EVC17 ECOSS37

# Programme

## Wednesday 19 June 2024

| Time | Room | Programme |
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| 9:00 am to 10:00 am | Auditorium | **Plenary Talk: Prof. Alfred Ludwig**<br>**Session Chair: Rafael Alvarez**<br>Combinatorial synthesis and high-throughput characterisation of thin film materials libraries for the accelerated discovery of materials |
| 9:00 am to 12:00 am | Theatre, Hall Q | VTC7 - Practical Training on Pump Maintenance and Troubleshooting<br>Training: Adam Ross and Raj Das, Leybold Vacuum |
| 10.00 am to 10:30 am | Hall Q | **Morning Break** |
| 10:30 am to 12:35 pm | Auditorium | **Plasmonics and Excited States at Surfaces - WePS1A: ASS+SS+SE**<br>**Invited Talk: Anna Rosławska**<br>**Feature Talk: Marcin Lapinski**<br>**10:30 am – 11:00 am Dr. Anna Roslawska**: Light-matter interaction probed at the atomic scale<br>**11:00 am - 11:15 am Alexander Spears**: Molecular dynamics investigation of the role of lattice heating in laser-driven hydrogen evolution at copper surfaces<br>**11:15 am - 11:30 am Prof. Valentina De Renzi**: HREELS investigation of phonon and plasmon dispersion across the TiSe2 CDW phase transition<br>**11:30 am – 11:45 am Vibhuti Rai**: From Vibrationally resolved to time-resolved spectroscopy with scanning tunnelling microscopy<br>**11:45 pm - 12:05 pm Mr Marcin Lapinski**: Plasmonic nanoalloys. Manufacturing with properties tuned by the assistance of machine learning method |
| | King's Suite | **Carbon Materials 2 - WePS1K: ASS+SS+SE**<br>**Session Chair: Andrew Evans**<br>**Feature Talk: Zamin Mamiyev**<br>**10:30 am – 10:45 am Jack Bradley**: Optimisation of graphene oxide synthesis and accurate determination of the carbon/oxygen ratio<br>**10:45 am - 11:00 am Alice Cartoceti**: Evolution of atomic-scale structure and vibrational properties of Graphdiyne nanoribbons: an insight into novel 2D carbon allotropes<br>**11:00 am - 11:15 am Dr. Andrea Tonelli**: Tuning the electronic structure of nanoporous graphene by chemical adsorption<br>**11:15 am - 11:30 am Connor Fields**: Timing the Escape of a Caged Electron<br>**11:30 am – 11:45 pm Arturs Medvids**: Photoluminescence of Diamond-Like Carbon Quantum Cones with Dispersive Spectrum Distributed in Time: Nano Monochromator<br>**11:45 am - 12:00 pm Marco Menegazzo**: Atomic force microscopy and Raman spectroscopy combined to in-situ and real time investigation of graphite anion intercalation<br>**12:00 pm - 12:15 pm Hualin Yang**: Atomically dispersed cobalt atoms embedded in a bilayer of C60<br>**12:15 pm – 12:35 pm Dr Zamin Mamiyev**: Confined epitaxy of Sn-induced structures beneath epitaxial graphene hosting correlated electronic properties |

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| | **Queen's Suite - Dewer Room** | **Biointerfaces/Biophysics/Biosensers - WePS1D: BIME**<br>**Session Chair: Markus Ronke**<br>**Invited Talks: Sebastiaan van Nuffel and Pedro Alpuim**<br>**10:30 am – 11:00 am Dr. Sebastiaan Van Nuffel**: Investigating Biointerfaces using Integrative ToF-SIMS Imaging<br>**11:00 am - 11:15 am Maria Caruso**: Durable Slippery Liquid Porous Surfaces for drug reduction application<br>**11:15 am - 11:30 am Lukas Hoermann**: Optimization of incommensurate organic/inorganic interface structures to study superlubricity<br>**11:30 am - 11:45 am Dr Festus Ben**: Investigating the Tribological Behavior of Bioinspired Surfaces in Agro-waste and Alumina Reinforced AA6063 Matrix Hybrid Composites<br>**11:45 am - 12:15 pm Mr Pedro Alpuim**: Advantages and challenges of graphene transistors for biosensing |
| | **Queen's Suite - Thomson Room** | **Advanced Thin Film Fabrication - WePS1T: TF**<br>**Session Chairs: Diederik Depla and Rafael Alvarez**<br>**Invited Talk: Maarit Karppinen**<br>**10:30 am – 11:00 am Maarit Karppinen**: Novel inorganic-organic materials through ALD/MLD as enablers of next-generation energy and nanotechnology applications<br>**11:00 am - 11:15 am Spyridon Korkos**: Structure formation in miscible and immiscible thin binary alloy films synthesized by temporally modulated vapor fluxes<br>**11:15 am - 11:30 am Mr. Zdenek Jansa**: Investigation of the effect of fabrication of SrTiO3 doped thin film samples on a silicon substrate and the experimental techniques used on surface cracking and destruction<br>**11:30 am - 11:45 am Dr Steve Wakeham**: Reactive remote plasma sputtering of TiOx thin films and controlled growth<br>**11:45 am - 12:00 pm Dr. Jiri Olejnicek**: Reactive sputtering of undoped ZnO films with ultrafast photoluminescence<br>**12:00 pm - 12:15 pm Professor Andrea Picone**: Ultrathin oxide/graphene heterostructures |
| | **Queen's Suite - Cockcroft Room** | **MS-6: RGA User Meeting 1 - WePS1C: VST / MS**<br>**Session Chairs: Joe Herbert and Klaus Beregner**<br>**Feature Talks: Steve Taylor and Matthias Bernien**<br>**10:30 am – 10:40 am Joe Herbert**: Opening MS-6. Harry Leck Medal Award<br>**10:40 am - 11:00 am Professor Stephen Taylor:** Residual Gas Analysis using a membrane inlet<br>**11:00 am - 11:15 am René Koops**: Quadrupole Residual Gas Analysis developments at TNO<br>**11:15 am - 11:30 am Mr Cliff Harris**: **RGA vs Leak Detector –** When to use an RGA?<br>**11:30 am – 11:45 am Laurent Ducimetiere**: Carrier gas in Helium leak detection – application to conductance-limited devices<br>**11:45 am - 12:00 pm Hugo Shiers:** Residual gas analysers (RGAs) on the Diamond Light source<br>**12:00 pm - 12:20 pm Matthias Bernien:** Traceable partial pressure and leak rate measurements applying ISO/TS 20175 |
| | **Queen's Suite - Walton room** | **MS-3: On-Surface Synthesis of 1D and 2D Functional Graphitic Materials - WePS1W: MS**<br>**Session Chairs: Alex Saywell and David A. Duncan**<br>**Invited Talk: Markus Lackinger**<br>**10:30 am - 11:00 am Dr. Markus Lackinger**: On the Utility of Spectroscopy for On-Surface Synthesis<br>**11:00 am - 11:15 am Dr Samuel Jarvis:** Extrinsic activation of 2D polymerization on inert surfaces using atomic clusters<br>**11:15 am - 11:30 am Dr. Ana Barragán**: Generating Antiaromaticity: Thermally-selective Skeletal Rearrangements at Interfaces |

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| | | **11:30 am - 11:45 am Mr Matthew Stoodley**: Imaging and spectroscopic study of topological defects in graphene grown by bottom up synthesis<br>**11:45 am - 12:00 pm Dr David Duncan**: Silicene's pervasive surface alloy on Ag<br>**12:00 pm - 12:15 pm Benedict Saunders**: Exploration of Defect Superstructures in Graphene<br>**12:15 pm - 12:30 pm Dr Alex Saywell**: On-surface synthesis of porphyrin-graphene nanoribbons |
| **12:30 pm to 2:00 pm** | **Hall Q** | **Lunch** |
| **2:00 pm to 5:00 pm** | **Theatre, Hall Q** | **VTC8 - An Introduction to Cryopumping**<br>**Trainer: Jinane Haddad, Leybold Vacuum** |
| **2:00 pm to 3:30 pm** | **Auditorium** | **Catalysis and Electrocatalysis including Single Atom and In Operando Studies 1 - WePS2A: ASS+SS+SE**<br>**Session Chair: Gareth Parkinson**<br>**Feature Talk: Jan Knudsen**<br>**2:00 pm - 2:15 pm Dr. Moritz Eder**: Multi-technique characterization of rhodium single atoms on TiO2<br>**2:15 pm - 2:30 pm Fulden Eratam**: A structural study of CO ligation to Cu adsorbed on Fe3O4<br>**2:30 pm - 2:45 pm Roser Fernandez-Climent**: Surfase reconstrucion of Cu2-xS electrocatalyst under bias<br>**2:45 pm - 3:00 pm Shiva Oveysipoor**: Iron-Induced Surface Transformations of Ceria: Insights from FeOx/CeO2 and Au/FeOx/CeO2 Systems<br>**3:00 pm - 3:20 pm Jan Knudsen**: Temperature-dependent selectivity and detection of hidden carbon deposition in methane oxidation |
| | **King's Suite** | **2D Materials and Van der Waals heterostructures 1 - WePS2K: ASS+SS+SE**<br>**Session Chair: Norbert Koch**<br>**Invited Talk: Maciej Rogala**<br>**2:00 pm - 2:30 pm Dr. Maciej Rogala:** Electrical properties of crystalline MoO3 monolayers<br>**2:30 pm - 2:45 pm Amina Kimouche:** Van der Waals epitaxy of a magnetic transition metal dihalide<br>**2:45 pm - 3:00 pm Dr Kabalan Lara**: Computational prediction of interfaces between transition metal surfaces and two-dimensional MoS2<br>**3:00 pm - 3:15 pm Jiandong Guo**: Lattice dynamics of low-dimensional systems investigated with surface spectroscopy<br>**3:15 pm - 3:30 pm Mrs Klaudia Toczek**: Heterostructures based on 2D-Bi and van der Waals layers as an effective method to protect 2D materials against oxidative degradation |
| | **Queen's Suite - Dewar room** | **MS-5: Electrochemical MEMs Sensing for Environmental and Biological Monitoring - WePS2D: MS**<br>**Session Chairs: Prof. Haitao Ye and Dr. Kai Yang**<br>**Invited Talk: Richard Fu**<br>**Feature Talk: Makoto Kasu**<br>**2:00 pm - 2:30 pm Prof Richard Fu**: Smart thin film materials for MEMS and microsystem applications<br>**2:45 pm - 3:00 pm Professor Haitao Ye**: Impedance spectroscopy studies on diamond-based nanomaterials and nanostructures<br>**3:00 pm - 3:20 pm Professor Makoto Kasu**: Recent Progress of Diamond Semiconductors: Two-Inch Diamond Wafer and High-Power Diamond MOSFETs |
| | **Queen's Suite - Cockcroft room** | **MS-6: RGA User Meeting 2 - WePS2C: VST / MS**<br>**Session Chairs: Steve Taylor and Raj Das**<br>**Invited Talk: Farnoush Salarzaei**<br>**Feature Talk: Eleni Marshall**<br>**2:00 pm - 2:30 pm Dr Farnoush Salarzaei**: Remote RGA Operation up to 100m, with a novel Radiation Resistant Extender Cable |

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| | | **2:30 pm - 2:45 pm Mareen Czech**: Correlation of mass spectrometry and pressure in ultra-high vacuum systems<br>**2:45 pm - 3:00 pm Florian Heck**: Unlocking the Mysteries of Process Gases: Insights from Mass Spectrometry<br>**3:00 pm - 3:20 pm Miss Eleni Marshall**: Comparison of Residual gas analyser calibration coefficients across in high- to extreme high- vacuum |
| | **Queen's Suite - Walton room** | **Plasma Science 2 - WePS2W: PS**<br>**Session Chair: Martin Rudolph**<br>**Invited Talks: Julian Held and Zdeněk Hubička**<br>**2:00 pm - 2:30 pm Julian Held**: Ionization of sputtered material in high power impulse magnetron sputtering plasmas<br>**2:30 pm - 2:45 pm Matjaž Panjan**: Dynamics and self-organization of HiPIMS plasma during individual pulses<br>**2:45 pm - 3:15 pm Dr Zdeněk Hubička**: Plasma diagnostics in various configurations of reactive pulse magnetron sputtering systems used for thin film deposition of semiconductors<br>**3:15 pm - 3:30 pm Mr Angus McCarter**: RFEAs for Plasma Assisted Thin Film Deposition Tools |
| **3.30 pm to 4:00 pm** | **Hall Q** | **Afternoon Break** |
| **4:00 pm to 5:30 pm** | **Auditorium** | **Catalysis and Electrocatalysis including Single Atom and In Operando Studies 2 - WePS3A: ASS+SS+SE**<br>**Session Chair: Jan Knudsen**<br>**Feature Talk: Gareth Parkinson**<br>**4:00 pm - 4:15 pm Dr Juliana Morbec**: Interaction between pentacene molecules and monolayer transition metal dichalcogenides<br>**4:15 pm - 4:30 pm Florian Kraushofer**: Dynamics of metal particles on rutile $TiO_2$ under near-ambient pressures of $O_2$, $H_2$, and $CO_2$<br>**4:30 pm – 4:45 pm Harry Taylor**: Underpotential deposition of nickel oxyhydroxide nanoislands for better understanding of the alkaline oxygen evolution reaction<br>**4:45 pm - 5:00 pm Fahdzi Muttaqien**: Direction Dependence of CO2 Incidence on Cu Lattice Vector in the CO2 Hydrogenation Reaction<br>**5:00 pm - 5:20 pm Gareth Parkinson**: How the 2nd coordination sphere affects the reactivity of "single-atom" catalysts |
| | **King's Suite** | **Water and Environmental Surfaces - WePS3K: ASS+SS+SE**<br>**Session Chair: Martin McCoustra**<br>**Invited Talk: Jenny Noble**<br>**4:00 pm - 4:30 pm Jenny Noble:** Amorphous solid water: from the laboratory to the interstellar medium<br>**4:30 pm - 4:45 pm Anna Cecilie Aasland:** Initial Stages of Water Absorption on CeO2 Surfaces at Very Low Temperatures for Understanding Anti-Icing Coatings<br>**4:45 pm - 5:00 pm Mateusz Suchodol:** Probing the mechanism of facile water dissociation on oxygen covered Cu by Reflection Absorption Infrared Spectroscopy (RAIRS) |
| | **Queen's Suite - Dewar room** | **ECR-2 - WePS3D: ECR**<br>**Invited Talks: Rob Short and Oleg B. Malyshev**<br>**4:00 pm - 4:30 pm Professor Robert Short**: Plasma Medicine: An Exciting New Medical Technology. The good, bad and ugly<br>**4:30 pm - 5:30 pm Dr. Oleg Malyshev**: How to get published |
| | **Queen's Suite - Thomson room** | **Advanced Thin Film Characterisation - WePS3T: TF**<br>**Session Chair: Alfred Ludwig**<br>**Feature Talk: Paul Dastoor**<br>**4:00 pm - 4:15 pm Dr Wojciech Pawlak**: Tetrafluoromethane influence on carbon-based nanocomposite nc-CrC/a-C thin films<br>**4:15 pm - 4:30 pm Dr Rosemary Jones:** The Impact of Substrate on Hafnium Oxide ALD from its Amido Precursor - An APXPS Study |

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| | | **4:30pm - 4:45 pm Eleanor Ender**: Unravelling Fundamental Limits: Isotopic Labelling and Correlative NanoSIMS/XPS Analysis of Nickel Catalysts in Alkaline Electrolysers<br>**4:45 pm - 5:00 pm Błażej Gołyszny**: LEEM and PEEM investigation of structural and electronic properties of F16CuPc thin films on Ag surfaces<br>**5:00 pm - 5:20 pm Prof Paul Dastoor**: Ångström-Scale Topography in Neutral Helium Microscopy: Evaluating Thin-Film Coatings over Large Areas |
| | **Queen's Suite - Cockcroft room** | **MS-6: RGA User Meeting 3 - WePS3C: VST / MS**<br>**Session Chairs: Sunil Patel and Farnoush Salarzaei**<br>**Feature Talk: Klaus Brergner**<br>**4:00 pm – 4:15 Freek Molkenboer**: A systematic approach for contamination control<br>**4:15 pm - 4:30 pm Martin Wüest**: Monitoring Chamber Health with an Optical Plasma Gauge<br>**4:30 pm - 4:45 pm Kristian Kirsch**: Enabling vacuum process monitoring with time-of-flight spectroscopy<br>**4:45 pm - 5:00 pm Nick von Jeinsen**: Advancements in ultra-high sensitivity mass spectrometers for atom scattering<br>**5:00 pm - 5:20 pm Dr. Klaus Bergner**: Mastering Clean Vacuum: Overcome Contamination for science and industrial applications |
| | **Queen's Suite - Walton room** | **Electronic Materials, Energy Reduction and Carbon Reduction - WePS3W: EM**<br>**Invited Talk: Takao Katsura**<br>**4:00 pm – 4:30 Takao Katsura**: Development of new structured-core transparent vacuum insulation panels contributing to insulation retrofit of existing buildings<br>**4:30 pm - 4:45 pm Mr. Michal Kaufman**: Smart VO2-based coatings for energy-saving windows<br>**4:45 pm - 5:00 pm Prof. Dr. Swetlana Schauermann**: Low-temperature heterogeneous hydrogenation of carbonyl compounds: molecular systems for reversible hydrogen storage |

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| 5.30 pm to 7:30 pm | Hall Q | **Poster Session 3 and Drinks Reception - Topic: Topics: Plasma Science, Thin Films Deposition, Characterisation and Applications, Vacuum Science and Technology and Applications**<br>**Poster Presentations:**<br>**Elisabeth Bancroft** - On-surface growth of 1D molecular wires characterised in ambient conditions<br>**Christopher Benjamin** - Surface Characterisation of Thin Film V3Si deposition using HiPIMS<br>**Christopher Benjamin** - Novel photocathode production method for CsTe Photocathodes via Cs Ion beam sputtering<br>**Charlotte Marie Benning** - Distributed Pumping and Seamless Flanges for the 120 km UHV Tubes of the Einstein Telescope<br>**César Caballero Pérez** - Status Vacuum System Design of IFMIF DONES<br>**Alice Cartoceti** - Unveiling substrate role in 2D MoS2 growth: Pulsed Laser Deposition on non-metallic substrates for high-end applications<br>**James Conlon** - Substrate preparation for SRF thin films: Comparisons of roughness properties<br>**Mr Mayank Dotiyal** - Designing stable and reliable vanadium oxide thin films<br>Eva Horynova - Preparation of nickel oxide by pulsed laser deposition and its utilisation as hole transport layers for solar cells<br>**Kim Jin Gyu** - Effect of Ozonized Water Treatment on Aluminum 6063<br>**Dr. Neeraj Kurichiyanil** - Pillow seal vacuum joints for the target area of the Super-FRS at FAIR<br>**Dr. Neeraj Kurichiyanil** - Special and standard vacuum solutions at the Super-FRS at FAIR<br>**Marek Kuzmiak** - Growth of Si-Ag-Tl thin films for self-assembly of organic molecules<br>**Rebekah Luff** - Vacuum performance analysis using new cleaning solutions (on an UHV outgassing rig)<br>**Arturs Medvids** - Improvement Mechanical Properties of Nb on Cu Structure for RF Cavity by Laser Radiation: Formation of Soft Cu Buffer layer<br>**Matthew Naylor** - Regulating the properties of Mo thin films to form an efficient back contact for CZTSSe solar cells<br>**Jun-Ik Park** - Impact of Conduit Geometry on the Pumping Speed Characteristics of Dry Vacuum Pumps<br>**Mr Oliver Poynton** - Development of SLA 3D printed volumes for leak testing of LHC Hi-Lumi cryomodules at STFC<br>**Aleksandar Radic** - On the application of components manufactured with stereolithographic 3D printing in high vacuum systems<br>**Jordan Rigby** - Analysis of Additive Manufactured Samples with Deposited Niobium Thin Films for Use on Particle Accelerators<br>**Naoko Sano** - 3D MS imaging using Cluster SIMS (Ar, CO2, H2O, C60) for various types of analytes: How to select an efficient sputter beam for a specific material?<br>**Mr Daniel Seal** - Optimisation Of Niobium Thin Film Depositions For Superconducting Radiofrequency Accelerating Cavities<br>**Mr Daniel Seal** - Cryogenic Facilities For Superconducting Thin Film Characterisation<br>**Prabhu Selvaraj** - A new lead-free low-temperature hermetic edge seal for the fabrication of vacuum glazing<br>**Hyungjoo Son** - Design of the Vacuum System for the High-Energy Beam Transport Section of RAON<br>**Sihui Wang** - Recent research on NEG coatings for HALF vacuum systems<br>**Charlie Wells** - Effect of surface roughness and molecular templates on thin film thermoelectric performance<br>**Dr Stuart Wilde** - Technical details of the STFC nitrogen purge system required for PIP II HB650 Cryomodule String Assembly<br>**Dawei Zhao** - Improving operational stability of thin film perovskite solar cells in extreme humidity and thermal environments using ultra-thin hydrophilic polymer films |

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| 7:30 pm to 10:00 pm | | Conference Dinner |