

UK Semiconductors 2019 with TMD-UK 2019

WEDNESDAY 10th JULY			
Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre	Atrium Level 2
09:30	Registration & Refreshments		
10:25	Introduction <i>Jon Heffernan</i>		
10:30	Plenary 1 <i>Mike Wale</i>		
11:20	B-O-1	Photonics-1	A-O-1
11:35	B-O-2	Photonics-2	A-O-2
11:50	B-O-3	Photonics-3	A-O-3
12:05	B-O-4	Photonics-4	A-O-4
12:20	B-O-5	Photonics-5	A-O-5
12:35	Lunch, Exhibition & Posters A-C		
13:00	IOP Student Competition Seminar Rm 223		
14:00	IOP Prize Talk <i>Mojtaba Abdi Jalebi</i>		
14:35	B-O-6	Photonics-6	A-O-6
14:50	B-O-7	Photonics-7	C-O-1
15:05	B-O-8	Photonics-8	C-O-2
15:20	B-O-9	Photonics-9	C-O-3
15:35	Refreshments & Exhibition		
16:00	B-O-10	Photonics-10	C-O-4
16:15	(Invited)	Photonics-11	C-O-5
16:30	B-O-11	Photonics-12	C-O-6
16:45	B-O-12	Photonics-13	C-O-7
17:00	B-O-13	Photonics-14	C-O-8
17:15	B-O-14	Photonics-15	C-O-9
17:30	B-O-15	Photonics-16	C-O-10
17:45	B-O-16	Photonics-17	
18:00	End of session		
18:30	Conference Dinner Devonshire Cat, Wellington Street, Sheffield S1 4HG		

THURSDAY 11th JULY			
Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre	Atrium Level 2
09:00	Registration & Refreshments		
09:30	Plenary 2 <i>Andras Kis</i>		
10:15	Refreshments & Exhibition		
10:45	D-O-1 (Invited)	TMD-O-1 (Invited)	F-O-1
11:00			F-O-2
11:15	D-O-2	TMD-O-2	F-O-3
11:30	D-O-3	TMD-O-3	F-O-4
11:45	D-O-4	TMD-O-4	F-O-5
12:00	D-O-5	TMD-O-5	F-O-6
12:15	D-O-6	TMD-O-6	
12:30	D-O-7	TMD-O-7	
12:45	Lunch, Exhibition & Posters D-F, TMD		
13:00	IOP Group AGM		
14:00	IOP Prizegiving		
14:05	Plenary 3 <i>Susanna Thon</i>		
14:55	D-O-8	TMD-O-8	E-O-1
15:10	D-O-9	(Invited)	E-O-2
15:25	D-O-10	TMD-O-9	E-O-3
15:40	D-O-11	TMD-O-10	E-O-4
15:55	Refreshments		
16:15	D-O-12 (Invited)	TMD-O-11 (Invited)	E-O-5
16:30			E-O-6
16:45	D-O-13	TMD-O-12	E-O-7
17:00	D-O-14	TMD-O-13	E-O-8
17:15	D-O-15	TMD-O-14	E-O-9
17:30	D-O-16	TMD-O-15	
17:45	D-O-17	TMD-O-16	
18:00	Conference Close		

A: Physics In Semiconductors
B: Optical Devices
C: Electronic Devices
D: Semiconductor materials & nanostructures
E: Mid-IR & THz
F: Organics, Hybrids and Perovskites
TMD: 2D Materials (TMD meeting)
EPSRC Future Photonics Hub Industry Day

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UK Semiconductors 2019 Technical Programme

This year's conference is being held in association with the EPSRC Future Photonics Hub Industry Day (10th July) and the TMD-UK 2019 meeting (11th July). We are pleased to welcome our plenary speakers who will provide extended presentations on the integration of photonic functions in electronic circuits, excitons in 2D materials, and semiconductor nanocrystal films for next-generation photovoltaics. We are also proud to host the prize talk for the IOP Semiconductor Physics Group thesis prize, on perovskite solar cells.

Delegates may attend any sessions they wish and are encouraged to do so.

Plenary Lectures: *Mike Wale, Andras Kis, Susanna Thon*

IOP Semiconductor Physics Group Thesis Prize Talk: *Mojtaba Abdi Jalebi*

Symposium A: Physics in Semiconductors

Symposium B: Optical Devices

Symposium C: Electronic Devices

Symposium D: Semiconductor Materials and Nanostructures

Symposium E: Mid-IR and THz Materials and Devices

Symposium F: Organic, Organic/Inorganic Hybrid Semiconductors and Perovskites

Symposium TMD: 2D Materials – incorporating the TMD-UK 2019 Meeting

Symposium Photonics: EPSRC Future Photonics Hub Industry Day

Oral Presentations – Wednesday 10th July 2019

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
09:30	Registration and Refreshments, Atrium Level 2		
10:30	<p>Plenary 1</p> <p style="text-align: center;">New Developments in Photonic Integration</p> <p style="text-align: center;"><u>Michael J. Wale</u></p> <p>Department of Electronic and Electrical Engineering, University College London, Torrington Place, London WC1E 7JE, UK</p>		
11:20	<p>B-O-1</p> <p style="text-align: center;">III-V quantum dot laser devices grown on on-axis (001) Si substrate</p> <p style="text-align: center;"><u>Zizhuo Liu</u>¹, C. Hantschmann², M. Tang¹, Y. Lu¹, J.-S. Park¹, M. Liao¹, A. Sanchez³, R. Beanland³, M. Martin⁴, T. Baron⁴, S. Chen¹, A. Seeds¹, R. Penty², I. White², H. Liu¹</p> <p>¹Department of Electronic and Electrical Engineering, University College London, London WC1E 7JE, UK ²Centre for Photonic Systems, Department of Engineering, University of Cambridge, 9 JJ Thomson Avenue, Cambridge CB3 0FA, UK ³Department of Physics, University of Warwick, Coventry CV4 7AL, UK ⁴Univ. Grenoble Alpes, CNRS, CEA-LETI, MINATEC, LTM, F-38054 Grenoble, France</p>	<p>Photonics-1</p> <p style="text-align: center;">Introduction to The Future Photonics Hub</p> <p style="text-align: center;"><u>Professor Sir David Payne</u></p> <p>Optoelectronics Research Centre, Building 46, University of Southampton, Highfield Campus, Hampshire SO17 1BJ, UK</p>	<p>A-O-1</p> <p style="text-align: center;">Optimisation of electron and nuclear spin lifetimes in InGaAs/GaAs quantum dot qubits</p> <p style="text-align: center;">G. Gillard¹, T. J. Broomhall¹, G. Raganathan¹, I. M. Griffiths¹, C. McEwan¹, A. Ulhaq¹, E. Clarke², P. Patil², I. Farrer², M. S. Skolnick¹, <u>Evgeny A. Chekhovich</u>¹</p> <p>¹Department of Physics and Astronomy, University of Sheffield, Sheffield S3 7RH, UK ²Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield S1 3JD, UK</p>
11:35	<p>B-O-2</p> <p style="text-align: center;">1.3 μm InAs/GaAs quantum dot laser monolithically integrated on exact (001) Si substrate</p> <p style="text-align: center;"><u>Keshuang Li</u>¹, Z. Liu¹, M. Tang¹, M. Liao¹, D. Kim¹, H. Deng¹, A. M. Sanchez², R. Beanland², M. Martin³, T. Baron³, S. Chen¹, J. Wu¹, A. Seeds¹, H. Liu¹</p> <p>¹Department of Electronic and Electrical Engineering, University College London, London WC1E 7JE, UK ²Department of Physics, University of Warwick, Coventry CV4 7AL, UK ³Univ. Grenoble Alpes, CNRS, CEA-LETI, MINATEC, LTM, F-38054 Grenoble, France</p>		<p>A-O-2</p> <p style="text-align: center;">Light Scattering from Solid-State Quantum Emitters: Beyond the Atomic Picture</p> <p style="text-align: center;"><u>Alistair J. Brash</u>¹, C. L. Phillips¹, J. Iles-Smith^{1,2}, D. P. S. McCutcheon³, J. O'Hara¹, E. Clarke⁴, B. Royall¹, J. Mørk⁵, M. S. Skolnick¹, A. M. Fox¹, A. Nazir²</p> <p>¹Department of Physics and Astronomy, University of Sheffield, UK ²School of Physics and Astronomy, University of Manchester, UK ³Quantum Engineering Technology Labs, University of Bristol, UK ⁴EPSRC National Epitaxy Facility, University of Sheffield, UK ⁵Department of Photonics Engineering, DTU Fotonik, Technical University of Denmark, Denmark</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
11:50	<p>B-O-3</p> <p>Monolithic Growth InAs Quantum Dots Lasers on (001) Silicon Emitting at 1.5 μm</p> <p>Z. Li¹, S. Shutts¹, <u>Craig P. Allford</u>¹, B. Shi², W. Luo², K. M. Lau², P. M. Smowton¹</p> <p>¹EPSRC Future Compound Semiconductor Manufacturing Hub, School of Physics and Astronomy, Cardiff University, Queen's Building, The Parade, Cardiff CF24 3AA, UK ²Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong</p>	<p>Photonics-2</p> <p>InP Based Photonic Integrated Circuits - A personal perspective on a Key Technology for Telecommunications</p> <p><u>Andy Carter</u></p>	<p>A-O-3</p> <p>Photon Statistics of Filtered Quantum Dot Resonance Fluorescence</p> <p><u>Catherine L. Phillips</u>¹, A. J. Brash¹, J. Iles-Smith^{1,2}, D. P. S. McCutcheon³, A. Nazir², M. S. Skolnick¹, A. M. Fox¹</p> <p>¹Department of Physics and Astronomy, University of Sheffield, UK ²School of Physics and Astronomy, University of Manchester, UK ³Quantum Engineering Technology Labs, University of Bristol, UK</p>
12:05	<p>B-O-4</p> <p>Temperature Dependant Characteristics of p-doped Laser Devices</p> <p><u>Lydia Jarvis</u>¹, S. Shutts¹, M. Tang², H. Liu², P. M. Smowton¹</p> <p>¹School of Physics and Astronomy, Cardiff University, Cardiff CF24 3AA, UK ²Department of Electronic and Electrical Engineering, University College London, London WC1E 7JE, UK</p>		<p>A-O-4</p> <p>A GaAs Topological Photonic Crystal Ring Resonator</p> <p>M. Jalalimehrabad, <u>Andrew Foster</u>, R. Dost, D. M. Whittaker, M. S. Skolnick, L.R. Wilson</p> <p>Department of Physics and Astronomy, University of Sheffield, Sheffield S3 7RH, UK</p>
12:20	<p>B-O-5</p> <p>Physical Properties of Low Threshold Current Type-II GaInAs/GaAsSb "W"-Lasers Emitting in the 1.2-1.3 μm range</p> <p><u>Dominic A. Duffy</u>¹, I. P. Marko¹, T. D. Eales¹, C. Fuchs², J. Lehr², W. Stolz², S. J. Sweeney¹</p> <p>¹Advanced Technology Institute and Department of Physics, University of Surrey, Guildford GU2 7XH, UK ²Materials Sciences Center and Department of Physics, Philipps-Universität Marburg, Renthof 5, 35032, Marburg, Germany</p>	<p>Photonics-3</p> <p>2019 update on the UK photonics landscape</p> <p><u>John Lincoln</u></p>	<p>A-O-5</p> <p>A Quantum Dot Spinterferometer: Measuring Spins in Low Fields</p> <p>A. B. Young¹, P. Androvitsaneas¹, T. Nutz^{1,2}, J. M. Lennon¹, C. Schneider³, S. Maier³, J. J. Hinchliff¹, E. Harbord¹, M. Kamp³, D. Mcutcheon¹, S. Höfling^{3,4}, J. G. Rarity¹, <u>Ruth Oulton</u>¹</p> <p>¹QET Labs and Quantum Engineering Centre for Doctoral Training, University of Bristol, UK ²Controlled Quantum Dynamics Theory Group, Imperial College London, London SW7 2AZ, UK ³Technische Physik, Universität Würzburg, Germany ⁴School of Physics and Astronomy, University of St Andrews, UK</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
12:35	Lunch, Exhibition and Poster Session for Symposia A-C, Atrium Level 2		
13:00	IOP Student Research Communication Competition Seminar Room 223		
14:00	<p>IOP Prize Talk</p> <p>Chemical Modifications and Passivation Approaches in Metal Halide Perovskite Solar Cells</p> <p><u>Mojtaba Abdi-Jalebi</u></p> <p>Cavendish Laboratory, Department of Physics, University of Cambridge, JJ Thomson Avenue, Cambridge CB3 0HE, UK</p>		
14:35	<p>B-O-6</p> <p>Ultra-thin GaAs photovoltaic device design for space power applications</p> <p><u>Larkin Sayre</u>¹, P. Pearce², A. Johnson³, N. J. Ekins-Daukes⁴, L. C. Hirst¹</p> <p>¹Department of Materials Science and Metallurgy, University of Cambridge, UK ²Department of Physics, Imperial College London, London SW7 2AZ, UK ³IQE plc. ⁴School of Photovoltaic and Renewable Energy Engineering, UNSW, Australia</p>	<p>Photonics-4</p> <p>Commercial models for advanced materials</p> <p><u>Drew Fellows</u></p>	<p>A-O-6</p> <p>Interdependence of magneto-photoluminescence and quantum Hall effect in modulation doped GaAs/AlGaAs quantum well</p> <p><u>Subhomoy Haldar</u>^{1,2}, G. Vashisht^{1,2}, S. Porwal¹, T. K. Sharma^{1,2}, V. K. Dixit^{1,2}</p> <p>¹Semiconductor Materials Lab., Materials Science Section, Raja Ramanna Centre for Advanced Technology, Indore- 452013, India ²Homi Bhabha National Institute, Training School Complex, Anushakti Nagar, Mumbai - 400094, India</p>
14:50	<p>B-O-7</p> <p>Linearly Polarised Multi-Mode 980 nm VCSELs for Erbium Doped Waveguide Amplifiers</p> <p><u>Danqi Lei</u>, N. Babazadeh, O. Ignatova, J. Sarma, D. T. D. Childs, R. A. Hogg</p> <p>School of Engineering, University of Glasgow, Glasgow G12 8QQ, UK</p>		<p>C-O-1</p> <p>Realisation and Transport Measurements of n-GaSb/Al_{0.2}Ga_{0.8}Sb</p> <p><u>Laura Hanks</u>, L. Ponomarenko, A. R. J. Marshall, M. Hayne</p> <p>Department of Physics, Lancaster University, Lancaster LA1 4YB, UK</p>

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15:05	<p>B-O-8 In-Line Characterisation of Photonic Crystal Surface Emitting Lasers</p> <p><u>Benjamin C. King</u>¹, T. S. Roberts², R. J. E. Taylor¹, K. Nishi³, K. Takemasa³, M. Sugawara³, D. T. D. Childs¹, R. A. Hogg¹</p> <p>¹School of Engineering, University of Glasgow, G12 8LT, UK ²Department of Electronic and Electrical Engineering, University of Sheffield, UK ³QD Laser Inc., Keihin Bldg. 1F 1-1 Minamiwataridacho Kawasaki-ku Kawasaki, Kanagawa 210-0855, Japan</p>	<p>Photonics-5 Working with the CSA Catapult</p> <p><u>Dom Brady</u></p> <p>Compound Semiconductor Applications Catapult, Regus, Falcon Drive, Cardiff Bay, Cardiff CF10 4RU, UK</p>	<p>C-O-2 Point defect-enhanced diffusion in epitaxial n++-InGaAs ultra-shallow junctions</p> <p><u>Paloma Tejedor</u>¹</p> <p>¹Instituto de Ciencia de Materiales de Madrid, C.S.I.C.. Sor Juana Inés de la Cruz 3, 28049 Madrid, Spain ²Global Foundries. Wilschdorfer Landstr. 101, 01109 Dresden, Germany ³Ernst-Abbe-Hochschule Jena. University of Applied Sciences. Carl-Zeiss-Promenade 2, 07745 Jena, Germany</p>
15:20	<p>B-O-9 Control of Q factors in Laterally Coupled Vertical Cavities</p> <p><u>Si Chen</u>, H. Francis, Y. R. Wang, C. H. Ho, K. J. Che, M. Hopkinson, C. Y. Jin</p> <p>Department of Electronic & Electrical Engineering, University of Sheffield, Sheffield S3 7HQ, UK</p>	<p>Photonics-6 Working with the EPSRC National Epitaxy Facility</p> <p><u>Jon Heffernan</u></p> <p>EPSRC National Epitaxy Facility, Department of Electronic & Electrical Engineering, University of Sheffield, 3 Solly Street, Sheffield S1 4DE, UK</p>	<p>C-O-3 Ultra-thin AlGaN-GaN Heterostructures on 6-inch Silicon Wafers</p> <p><u>Saptarsi Ghosh</u>¹, B. F. Spiridon¹, A. Hinz¹, M. Frentrup¹, D. J. Wallis^{1,2}, R. A. Oliver¹</p> <p>¹Department of Materials Science and Metallurgy, University of Cambridge, 27 Charles Babbage Road, Cambridge CB3 0FS, UK ²Centre for High Frequency Engineering, University of Cardiff, 5 The Parade, Newport Road, Cardiff CF24 3AA, UK</p>
15:35	Refreshments and Exhibition, Atrium Level 2		
16:00	<p>B-O-10 (Invited) An Integrated Optoelectronic Microfluidic Platform for Particle Manipulation and Control</p> <p>D. Giliyana, <u>Sara-Jane Gillgrass</u>, B. Almagwashi, E. Le Boulbar, P. M. Smowton</p> <p>School of Physics and Astronomy, Cardiff University, The Parade, Cardiff CF24 3AA, UK</p>	<p>Photonics-7 Photonics as an enabler for quantum technology</p> <p><u>Peter Smith</u></p> <p>Optoelectronics Research Centre, Building 46, University of Southampton, Highfield Campus, Hampshire SO17 1BJ, UK</p>	<p>C-O-4 Growth optimization of metamorphic Asymmetric Spacer Tunnel (mASPAT) Diodes for High-Frequency Applications</p> <p><u>Abdelmajid Salhi</u>, J. Sexton, M. Missous</p> <p>School of Electrical & Electronic Engineering, University of Manchester, Sackville Street, Manchester M13 9PL, UK</p>
16:15			<p>C-O-5 Experimentally Validated Physical Modelling of Asymmetric Spacer Layer Tunnel Diodes</p> <p><u>Andrew Hadfield</u>, M. Missous</p> <p>School of Electrical & Electronic Engineering, University of Manchester, Sackville Street, Manchester M13 9PL, UK</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
16:30	<p>B-O-11</p> <p>Transfer-printed dual-colour micro-LEDs for underwater wireless optical communication</p> <p><u>José F. C. Carreira</u>¹, G. N. Arvanitakis¹, A. D. Griffiths¹, J. J. D. McKendry¹, E. Xie¹, J. Kosman², R. K. Henderson², E. Gu¹, M. D. Dawson¹</p> <p>¹Institute of Photonics, Department of Physics, University of Strathclyde, Glasgow, UK ²Joint Research Institute for Integrated Systems, University of Edinburgh, Edinburgh, UK</p>	<p>Photonics-8</p> <p>CORNERSTONE: UK Silicon Photonics Rapid Prototyping Capability</p> <p><u>Callum G. Littlejohns</u>¹, D. T. Tran¹, H. Du¹, M. Banakar¹, X. Yan¹, G. Sharp², M. Sorel², R. Webb³, J. England³, H. M. H. Chong¹, F. Y. Gardes¹, D. J. Thomson¹, G. Z. Mashanovich¹, G. T. Reed¹</p> <p>¹Optoelectronics Research Centre, University of Southampton, Southampton, SO17 1BJ, UK ²Optoelectronics Group, University of Glasgow, Glasgow, G12 8LP, UK ³Ion Beam Centre, University of Surrey, Guildford, GU2 7XH, UK</p>	<p>C-O-6</p> <p>15-35 GHz Zero-Bias Asymmetrical Spacer Layer Tunnel Diode Detectors</p> <p><u>Omar S. Abdulwahid</u>¹, S. G. Muttalak¹, J. Sexton¹, M.J. Kelly², M. Missous¹</p> <p>¹School of Electrical and Electronic Engineering, University of Manchester, UK ²Department of Electrical Engineering, University of Cambridge, UK</p>
16:45	<p>B-O-12</p> <p>Distributed Feedback Lasers for ⁸⁷Sr-Based Optical Lattice Clocks</p> <p><u>Aleksandr Boldin</u>¹, E. Di Gaetan¹, D. Childs¹, N. Babazadeh¹, M. Steer¹, T. Kelly¹, M. Sorel¹, R. A. Hogg¹, J. Orchard², N. Gerrard², O. Kowalski², M. Knapp³, C. Robinson³, M. Haji³</p> <p>¹School of Engineering, University of Glasgow, Glasgow, G12 8LT, Scotland, UK ²Compound Semiconductor Technologies Global Ltd., Hamilton, G72 0BN, Scotland, UK ³National Physics Laboratory, Hampton Road, Middlesex, TW11 0LW, England, UK</p>	<p>Photonics-9</p> <p>High efficiency, Quantum dot enhanced Photonic Crystal LEDs for monolithic micro-display applications</p> <p><u>Martin D.B. Charlton</u>¹, C. Krishnan¹, P. Lagoudakis²</p> <p>¹Electronics and Computer Science, University of Southampton, UK ²Department of Physics, University of Southampton, UK</p>	<p>C-O-7</p> <p>Feasibility Study of III-V Non-volatile RAM Manufactured on Si Substrates</p> <p><u>Peter D. Hodgson</u>¹, R. Beanland², D. Lane¹, J. I. Davies³, M. Hayne¹</p> <p>¹Department of Physics, Lancaster University, Lancaster, LA1 4YB, UK ²Department of Physics, University of Warwick, Coventry, CV4 7AL, UK ³IQE plc, Pascal Close, St Mellons, Cardiff, CF3 0LW, UK</p>
17:00	<p>B-O-13</p> <p>Developments in InP-Based Epitaxial Regrowth</p> <p><u>Adam F. McKenzie</u>^{1,2}, J. R. Orchard^{1,2}, N. D. Gerrard², O. Kowalski², A. McKee², Z. Bian¹, R. J. E. Taylor¹, D. T. D. Childs¹, D. A. MacLaren¹, R. A. Hogg¹</p> <p>¹University of Glasgow, Glasgow, G12 8LT, UK ²CST Global Ltd, Blantyre, G72 0BN, UK</p>	<p>Photonics-10</p> <p>State-of-the-art wafer scale 2D MoS₂ FET biosensors</p> <p><u>Ioannis Zeimpekis</u>, K. Morgan, N. Aspiotis, Z. Feng, D. Hewak</p> <p>Optoelectronics Research Centre, University of Southampton, Southampton, SO17 1BJ, UK</p>	<p>C-O-8</p> <p>Sub-nanomolar detection of Caesium with water-gated transistor</p> <p><u>Nawal Alghamdi</u>^{1,2}, Z. Alqahtani^{1,3}, M. Grell¹</p> <p>¹Department of Physics and Astronomy, University of Sheffield, Hicks Building, Hounsfield Rd, Sheffield S3 7RH, UK ²Department of Physics, University of Tabuk, King Fahad Road, Tabuk 47731, Saudi Arabia ³Department of Physics, University of Taif, Taif-Al-Haweiah 21974, Saudi Arabia</p>

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17:15	<p>B-O-14</p> <p>Polariton nonlinear optics in gallium nitride quantum-well waveguides up to 200 Kelvin</p> <p><u>Paul M. Walker</u>¹, D. M. Di Paola¹, R. P. Emmanuele¹, T. Kuriakose¹, J. Ciers², Z. Zaidi¹, M. S. Skolnick¹, Raphaël Butté², D. N. Krizhanovskii¹</p> <p>¹University of Sheffield, Sheffield S3 7RH, UK ²Ecole Polytechnique Federale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland</p>	<p>Photonics-11</p> <p>Henry Royce Institute</p> <p><u>Thanasis Georgiou</u></p> <p>Henry Royce Institute, Manchester, UK</p>	<p>C-O-9</p> <p>Effects of Scaling on a 3-D Lateral Super-Junction Multi-Gate MOSFET for sub-50 V Applications</p> <p>O. A. Adenekan, P. Holland, <u>Karol Kalna</u></p> <p>Nanoelectronic Devices Computational Group (NanoDeCo), College of Engineering, Swansea University Bay Campus, Fabian Way, Swansea SA1 8EN, Wales, UK</p>
17:30	<p>B-O-15</p> <p>Dilute Nitride GaInNAsSb for High Speed 1.55 μm Photodiodes</p> <p><u>Xiao Collins</u>¹, K. Nunna², R. Yanka², R. Pelzel³, A. R. J. Marshall¹</p> <p>¹Physics Department, Lancaster University, Lancaster LA1 4YB, UK ²IQE inc, Greensboro - NC 27409, USA ³IQE inc, Bethlehem - PA 18015, USA</p>	<p>Photonics-12</p> <p>EPSRC Future Metrology Hub</p> <p><u>Christian Young</u></p> <p>The Future Metrology Hub, University of Huddersfield, School of Computing and Engineering, Queensgate, Huddersfield HD1 3DH, UK</p>	<p>C-O-10</p> <p>Choice of semiconductor for Tritium Betavoltaic Batteries</p> <p><u>Sergey I. Maximenko</u>¹, J. E. Moore², C. Affouda³</p> <p>¹Naval Research Laboratory, Washington, DC, 20375, USA ²The George Washington University, Washington, DC, 20052, USA ³Formerly of Naval Research Laboratory, Washington, DC, 20375, USA</p>
17:45	<p>B-O-16</p> <p>Monolithically Mode-Locked Self-Assembled InP Quantum Dot Lasers</p> <p>Z. Li¹, <u>Craig P. Allford</u>¹, S. Shutts¹, A. B. Krysa², P. M. Smowton¹</p> <p>¹EPSRC Future Compound Semiconductor Manufacturing Hub, School of Physics and Astronomy, Cardiff University, Queen's Building, The Parade, Cardiff CF24 3AA, UK ²EPSRC National Epitaxy Facility, University of Sheffield, Sheffield S1 3JD, UK</p>	<p>Photonics-13</p> <p>Funding opportunities with the Future Photonics Hub</p> <p><u>Tom Carr</u></p> <p>Zepler Institute/Optoelectronics Research Centre, University of Southampton, Highfield, Southampton SO17 1BJ, UK</p>	
18:00	End of Session		
18:30	<p>Conference Dinner</p> <p>Devonshire Cat 49 Wellington Street, Sheffield S1 4HG</p>		

Oral Presentations – Thursday 11th July 2019

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
09:00	Registration and Refreshments, Atrium Level 2		
09:30	<p>Plenary 2</p> <p style="text-align: center;">Exciton Manipulation in Heterostructures of 2D Materials</p> <p style="text-align: center;"><u>Andras Kis^{1,2}</u></p> <p>¹Electrical Engineering Institute, École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland</p> <p>²Institute of Materials Science and Engineering, École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland</p>		
10:15	Refreshments and Exhibition, Atrium Level 2		
10:45	<p>D-O-1 (Invited)</p> <p style="text-align: center;">Electronic structure evolution in dilute carbide Ge_{1-x}C_x alloys</p> <p style="text-align: center;"><u>Michael D. Dunne^{1,2}</u>, C. A. Broderick^{1,2}, A. C. Kirwan^{1,2}, S. Schulz¹, E. P. O'Reilly^{1,2}</p> <p>¹Tyndall National Institute, Lee Maltings, Dyke Parade, Cork T12 R5CP, Ireland</p> <p>²Department of Physics, University College Cork, Cork T12 YN60, Ireland</p>	<p>TMD-O-1 (Invited)</p> <p style="text-align: center;">Excitons in MoS₂/MoSe₂ Van der Waals heterostructures</p> <p style="text-align: center;"><u>Paulina Plochocka</u></p> <p>Laboratoire National des Champs Magnétiques Intenses, UPR 3228, CNRS-UGA-UPS-INSA, Grenoble and Toulouse, France</p>	<p>F-O-1</p> <p style="text-align: center;">Room-Temperature Polariton Condensation in Dye-filled Microcavities</p> <p style="text-align: center;"><u>Kyriacos Georgiou¹</u>, T. Cookson², D. Sannikov³, T. Yagafarov³, A. Zasedatelev², P. Lagoudakis^{2,3}, D. Lidzey¹</p> <p>1University of Sheffield, UK 2University of Southampton, UK 3Skolkovo Institute of Science and Technology, Russia</p>
11:00			<p>F-O-2</p> <p style="text-align: center;">Understanding texture formation in methylamine-recrystallised methylammonium lead iodide perovskites</p> <p style="text-align: center;"><u>Joel A. Smith</u>, O. S. Game, R. S. Kilbride, M. O'Kane, A. J. Parnell, David G. Lidzey</p> <p>Department of Physics and Astronomy, University of Sheffield, Sheffield, S3 7RH, UK</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
11:15	<p>D-O-2</p> <p>Growth of α-Ga₂O₃ by ALD and application for solar-blind photodetector</p> <p>Fabien C.-P. Massabuau¹, J. Moloney¹, O. Tesh¹, M. Singh², J. W. Roberts³, J. C. Jarman¹, L. C. Lee¹, T. N. Huq¹, J. Brister¹, S. Karboyan², M. Kuball², P. R. Chalker³, R. A. Oliver¹</p> <p>¹Department of Materials Science and Metallurgy, University of Cambridge, Cambridge CB3 0FS, UK ²School of Physics, HH Wills Physics Laboratory, University of Bristol, Bristol BS8 1TL, UK ³School of Engineering, University of Liverpool, Liverpool L69 3GH, UK</p>	<p>TMD-O-2</p> <p>Moiré patterns and highly-ordered nanocorrugations in transition metal dichalcogenide heterostructures</p> <p>Evgeny M. Alexeev¹, N. Mullin¹, Y. Wang^{2,3}, M. J. Hamer^{2,3}, D. J. Terry^{2,3}, P. K. Nayak^{4,5}, S. Ahn⁴, K. Watanabe⁶, T. Taniguchi⁶, H. S. Shin⁴, R. V. Gorbachev^{2,3,7}, K. S. Novoselov^{2,3}, J. K. Hobbs¹, A. I. Tartakovskii¹</p> <p>¹Department of Physics and Astronomy, University of Sheffield, Sheffield, UK ²School of Physics and Astronomy, University of Manchester, Oxford Road, Manchester, UK ³National Graphene Institute, University of Manchester, Manchester, UK ⁴Department of Energy Engineering and Department of Chemistry, Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea ⁵Department of Physics, Indian Institute of Technology Madras, Chennai, India ⁶National Institute for Materials Science, Tsukuba, Japan ⁷Henry Royce Institute for Advanced Materials, Manchester, UK</p>	<p>F-O-3</p> <p>Efficiency of Tin Halide Perovskite Solar Cells</p> <p>Francis Abutu, I. Anejo, B. A. Ikyo</p> <p>Department of Physics, Benue State University, Makurdi, Nigeria</p>
11:30	<p>D-O-3</p> <p>First-principles calculations of electronic properties of prime and oxygen defected β-Ga₂O₃</p> <p>S. Deng, S. Rafique, Lijie Li</p> <p>College of Engineering, Swansea University, Swansea SA1 8EN, UK</p>	<p>TMD-O-3</p> <p>Spin-layer locking of interlayer valley excitons trapped in moiré potentials</p> <p>Mauro Brotons-Gisbert, H. Baek, D. Scerri, C. Bonato, B. D. Gerardot</p> <p>Institute of Photonics and Quantum Sciences, SUPA, Heriot-Watt University, Edinburgh EH14 4AS, UK</p>	<p>F-O-4</p> <p>Influence of Potassium Iodide Inclusion on Operational Lifetime of Triple-Cation Mixed-Halide Perovskite Solar Cells</p> <p>Tarek I. Alanazi, O. S. Game, J. A. Smith, C. Greenland, R. Kilbride, D. G. Lidzey</p> <p>Department of Physics and Astronomy, University of Sheffield, Sheffield, S3 7RH, UK</p>
11:45	<p>D-O-4</p> <p>Tuning porosity of air dried and supercritically dried nanoporous silicon membranes</p> <p>Elida Nekovic, C. J. Storey, A. Kaplan, L. T. Canham, W. Theis</p> <p>Nanoscale Physics Research Laboratory (NPRL), School of Physics & Astronomy, University of Birmingham, Edgbaston, Birmingham B152TT, UK</p>	<p>TMD-O-4</p> <p>Lattice reconstruction in twisted bilayers of semiconducting transition metal dichalcogenides</p> <p>Vladimir V. Enaldiev, C. Yelgel, V. Zólyomi, V. I. Fal'ko</p> <p>National Graphene Institute, University of Manchester, Booth St. E. Manchester M13 9PL, UK</p>	<p>F-O-5</p> <p>A flexible back-contact perovskite solar mini-module</p> <p>M. Wong-Stringer¹, Thomas J. Routledge¹, T. McArdle², C. Wood², O. S. Game¹, J. A. Smith¹, J. E. Bishop¹, N. Vaenas¹, D. M. Coles^{1,3}, N. Spann², A. R. Buckley^{1,3}, D. G. Lidzey^{1,3}</p> <p>¹Department of Physics & Astronomy, University of Sheffield, Hicks Building, Sheffield S3 7RH, UK ²Power Roll Limited, Washington Business Centre, 2 Turbine Way, Sunderland SR5 3NZ, UK ³Ossila Limited, Windsor Street, Sheffield S4 7WB, UK</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
12:00	<p>D-O-5</p> <p>Theory of the electronic structure of direct-gap $\text{Ge}_{1-x}(\text{Sn,Pb})_x$ group-IV alloys</p> <p><u>Edmond J. O'Halloran</u>^{1,2}, C. A. Broderick^{1,3}, E. P. O'Reilly^{1,3}</p> <p>¹Tyndall National Institute, Lee Maltings, Dyke Parade, Cork T12 R5CP, Ireland ²School of Chemistry, University College Cork, Cork T12 YN60, Ireland ³Department of Physics, University College Cork, Cork T12 YN60, Ireland</p>	<p>TMD-O-5</p> <p>Layer- and twist-dependent valence band structure in two-dimensional InSe heterostructures revealed by spatially-resolved ARPES</p> <p>M. J. Hamer^{1,2}, J. Zultak^{1,2}, A. V. Tyurnina^{1,2}, V. Zólyomi^{1,2}, D. Terry^{1,2}, A. Barinov³, A. Garner⁴, J. Donoghue⁴, A. P. Rooney⁴, V. Kandyba³, A. Giampietri³, <u>Abigail Graham</u>⁵, N. Teutsch⁵, X. Xia⁵, M. Koperski^{1,2}, S. J. Haigh^{2,4}, V. I. Fal'ko^{1,2,6}, R. V. Gorbachev^{1,2,6}, N. R. Wilson⁵</p> <p>¹School of Physics and Astronomy, University of Manchester, Oxford Road, Manchester, M13 9PL, UK ²National Graphene Institute, University of Manchester, Oxford Road, Manchester, M13 9PL, UK ³Elettra - Sincrotrone Trieste, S.C.p.A., Basovizza (TS), 34149, Italy ⁴School of Materials, University of Manchester, Oxford Road, Manchester, M13 9PL, UK ⁵Department of Physics, University of Warwick, Coventry, CV4 7AL, UK ⁶Henry Royce Institute, Oxford Road, Manchester, M13 9PL, UK</p>	<p>F-O-6</p> <p>Adsorption of DMMP molecules on zinc phthalocyanine: towards nerve agents sensor design</p> <p><u>Paulina Powroźnik</u>^{1,2}, H. Aldahhak², P. Pander³, W. Jakubik¹, F. B. Dias³, W. G. Schmidt², U. Gerstmann², M. Krzywiecki¹</p> <p>¹Institute of Physics – Center for Science and Education, Silesian University of Technology, S. Konarskiego Str. 22B, 44-100 Gliwice, Poland ²Department of Physics, Paderborn University, D-33098 Paderborn, Germany ³Physics Department, Durham University, South Road, Durham, DH1 3LE, UK</p>
12:15	<p>D-O-6</p> <p>InAs QDs grown on Metamorphic Buffer Layer based on GaAs (001) substrate</p> <p><u>Piotr Andrzej Wroński</u>^{1,2}, F. Jabeen^{1,2}, Sven Höfling^{1,3}</p> <p>¹Technische Physik, Universität Würzburg, Würzburg, Germany ²LHO, School of Physics and Astronomy, University of Southampton, Southampton, UK ³SUPA, School of Physics and Astronomy, University of St Andrews, St Andrews, UK</p>	<p>TMD-O-6</p> <p>Graphene/h-BN/WS₂/Graphene Ultrathin Asymmetrical Vertical Heterostructure using CVD Grown 2D materials</p> <p><u>Linlin Hou</u>, Q. Zhang, Y. Sheng, V. Shautsova, J. Warner</p> <p>Department of Materials, University of Oxford, Parks Road, Oxford, OX1 3PH, UK</p>	

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
12:30	<p>D-O-7</p> <p>Bringing precision to InAs/GaAs Quantum Dot Nucleation and Growth</p> <p>Peter Spencer, C. Chen, W. Michailow, H. Beere, D. Ritchie</p> <p>Cavendish Laboratory, Cambridge University, JJ Thomson Avenue, Cambridge CB3 0HE, UK</p>	<p>TMD-O-7</p> <p>Excitonic upconversion in van der Waals light emitting diodes</p> <p><u>Aleksey Kozikov</u>¹, J. Binder^{2,3}, J. Howarth¹, F. Withers¹, M. Molas^{2,3}, T. Taniguchi⁴, K. Watanabe⁴, C. Faugeras², A. Wymolek³, M. Danovich¹, V. Fal'ko¹, A. K. Geim¹, K. S. Novoselov¹, M. Potemski^{2,3}</p> <p>¹School of Physics and Astronomy, University of Manchester, Manchester, UK ²Laboratoire National des Champs Magnetiques Intenses, Grenoble, France ³Faculty of Physics, University of Warsaw, Warsaw, Poland ⁴National Institute for Materials Science, 1-1 Namiki, Tsukuba 305-0044, Japan</p>	
12:45	Lunch, Exhibition and Poster Session for Symposia D-F, TMD-UK Atrium Level 2		
13:00	IOP Semiconductor Group AGM		
14:00	IOP Student Research Communication Competition Prize-giving		
14:05	<p>Plenary 3</p> <p>Spectral Engineering of Semiconductor Nanocrystal Films for Next-Generation Photovoltaics</p> <p><u>Susanna M. Thon</u></p> <p>Johns Hopkins University, Whiting School of Engineering, 3400 North Charles Street, Baltimore, MD 21218-2608, USA</p>		
14:55	<p>D-O-8</p> <p>Selected energy dark-field imaging for optimal surface phase discrimination in LEEM-MBE</p> <p><u>Daniel Gomez</u>, Y. R. Niu, J. Pereiro, K. Hannikainen, D. E. Jesson</p> <p>School of Physics and Astronomy, Cardiff University, Cardiff CF24 3AA, UK</p>	<p>TMD-O-8 (Invited)</p> <p>Coulomb effects in 2D semiconductors</p> <p><u>Alexey Chernikov</u></p> <p>Department of Physics, University of Regensburg, Germany</p>	<p>E-O-1</p> <p>GaSb-based Mid-infrared Materials and Devices Monolithically Integrated onto Silicon</p> <p><u>Evangelia Delli</u>¹, V. Letka², P. D. Hodgson², E. Repiso², J. P. Hayton¹, A. P. Craig², Q. Lu², R. Beanland³, A. Krier², A. R. J. Marshall², P. J. Carrington¹</p> <p>¹Engineering Department, Lancaster University, Bailrigg, Lancaster, LA1 4YW, UK ²Physics Department, Lancaster University, Bailrigg, Lancaster, LA1 4YB, UK ³Physics Department, University of Warwick, Coventry, CA4 7AL, UK</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
15:10	<p>D-O-9</p> <p>Surface Phase Metastability on GaAs(001)</p> <p><u>Kennet Hannikainen</u>, D. Gomez, J. Pereiro, Y. R. Niu, D. E. Jesson</p> <p>School of Physics and Astronomy, Cardiff University, Cardiff CF24 3AA, UK</p>		<p>E-O-2</p> <p>Theoretical analysis of band-to-band tunneling in highly-mismatched, narrow-gap semiconductor alloys</p> <p><u>Sarita Das</u>^{1,2}, C. A. Broderick^{1,2}, E. P. O'Reilly^{1,2}</p> <p>¹Tyndall National Institute, University College Cork, Lee Maltings, Dyke Parade, Cork T12 R5CP, Ireland ²Department of Physics, University College Cork, Cork T12 YN60, Ireland</p>
15:25	<p>D-O-10</p> <p>InGa(As,Sb) quantum dots (QDs) on GaP (001) substrates: effects of quantum confinement on electronic states</p> <p><u>Petr Klenovsky</u>^{1,2,3}, E. M. Sala^{4,5}, A. Schliwa⁴, D. Bimberg^{4,6}</p> <p>¹Department of Condensed Matter Physics, Faculty of Science, Masaryk University, Kotlářská 267/2, 61137 Brno, Czech Republic ²Central European Institute of Technology, Masaryk University, Kamenice 753/5, 62500 Brno, Czech Republic ³Czech Metrology Institute, Okružní 31, 63800 Brno, Czech Republic ⁴Institute of Solid State Physics, TU Berlin, Hardenbergstr. 36, 10623 Berlin, Germany ⁵EPSRC National Epitaxy Facility, University of Sheffield, North Campus, Broad Lane, S3 7HQ Sheffield, UK ⁶Chinese-German Center on Green Photonics of the Chinese Academy of Science at CIOMP, Changchun 13033, China</p>	<p>TMD-O-9</p> <p>Valley-coherent polaritons propagation in transitional metal dichalcogenides monolithic microcavities</p> <p><u>Armando Genco</u>, A. Catanzaro, D. Gillard, R. Jayaprakash, D. Lidzey, A. I. Tartakovskii</p> <p>University of Sheffield, Department of Physics and Astronomy, Sheffield, UK</p>	<p>E-O-3</p> <p>A comparative study of period composition and thickness of type-II InAs/GaSb superlattices for long-wavelength infrared detectors</p> <p><u>Dominic C. M. Kwan</u>¹, M. Delmas¹, B. Liang², D. Huffaker^{1,2}</p> <p>¹School of Physics and Astronomy, Cardiff University, The Parade, Cardiff, CF24 3AA, UK ²California NanoSystems Institute, University of California, Los Angeles, CA90095, USA</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
15:40	<p>D-O-11</p> <p>AllnAs Gettering Layer for Resonant Tunnelling Diode Barrier Symmetry</p> <p><u>Razvan Baba</u>¹, B. A. Harrison², B. J. Stevens³, R. Beanland⁴, T. Mukai⁵, R. A. Hogg¹</p> <p>¹University of Glasgow, Glasgow G12 8LT, UK ²EPSRC National Epitaxy Facility, Sheffield S3 7HQ, UK ³IQE Europe Ltd., Cardiff CF3 0LW, UK ⁴Integrity Scientific Ltd., Warwick CV34 4JP, UK ⁵ROHM Semiconductor Co. Ltd., Kyoto, 615-8585 Japan</p>	<p>TMD-O-10</p> <p>Highly nonlinear trion-polaritons in a monolayer semiconductor</p> <p><u>Ruggero P. A. Emmanuele</u>¹, M. Sich¹, O. Kyriienko², V. Shahnazaryan^{2,3}, F. Withers⁴, A. Catanzaro¹, P. M. Walker¹, F. A. Benimetskiy³, M. S. Skolnick^{1,3}, A. I. Tartakovskii¹, I. A. Shelykh^{5,3}, D. N. Krizhanovskii^{1,3}</p> <p>¹Department of Physics and Astronomy, University of Sheffield, S3 7RH, UK ²NORDITA, KTH Royal Institute of Technology, Stockholm University, SE-106 91 Stockholm, Sweden ³Department of Nanophotonics and Metamaterials, ITMO University, St.Petersburg, 197101, Russia ⁴College of Engineering Mathematics and Physical Sciences, University of Exeter, EX4 4QF, UK ⁵Science Institute, University of Iceland, Dunhagi-3, IS-107 Reykjavik, Iceland</p>	<p>E-O-4</p> <p>Antimony-rich digital alloys for InSb QDs mid-infrared lasers aiming to gas sensing</p> <p><u>Xin Guan</u>, H. Lei, Z. Jin, Q. Lu, S. Ye, C. Redman, Q. Zhuang</p> <p>Physics department, Lancaster University, Lancaster LA1 4YB UK</p>
15:55	Refreshments, Atrium Level 2		
16:15	<p>D-O-12 (Invited)</p> <p>Growth and Fabrication of High-Quality Single-Nanowire Devices with Radial p-i-n Junctions</p> <p><u>Yunyan Zhang</u>¹, A. M. Sanchez², H. A. Fonseka², J. A. Gott², D. Kim¹, H. Liu¹</p> <p>¹Department of Electronic and Electrical Engineering, University College London, London WC1E 7JE, UK ²Department of Physics, University of Warwick, Coventry CV4 7AL, UK</p>	<p>TMD-O-11 (Invited)</p> <p>Novel materials for van der Waals heterostructures and advances in their nanofabrication</p> <p><u>Roman Gorbachev</u></p> <p>National Graphene Institute, University of Manchester, Manchester M13 9PL, UK</p>	<p>E-O-5</p> <p>Resonantly Excited Excitons for Second-Order Optical Non-Linearity and Realisation of a Broadly Tuneable THz Source and Absorption Spectrometer</p> <p>A. Majeed¹, P. Ivanov², B. Stevens¹, E. Clarke³, I. Butler², D. Childs², O. Kojima⁴, <u>Richard Hogg</u>²</p> <p>¹Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield S1 4DE, UK ²James Watt School of Engineering, University of Glasgow, Glasgow G12 8QQ, UK ³EPSRC National Epitaxy Facility, University of Sheffield, Broad Lane, Sheffield S3 7HQ, UK ⁴Department of Electrical and Electronic Engineering, Graduate School of Engineering, Kobe University, 1-1 Rokkodai, Nada, Kobe, 657-8501, Japan</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
16:30			<p>E-O-6</p> <p>Ultrafast infrared and THz switching based on controllably-doped carbon nanotubes showing negative photoconductivity</p> <p><u>Maria G. Burdanova</u>¹, A. P. Tsapenko², D. A. Satco², R. Kashtiban¹, C. D. W. Mosley¹, M. Monti¹, M. Staniforth¹, J. Sloan¹, Y. G. Gladush², A. G. Nasibulin^{2,3}, J. Lloyd-Hughes¹</p> <p>¹University of Warwick, Department of Physics, Gibbet Hill Road, Coventry, CV4 7AL, UK ²Skolkovo Institute of Science and Technology, Nobel str. 3, 121205 Moscow, Russian Federation ³Aalto University, Department of Applied Physics, Puumiehenkuja 2, 00076 Espoo, Finland</p>
16:45	<p>D-O-13</p> <p>Catalyst-Free Selective-Area Metalorganic Chemical Vapour Deposition of InGaAs/InGaP Core-Shell Nanowire Arrays</p> <p><u>Sa Hoang Huynh</u>¹, H. Kim², Y. Gong¹, K. M. Azizur-Rahman¹, D. Ren², Q. Li¹, D. L. Huffaker¹</p> <p>¹School of Physics and Astronomy, Cardiff University, UK ²Department of Electrical Engineering, University of California Los Angeles, USA</p>	<p>TMD-O-12</p> <p>Ambient optical charge homogenisation in monolayer WS₂</p> <p><u>Yameng Cao</u>, S. Wood, F. Richeimer, J. C. Blakesley, F. A. Castro</p> <p>National Physical Laboratory, Hampton Road, Teddington, London, TW11 0LW, UK</p>	<p>E-O-7</p> <p>Tuneable Quantum Cascade Lasers for the Mapping of Mosquito Population Structure</p> <p><u>Mauro Pazmino Betancourth</u>¹, F. Baldini³, H. Ferguson³, K. Wynne², L. Ranford-Cartwright³, David Childs¹</p> <p>¹School of Engineering, University of Glasgow, Glasgow G12 8QQ, UK ²School of Chemistry, University of Glasgow, UK ³Institute of Biodiversity, Animal Health & Comparative Medicine, University of Glasgow, UK</p>
17:00	<p>D-O-14</p> <p>Irregular Compositional Distribution in Ternary AlGaAs Branched Nanowires</p> <p><u>Giorgos Boras</u>¹, X. Yu¹, H. A. Fonseca², H. Zeng¹, A. M. Sanchez², H. Liu¹</p> <p>¹Department of Electronic and Electrical Engineering, University College London, London WC1E 7JE, UK ²Department of Physics, University of Warwick, Coventry CV4 7AL, UK</p>	<p>TMD-O-13</p> <p>Electroluminescence from perylene diimide monolayers encapsulated in van der Waals tunnel diodes</p> <p><u>James Kerfoot</u>¹, S. A. Svatek¹, V. V. Korolkov¹, M. Alkhamisi¹, T. Taniguchi², K. Watanabe², E. Antolín³, P. H. Beton¹</p> <p>¹School of Physics and Astronomy, University of Nottingham, Nottingham NG7 2RD, UK ²The National Institute for Materials Science, Advanced Materials Laboratory, 1-1 Namiki, Tsu-kuba, Ibaraki 305-0044, Japan ³Universidad Politécnica de Madrid - Instituto de Energía Solar, Avenida Complutense 30, 28040 Madrid, Spain</p>	<p>E-O-8</p> <p>Resonant Cavity Enhanced SWIR Detectors for Spectroscopic Sensing</p> <p><u>Andrew Bainbridge</u>, A. P. Craig, A. R. J. Marshall</p> <p>Physics Department, Lancaster University, Lancaster, LA1 4YB, UK</p>

	Pennine Lecture Theatre	Peak Lecture Theatre	Norfolk 210 Lecture Theatre
17:15	<p>D-O-15</p> <p>Charge Carrier Dynamics and High Optical Coherence Length of a GaAsP-GaAs core-shell Quantum Well Nanolaser</p> <p><u>Stefan Skalsky</u>¹, Y. Zhang², J. A. Alanis¹, H. Liu², P. Parkinson¹</p> <p>¹School of Physics and Astronomy and the Photon Science Institute, University of Manchester, Oxford Road, Manchester M13 9PL, UK ²Department of Electronic and Electrical Engineering, University College London, Torrington Place, London WC1E 7JE, UK</p>	<p>TMD-O-14</p> <p>Synthesis of WSe₂ Monolayers from Inorganic-Se precursors</p> <p><u>Mauro Och</u>¹, P. Palczynski¹, G. Z. Zemignani¹, E. Alexeev², A. Tartakovskii², Cecilia Mattevi¹</p> <p>¹Department of Materials, Imperial College London, London, UK ²Department of Physics and Astronomy, University of Sheffield, Sheffield, UK</p>	<p>E-O-9</p> <p>High k-dielectric passivation of InAs Avalanche Photodiodes</p> <p>Z. Cao, <u>Ian C. Sandall</u></p> <p>University of Liverpool, Department of Electrical Engineering and Electronics, Brownlow Hill, Liverpool L69 3GJ, UK</p>
17:30	<p>D-O-16</p> <p>Realization and the optical properties of Type III InAsSb/GaSb core-shell nanowires</p> <p><u>Hayfaa Aldradhi</u>¹, Z. Jin², X. Chen³, J. Shao³, M. Sanchez⁴, Q. D. Zhuang²</p> <p>¹Department of Physics, Basra University, Basra, Iraq ²Physics Department, Lancaster University, Lancaster LA1 4YB, UK ³State Key Laboratory of Infrared Physics, Shanghai Institute of Technical Physics, Chinese Academy of Sciences, 200083 Shanghai, P. R. China ⁴Department of Physics, University of Warwick, Coventry CV4 7AL, UK</p>	<p>TMD-O-15</p> <p>Laser Induced Transformation of PdSe₂ for On Demand Device Fabrication</p> <p><u>Viktoryia Shautsova</u>, S. Sinha, Y. Sheng, Y. Lu, Q. Zhang, L. Hou, J. Warner</p> <p>Department of Materials, University of Oxford, Parks Road, Oxford OX1 3PH, UK</p>	
17:45	<p>D-O-17</p> <p>GaAs PhC based optical absorber for photovoltaics</p> <p><u>Saraswati Behera</u>, C.-Y. Jin, M. Hopkinson</p> <p>Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield S3 7HQ, UK</p>	<p>TMD-O-16</p> <p>2D Light Emitting Devices for Silicon Photonics</p> <p><u>Yue Wang</u>¹, T. Krauss¹, H. Fang², Juntao Li²</p> <p>¹Department of Physics, University of York, York YO10 5DD, UK ²State Key Laboratory of Optoelectronic Materials and Technologies, Sun Yat-Sen University, Guangzhou, 510275, China</p>	
18:00	Conference Close		

Poster Presentations – Wednesday 10th July, Atrium Level 2

Symposium A: Physics in Semiconductors

A-P-1

Mapping the gain in strained Ge

Ekaterina E. Orlova, R. W. Kelsall

Pollard Institute, School of Electronic and Electrical Engineering, University of Leeds, Leeds LS2 9JT, UK

Symposium B: Optical Devices

B-P-1

Modelling Localized State Distribution in GaAsBi across an Array of Growth Conditions

Nick J. Bailey¹, T. Wilson², T. B. O. Rockett¹, J. P. R. David¹, R. D. Richards¹

¹University of Sheffield, Sheffield, UK

²Imperial College London, London SW7 2AZ, UK

B-P-2

Photoluminescence analysis of strained and relaxed GaAsBi/GaAs MQWs

Nada A. Adham¹, F. Harun¹, T. B. O. Rockett¹, S. J. Sweeney², J. P. R. David¹, R. D. Richards¹

¹University of Sheffield, Sheffield, UK

²University of Surrey, Guildford, UK

B-P-3

Temperature and bias dependent photocurrent of GaAsBi/GaAs multiple quantum well devices

Robert D. Richards, M. R. M. Nawawi, F. Harun, J. P. R. David

University of Sheffield, Sheffield, UK

B-P-4

Structural properties of InGaAsBi epitaxial layers studied using Rutherford Back Scattering techniques

Matthew K. Sharpe¹, I. P. Marko^{1,2}, D. A. Duffy^{1,2}, P. Couture¹, A. Ellis^{1,2}, J. England¹, M. Kesaria^{3,4}, V. Fedorov^{3,5}, E. Clarke³, C. H. Tan³, S. J. Sweeney^{1,2}

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B-P-5

Characterization of gain and loss of In(Ga)As/GaAs quantum dot active region for high temperature operation

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B-P-6

Characteristics and Design Parameters for InP(311)B InAs Quantum Dot LasersIain M.E. Butler^{1,2}, D. T. D. Childs¹, R. A. Hogg¹, A. Matsumoto³, K. Akahane³, N. Yamamoto³¹School of Engineering, University of Glasgow, Glasgow G12 8LT, UK²School of Mathematics and Physics, Queen's University Belfast, Belfast BT7 1NN, UK³National Institute of Information and Communications Technology, 4-2-1 Nukuikita-machi, Koganei, Tokyo 184-8795, Japan

B-P-7

Design and Modeling of an Active Optical Hydrogen and Oxygen Generation System Employing Ultraviolet Terrestrial Solar irradianceHifsa Shahid¹, M. S. Butt¹, M. Adnan¹, A. Shahid¹, A. N. Tabish², I. Safdar¹¹Department of Electrical Engineering, University of Engineering & Technology Lahore, Punjab, Pakistan²Department of Chemical Engineering & Technology, University of Engineering & Technology Lahore, Punjab, Pakistan

B-P-8

Autonomous Alignment and Spatial Tracking On A Microscale Through Structured IlluminationMark Stonehouse, A. Blanchard, B. Guilhabert, I. M. Watson, E. Gu, J. Herrnsdorf, M. D. Dawson

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B-P-9

Investigation into the Implementation of GaAs/Al_xGa_(1-x)As-based Optical Switches in Cold Atom-based Quantum SensorsB. Saleeb-Mousa, Jessica O. Maclean, J. L. Moss, R. P. Champion, C. J. Mellor

School of Physics & Astronomy, University Of Nottingham, University Park, Nottingham NG7 2RD, UK

B-P-10

Optimization of thin Ge buffer layers for integration of InAs/GaAs quantum-dot lasers on silicon substrateJunjie Yang¹, P. Jurczak¹, F. Cui¹, K. Li¹, M. Tang¹, L. Billiald², R. Beanland², A. M. Sanchez², H. Liu¹¹Department of Electronic and Electrical Engineering, University College London, Torrington Place, London WC1E 7JE, UK²Department of Physics, University of Warwick, Coventry CV4 7AL, UK**Symposium C: Electronic Devices**

C-P-1

Boronic Acid Functionalized Carbon Nanotube Field Effect Transistors (CNT-FETs) for Glucose SensingHalit Altuntas^{1,2}, K. Snashall¹, M. Tas¹, I. Jayawardena¹, S. Ravi P. Silva¹¹Advanced Technology Institute, University of Surrey, Guildford, Surrey, GU2 7XH, UK²Department of Physics, Faculty of Science, Cankiri Karatekin University, 18100, Cankiri, Turkey

C-P-2

Peak Current and di/dt of a High-Voltage Fast Thyristor with a Shorted LoadCheon-Ho Kim, K.-H. Yun, S.-H. Han

The 4th R&D Center, Agency for Defense Development, Daejeon, Republic of Korea

C-P-3

A Study of the Effect of Optical Phonons in AlGa_N/Ga_N HeterostructuresKhue Tian Lai¹, J. E. Evans², P. Igić³, L. Li¹¹College of Engineering, Swansea University Bay Campus, Swansea SA1 8EN, UK²Centre for NanoHealth, Institute for Life Science 2, Swansea University, Singleton Park, Swansea SA2 8PP, UK³Institute for Future Transport and Cities, Coventry University, Coventry CV1 5FB, UK**Poster Presentations – Thursday 11th July, Atrium Level 2****Symposium D: Semiconductor Materials and Nanostructures**

D-P-1

Molecular Beam Epitaxial Growth of High-Density InAs/GaAs Quantum DotsHuiwen Deng, K. Li, M. Dang, M. Tang, H. Liu

Department of Electronic & Electrical Engineering, University College London, Torrington Place, London, WC1E 7JE, UK

D-P-2

Modelling strain, structural relaxation, and elastic properties of diamond and zincblende crystals: fully analytic valence force field approachDaniel S. P. Tanner¹, M. A. Caro^{2,3}, S. Schulz¹, E. P. O'Reilly^{1,4}¹Tyndall National Institute, University College Cork, Lee Maltings, Dyke Parade, Cork T12 R5CP, Ireland²Department of Electrical Engineering and Automation, Aalto University, Espoo 0215, Finland³Department of Applied Physics, Aalto University, Espoo 0215, Finland⁴Department of Physics, University College Cork, Cork T12 YN60, Ireland

D-P-3

Optical and Electrical Properties of Ga₂O₃ Thin Films on Quartz SubstratesNafiseh Badiei¹, K. T. Lai¹, S. Deng¹, S. Faramehr², P. Igić², L. Li¹¹College of Engineering, Swansea University Bay Campus, Swansea SA1 8EN, UK²Institute for Future Transport and Cities, Coventry University, Coventry CV1 5FB, UK

D-P-4

Ex-situ annealing study of thick GeSn layers grown by Molecular Beam Epitaxy as virtual substrates for GeSn optoelectronic devicesHui Jia, P. Jurczak, J. Yang, H. Liu

Department of Electronic & Electrical Engineering, University College London, Torrington Place, London WC1E 7JE, UK

D-P-5

New family of V pit formation after exceeding critical thickness of InGa_N in InGa_N/Ga_N quantum well structuresFrantišek Hájek^{1,2}, J. Oswald¹, A. Hospodková¹, T. Kretková¹¹Institute of Physics CAS, Cukrovarnická 10/112, 162 00 Prague 6, Czech Republic²Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Břehová 7, 115 19 Praha 1, Czech Republic

D-P-6

Fabrication of MSM Ge Nanowire Photodetector utilising DielectrophoresisSiriny Laumier¹, M. Bosi², I. Sandall¹¹Department of Electrical Engineering and Electronics, University of Liverpool, 9 Brownlow Hill, Liverpool L69 3GJ, UK²Institute of Material for Electronic and Magnetism Parco Area delle Scienze 37/A 43124 Parma, Italy

D-P-7

Fast prototyping of nanoscale InSb devices using focused ion beam lithographyDaisy K. Shearer¹, M. Masteghin², D. C. Cox², P. D. Buckle³, S. K. Clowes¹¹Advanced Technology Institute, Department of Physics, University of Surrey, Guildford, GU2 7XH, UK²Advanced Technology Institute, Department of Electrical and Electronic Engineering, University of Surrey, Guildford, GU2 7XH, UK³School of Physics and Astronomy, Cardiff University, Queens Buildings, The Parade, Cardiff CF24 3AA, UK**Symposium E: Mid-IR and THz Materials and Devices**

E-P-1

Evaluation of the cut-off wavelength of lattice matched InAs/GaAs_{0.09}Sb_{0.91} Type II superlatticesElizabeth Stark, B. White, C. H. Tan

Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield S1 3JD, UK

Symposium TMD: 2D Materials (TMD-UK Meeting)

TMD-P-1

CVD Growth of High Quality Few-layer WS₂ filmsWill Campbell¹, S. Bending¹, R. Sundaram², Francesco Reale²¹University of Bath, Claverton Down, Bath BA2 7AY, UK²Oxford Instruments Plasma Technology, Yatton, Bristol BS49 4AP, UK

TMD-P-2

Synthesis of few-layered ZrS₂ nanosheetsGiulia Zemignani, M. Och, P. Palczynski, C. Mattevi

Department of Materials, Imperial College London, London, UK

TMD-P-3

Tunnel spectroscopy of localized states in graphene-hBN diodes; evidence for the Stark effectJoe Page¹, M. T. Greenaway^{1,2}, E. E. Vdovin^{2,5,6}, O. Makarovskiy², A. Patanè², J. L. Dunn², T. M. Fromhold², D. Ghazaryan³, A. Misra³, A. Mishchenko³, Y. Cao⁴, Z. Wang³, M. Holwill⁴, S. V. Morozov^{5,6}, K. Watanabe⁷, T. Taniguchi⁷, A. K. Geim^{3,4}, K. S. Novoselov^{3,4}, L. Eaves²¹Department of Physics, Loughborough University, Loughborough LE11 3TU, UK²School of Physics and Astronomy, University of Nottingham, Nottingham NG7 2RD, UK³School of Physics and Astronomy, University of Manchester, Manchester M13 9PL, UK⁴National Graphene Institute, University of Manchester, Manchester M13 9PL, UK⁵IMT and HPM, RAS, Chernogolovka 142432, Russia⁶"MISIS", 119049, Leninsky pr. 4, Moscow, Russia⁷National Institute for Materials Science, Namiki 1-1, Tsukuba, Ibaraki, 305-0044, Japan

TMD-P-4

Two-dimensional ReS₂ for nonlinear photonics

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TMD-P-5

Band-structure engineering in alloy-based transition metal dichalcogenide van der Waals heterobilayers

Alessandro Catanzaro¹, A. Genco¹, A. Kozikov², J. Howarth², C. Louca¹, D. Gillard¹, L. Sortino¹, E. Alexeev¹, K. S. Novoselov², A. I. Tartakovskii¹

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TMD-P-6

Thermopower and Unconventional Nernst Effect in the tungsten ditelluride (WTe₂)

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TMD-P-7

Spin polarization in monolayer semiconductors by magnetic proximity coupling

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TMD-P-8

A theory for magnetophonon resistance oscillations in graphene and carrier screening of the longitudinal acoustic modes

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TMD-P-9

Band-structure engineering in alloy based transition metal dichalcogenide van der Waals heterobilayers

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TMD-P-10

Strain engineering and exciton funnelling in two-dimensional WSe₂ coupled with dielectric nano-antennas

Luca Sortino¹, M. Brooks², P. G. Zotev¹, A. Genco¹, J. Cambiasso³, S. Mignuzzi³, S. A. Maier^{3,4}, R. Sapienza³, G. Burkard², A. I. Tartakovskii¹

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TMD-P-11

Aligned Transfer for Assembling Large-scale 2D Layered Arrays

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TMD-P-12

Diamagnetic shift of exciton transitions in MoS₂ monolayers

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D. Dumcenco⁴, Y. C. Kung⁴, D. K. Maude², A. Kis⁴, P. Plochocka¹

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