwan- “Selected as a Top 10 Best Poster.”
26. **R. K. Ulaganathan**, K. R. J. Thomas*, “Hybrid Nanostructures for the Efficiency of Dye-Sensitized Solar Cells” International Conference on Advancement of Nanoscience and Nanotechnology (ICOANN)-2010, Karaikudi, India.

27. R. Agarwal, **R. K. Ulaganathan**, A. Baheti, K. R. J. Thomas*. "Interaction of TiO₂ Nanoparticles in Organic Dye for Dye-Sensitized Solar Cell" Modern Trends Inorganic Chemistry (MTIC-X111)-2009, IISC, Bangalore, India.

References

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