



European Materials Research Society

# 2025 Spring Meeting

May 26 – 30 | Strasbourg Convention Centre

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## SYMPOSIUM M

ANIM 5: advances and enhanced functionalities of anion-controlled new inorganic materials and mixed-anion research for energy conversion

Oral sessions : DRESDE – FIRST FLOOR  
Poster sessions : ETOILE – FIRST FLOOR

Symposium Organizers:

Laurence CROGUENNEC, CNRS, Université de Bordeaux, France

Martin VALLDOR, University of Oslo, Department of Chemistry, Norway

Simon CLARKE (Main organizer), University of Oxford, Department of Chemistry, UK

Yoshihiro TSUJIMOTO, National Institute for Materials Science (NIMS), Japan

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Monday May 26

M01 Approaches to mixed-anion compounds

Chairperson(s): CLARKE Simon

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08:30	643	Strain-Driven Design of Functional Mixed-Anion Materials <b>KAGEYAMA Hiroshi (Invited)</b>
09:00	251	Iridium-containing Oxyhydride Phases <b>HAYWARD Michael</b>
09:15	1422	Synthesis and Pressure-Induced Novel Properties in Two-Dimensional Magnetic Oxyhydride EuVO <sub>2</sub> H <b>TAKATSU Hiroshi</b>
09:30	1493	Topochemical intercalation of multiple anions in LaScSi-electride : Hydride vs Fluoride competition <b>DEMOURGUES Alain</b>
09:45	1765	Synthesis of new functional mixed anion fluorides by high pressure synthesis <b>TASSEL Cédric</b>

Monday May 26

M02 Chalcogenide mixed-anion

Chairperson(s): CROGUENNEC Laurence

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10:30	569	Exploring Mixed-Anion Chemistry in Cr <sub>5</sub> Br and Its Impact on Emergent Low-Temperature Phases <b>VON ROHR Fabian (Invited)</b>
11:00	3136	Synthesis, Structure & Properties of CuBiSeCl <sub>2</sub> : A Chalcohalide Material with Low Thermal Conductivity <b>HAWKINS Cara J.</b>
11:15	682	Impact of the anion order on the 2D Janus material RhSeCl and its structural analogues <b>NOWAK Domenic</b>
11:30	1451	Effect of Anion Mixing on Structural and Thermoelectric Properties of CoSb(S,Se) <b>TEWARI Girish C</b>
11:45	2070	Phosphosulfides: Exploring Novel Mixed-Anion Materials in Thin-Film Form <b>MITTMANN Lena Angelika</b>

Monday May 26

M03 Oxide Chalcogenides

Chairperson(s): VALLDOR Martin

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13:45	1860	Computational Prediction and experimental realisation of novel Quinary Layered Oxychalcogenides <b>SCANLON David (Invited)</b>
14:15	412	Investigating the optoelectronic properties of Layered copper oxychalcogenides: next generation p-type transparent conductors? <b>HYETT Geoffrey</b>
14:30	2645	Hydride ion conducting properties in La-Ba-H-O-S mixed-anion sysmtems <b>KOBAYASHI Genki</b>
14:45	496	Crystal Chemistry and Reactivity of Layered Mixed-anion Polychalcogenides <b>SASAKI Shunsuke (Invited)</b>
15:15	1735	Structural modulations in layered oxysulfides <b>CRENTSIL Lemuel</b>
15:30	420	Synthesis, structure, magnetism and cation ordering in Ba <sub>3-x</sub> Sr <sub>x</sub> Fe <sub>2</sub> O <sub>5</sub> Cu <sub>2</sub> Ch <sub>2</sub> (x = 0, 1, 2; Ch = S, Se) and BaCa <sub>2</sub> Fe <sub>2</sub> O <sub>5</sub> Cu <sub>2</sub> S <sub>2</sub> <b>SMYTH Robert</b>
15:45	783	Green synthesis of Li-rich antiperovskite cathode material for Li-ion batteries <b>GRÄßLER Nico</b>

Monday May 26

M04 Diverse mixed-anion compounds

Chairperson(s): KAGEYAMA Hiroshi

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16:30	2601	Magnetic and structural symmetries of BaFe <sub>12</sub> Se <sub>7</sub> O <sub>6</sub> <b>MCCABE Emma (Invited)</b>
17:00	832	Ferroelectric ion conductor based on mixed-anion type metal-cyanide compounds <b>OHTANI Ryo</b>
17:15	891	Phase competition control by uniform tensile strain in tri-layered fluorite oxychloride solid solution between Bi <sub>2</sub> LaO <sub>4</sub> Cl and Bi <sub>3</sub> O <sub>4</sub> Cl <b>GABOV Artem</b>
17:30	2483	Transition-metal carbodiimides <b>CORKETT Alexander (Invited)</b>
18:00	2738	Understanding the Mechanistic Pathways of La <sub>2</sub> O <sub>2</sub> NCN Formation in Synthesis through the Proanion Method Utilizing Urea <b>Sumioka Oomi</b>
18:15	1193	Pressure- and shear-induced phase transition in barium carbodiimide <b>MASUBUCHI Yuji</b>

Tuesday May 27

M05 Oxide Fluorides 1

Chairperson(s): TSUJIMOTO Yoshihiro

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08:30	209	Anion-controlled inorganic solids for small-molecule conversion <b>MAEDA Kazuhiko (Invited)</b>
09:00	1073	Multi-metallic oxyfluoride catalysts for decarbonized hydrogen production via water electrolysis <b>DUVAL Guillaume</b>
09:15	1064	Copper-Based Oxyfluoride Catalysts for Decarbonized Ammonia Production <b>ANDRIEU Noémie</b>
09:30	1673	Mixed anion control of thermal expansion <b>CUMBY James</b>

Tuesday May 27

M06 Oxide Fluorides 2

Chairperson(s): FUERTES Amparo

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10:30	238	Systematic Synthesis of Noncentrosymmetric Solid-State Materials <b>OK Kang Min (Invited)</b>
11:00	2876	Frustration and proximity to Quantum-Spin-Liquid state in exotic oxyfluoride compounds <b>MENTRÉ Olivier</b>
11:15	1855	Ultra-High-Capacity of Earth-Abundant Supra-ceramics Cathodes Enabled by Excess Fluoride-Ion Insertion/Extraction <b>UCHIMOTO Yoshiharu</b>
11:30	62	Complex transition-metal oxyfluorides prepared via successive topochemical reactions <b>WERNERT Romain</b>
11:45	791	Investigation of local structure of perovskite-type oxyfluoride, Sr <sub>1-x</sub> BaFeO <sub>2</sub> F using X-ray PDF <b>KATSUMATA Tetsuhiro</b>

Tuesday May 27

M07 Nitrides and Oxynitrides

Chairperson(s): WOODWARD Patrick

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13:45	2356	Synthesis and phase transition of Ag-containing perovskite-type oxyfluorides <b>INAGUMA Yoshiyuki</b>
14:00	2868	Polyanionic electrode materials for Na-ion batteries obtained by topochemical reaction in ionic liquid <b>OLCHOWKA Jacob</b>
14:15	1211	Mixed Anion Effects in the Development of New Solid State Lighting Materials <b>HUPPERTZ Hubert (Invited)</b>
14:45	2554	Design and Synthesis of Novel Oxonitridosilicate Phosphors with Tunable Framework Condensation <b>Wang Xiaoming</b>
15:00	892	Non-Ammonolysis Synthesis and Color Properties of Calcium–Tantalum-Based Perovskite Oxynitrides <b>KATAGIRI Kiyofumi</b>
15:15	413	New insights in the chemistry of transition metal nitride materials <b>FUERTES Amparo (Invited)</b>
15:45	2140	Perovskite-related nitrides <b>ATTFIELD J. Paul</b>

Tuesday May 27

MPO2 Poster Session

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16:30	01_1593	Electronic structure of carbonate-containing lead apatite <b>KARBIVSKYY Volodymyr</b>
16:30	02_1779	Manipulating the anion sublattice for novel oxidation states: stabilising Mn <sup>2+</sup> and Rh <sup>1+</sup> in an extended oxide framework <b>BATNARAN Bodo</b>
16:30	03_1852	Structural and optical characterization of a new polymorph of InOF <b>WOODWARD Patrick</b>
16:30	04_2008	Bis-Heteroleptic Ru(II) Metallo-Surfactants for Phosphate Sensing through Self-assembly and Visible Light Photocatalysis <b>RASHID Ambreen</b>
16:30	05_218	Competing Cerium and Chalcogenide Redox in Layered Oxychalcogenides <b>FIELDS Georgia</b>

16:30	06_2207	Carbon-Decorated Multielectron Mixed Phosphate-Sulfate Cathodes with Improved Sodium Storage Performance <b>KOLEVA Violeta</b>
16:30	07_2215	Effect of the Electrolyte on Sodium Storage Performance of Sodium Iron Phosphates <b>Tushev Trajche</b>
16:30	08_25	Novel compositional variations of $\text{Sr}_3\text{Fe}_2\text{O}_5\text{Fe}_2\text{O}_5\text{S}_2$ <b>GILLETTE Alexis</b>
16:30	09_2505	Control of Structure, Optical & Electronic Properties of Mixed Anion Materials in the Cu-Bi-Se-Cl-I Phase Space <b>HAWKINS Cara J.</b>
16:30	10_3109	A novel layered fluoride polyselenide exhibiting an incommensurately modulated structure <b>ECHATE Hajar</b>
16:30	11_316	Chemical and electrochemical lithiation of van der Waals oxytelluride $\text{V}_2\text{Te}_2\text{O}$ <b>KELLY Nicola</b>
16:30	12_408	Transition metal nitrides syntheses from metallic clusters: applications to the Water-Gas Shift (WGS) reaction <b>MATHIVET Sébastien</b>
16:30	13_508	The structure and Magnetism of the Novel Phase $\text{Sr}_4\text{Fe}_4\text{O}_7\text{S}_2$ Containing Mixed Valent Fe (II) and Fe (III) Ions <b>LYON Annabel</b>
16:30	14_632	Synthesis of Transition metal Oxychalcogenides using flux method <b>PHOMSOMBUT Kasamol</b>
16:30	15_770	Creation of kagome lattice compounds through topochemical conversion of structural framework <b>RYOYA Higuchi</b>
16:30	16_878	The effects of intercalation on the structure and properties of niobium selenide. <b>STEELE Katherine</b>

Wednesday May 28
M09 Tuning oxides
Chairperson(s): MCCABE Emma

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08:30	1298	A comparative study of the magnetic and optical properties of quaternary oxide and halide hexagonal perovskites <b>WOODWARD Patrick (Invited)</b>
09:00	2540	First-Principles Investigations of Magnetoelectric Coupling in Anion-Substituted $\text{BiCoO}_3$ <b>BRAUN Maxime</b>

09:15	1638	Spin ordering in novel mixed-valent $\text{KLi}_2\text{Cr}_6\text{O}_{12}$ oxide from high-pressure and high-temperature synthesis. <b>AREVALO-LOPEZ Angel</b>
09:30	2497	Hydrogen Free Topotactic Reduction <b>WHORISKEY Thomas</b>
09:45	738	Molecular Level Engineering of Mixed-anion Molecular Compounds <b>MATHUR Sanjay</b>

Wednesday May 28
M10 Mixed-anion for applications
Chairperson(s): CLARKE Simon

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10:30	2944	Renewable Perovskite-type oxynitrides for direct photoelectrochemical solar energy converters <b>WEIDENKAFF Anke (Invited)</b>
11:00	216	A Fermi Level Engineers Perspective on Anionic Co-doping in Perovskites <b>WIDENMEYER Marc</b>
11:15	503	Layered perovskite nanofibers by electrospinning converted to perovskite oxynitrides performing photocatalytic oxygen and hydrogen generation <b>MARSCHALL Roland</b>
11:30	1584	Electrochemical $\text{CO}_2$ reduction using lead hydroxyapatite <b>IWAMOTO Shunta</b>
11:45	24	Rational design of chloride ion conduction paths in an open borate framework <b>TSUJIMOTO Yoshihiro</b>