



European Materials Research Society

# 2025 Spring Meeting

May 26 – 30 | Strasbourg Convention Centre

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## SYMPOSIUM B

Topological materials and their application to classical and quantum nanotechnologies

Oral sessions : BOSTON – FIRST FLOOR

Poster sessions : ETOILE – FIRST FLOOR

Symposium Organizers:

Alessandro MOLLE (Main organizer), CNR-Institute for microelectronics and microsystems, Italy

Juan F. SIERRA, Catalan Institute of Nanoscience and Nanotechnology (ICN2), Spain

Maia G. VERGNIORY, University of Sherbrooke, Canada

Paolo BONDAVALLI (Main organizer), European Innovation Council (EIC-EISMEA) Belgium

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Monday May 26

B01 Quantum, optical, and magnetic properties (I)

Chairperson(s): MOLLE Alessandro

SIERRA Juan Francisco

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09:00	2928	Self-assembled Pentasilicene Nanoribbons: a promising platform for Topologically Protected Quantum Computation <b>LE LAY Guy (Invited)</b>
09:30	981	Topological photonics with cavity polaritons <b>BLOCH Jacqueline (Invited)</b>

Monday May 26

B02 Fundamentals

Chairperson(s): LE LAY Guy

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10:30	438	Effects of strong electronic correlations in topological materials <b>PASCHEN Silke (Invited)</b>
11:15	1023	Ab-initio Insights on the Fermiology of d1 Transition metals in Honeycomb lattice : Hierarchy of hopping pathways and spin-orbit coupling <b>GUPTA Manoj</b>
11:30	136	3D topological photonics: 3D Chern photonic insulators and electromagnetic axions <b>AITZOL Garcia-Etxarri (Invited)</b>

Monday May 26

B03 Quantum, optical, and magnetic properties (II)

Chairperson(s): BLOCH Jacqueline

JAMET Matthieu

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13:45	230	Topological Interlayer Superconductivity in a van der Waals Heterostructure <b>KLINOVAJA Jelena (Invited)</b>
14:15	713	Intertwined Topological Phases in Topological Semimetal Nanowires: Giant Magnetoresistance and Quantum Coherent Surface Transport <b>ROY Anand</b>
14:30	329	Non-Hermitian Fermi-Dirac distribution in persistent current transport <b>Trif Mircea</b>
14:45	2556	Spin-Charge Conversion in Wafer-Scaled Sb <sub>2</sub> Te <sub>3</sub> Topological Insulator <b>AHMED Rehab</b>

15:00	1227	Composition-dependent charge-to-spin current conversion in topological insulators Bi1-xSbx thin films <b>FEKRAOUI Salima</b>
15:15	2676	Enhanced Spin Accumulation in Transition Metal Dichalcogenide MoTe <sub>2</sub> Thin Films <b>LONGO Emanuele</b>
15:30	1441	Pt/Co/Al multilayers: the Swiss knife materials of modern spinorbitronics <b>CROS Vincent (Invited)</b>

Monday May 26

B04 Quantum, optical, and magnetic properties (III)

Chairperson(s): ZANDVLIET Harold J.W.

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16:30	249	Novel Probes for the Cascades in Magic Angle Twisted Bilayer Graphene <b>BASCONES Leni (Invited)</b>
17:00	2778	Production of Magnetic Arsenic–Phosphorus Alloy Nanoribbons with Small Band Gaps and High Hole Conductivities <b>ZHANG Fengfei</b>
17:15	851	Universal negative differential resistance in twisted homobilayer transitional metal dichalcogenide devices <b>HENGST Arend-Jan</b>
17:30	1617	Polymerization diphenylbutadiyne on surface evidenced by STM with a target for photocatalysis <b>WU Yan</b>

Tuesday May 27

B05 Applications (I)

Chairperson(s): ALLEN Monica

SOTOMAYOR TORRES Clivia marfa

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08:30	442	Topological insulator metamaterials for THz applications <b>TIELROOIJ Klaas-Jan (Invited)</b>
09:00	2253	Engineering Quantum Emission from Silicon Carbide in Telecom Region <b>SHWETABH Kumar</b>
09:15	2050	Type-II Dirac topological semimetal PtTe <sub>2</sub> based MIR photodetectors <b>GARDELLA Matteo</b>
09:30	264	Topological Materials for Terahertz Optics <b>LUPI Stefano (Invited)</b>

Tuesday May 27

B06 Applications (II)

Chairperson(s): KLINOVAJA Jelena

TIELROOIJ Klaas-Jan

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10:30	918	2 GHz Phonon propagation in a topological non-trivial phononic waveguide <b>SOTOMAYOR TORRES Clivia Marfa (Invited)</b>
11:00	1463	Evidence of high electron mobility in magnetic kagome topological metal FeSn thin films <b>MOSESSO Lorenzo</b>
11:15	2947	Topological insulator-based wideband infrared absorber: Optimization and behaviour prediction using machine learning models <b>SORATHIYA Vishal</b>
11:30	309	Near-field mapping of terahertz plasmon polaritons in topological insulator metaelements with a tunable dispersion <b>VITIELLO Miriam Serena (Invited)</b>

Tuesday May 27

B07 Characterization and Fundamental Properties

Chairperson(s): AITZOL Garcia-etxarri

LUPI Stefano

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13:45	1826	Microwave impedance microscopy of topological states of matter <b>ALLEN Monica (Invited)</b>
14:15	2333	Synthesis and Magneto-Transport Properties of Dirac Semimetal Pd <sub>3</sub> In <sub>7</sub> <b>DAS Priya</b>
14:30	1212	Giant Rashba spin splitting and an indication of stable InBi bonding in one-dimensional Bi-chains on InSb(110) <b>YADAV Rohit</b>
14:45	1301	Tuning of the electronic, phononic, and magnetic properties of the AMn <sub>3</sub> Sb <sub>5</sub> (A = K, Cs, and Rb) Kagome lattices by A-site and strain engineering <b>GARCIA-CASTRO Andres Camilo</b>
15:00	313	Topological characterization of carbon nanotubes <b>SCHWINGENSCHLÖGL Udo</b>
15:15	2472	Multiple topological phase transitions in polyacene polymers as physical realization of a generalized ab-initio SSH model <b>AKTAS Melih</b>
15:30	512	Moire Systems as Quantum Simulators of Strongly Correlated Hamiltonians <b>BERNEVIG B. Andrei (Invited)</b>

Tuesday May 27

BPO2 Poster session

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16:30	01_1154	Graphene intercalation of the large gap quantum spin Hall insulator bismuthene <b>GEHRIG Lukas</b>
16:30	02_1265	Probing Electronic Phase transitions in Tungsten Telluride (Td-WTe <sub>2</sub> ) through resistance fluctuation spectroscopy. <b>CHANDA Prajna Paromita</b>
16:30	03_1326	Frustrated Magnetism and Structural Chirality in Electronic and Topological Properties of 3D Kagome Lattice <b>ARDILA-GUTIERREZ Carlos Eduardo</b>
16:30	04_1402	Impact of Cu Buffer Layer on Interface Dynamics between Bi <sub>2</sub> Se <sub>3</sub> and YBa <sub>2</sub> Cu <sub>3</sub> O <sub>7</sub> Thin Films <b>LEE Woo-Jung</b>
16:30	05_1890	Polarizability-Enhanced Strongly Correlated Insulator as an Advanced Hole Transport Layer for Quantum Dot Light-Emitting Diodes <b>OH Min Suk</b>
16:30	06_2011	Investigating multiple Charge-Density-Wave instabilities in NbTe <sub>4</sub> <b>BHARTI Kumar</b>
16:30	07_2432	Optoelectronic and Thermoelectric Properties of H-MoTe <sub>2</sub> and H-WTe <sub>2</sub> for Advanced Energy Application <b>EL FATIMY Anass</b>
16:30	09_282	Hexagonal Boron Nitride Growth on Molten and Single-Crystal Copper: Experimental and Computational Insights into Atomic Structure and Interfacial Interactions <b>REIN Valentina</b>
16:30	10_337	Investigating layered topological magnetic materials as efficient electrocatalysts for hydrogen evolution reaction under high current densities <b>GUPTA Sanju</b>
16:30	11_456	Observation of an intrinsic Bernal gap in large-angle-twisted monolayer-bilayer graphene grown by CVD <b>BOSCHI Alex</b>
16:30	12_792	Growth and Characterizations of Bi(2-x)SbxTe <sub>3</sub> Topological Insulators <b>PLISSARD Sébastien</b>
16:30	13_940	Unlocking Dual Topological States: From Stanene to Nodal Line Semimetals in Ultrathin β-Sn <b>CHENG Cheng-Maw</b>
16:30	14_960	Eu-Doping Induced Enhancement of Weak Antilocalization and Magnetism in SnTe <b>GHOSH Subhadip</b>

Wednesday May 28

B09 Characterization (II)

Chairperson(s): BASCONES Leni

CROS Vincent

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08:30	40	Unique transport and energy-harvesting properties of two-dimensional Weyl semimetal states achieved by thickness-dependent topological phase transition in Bi <sub>0.96</sub> Sb <sub>0.04</sub> thin films <b>CHOI Suk-Ho (Invited)</b>
09:00	1471	Multi-probe analysis to separate edge currents from bulk currents in quantum spin Hall insulators and to analyze their temperature dependence <b>JOUAULT Benoit</b>
09:15	938	Circular photogalvanic effect in large-scale tellurium thin films <b>BONAVENTURA Eleonora</b>
09:30	531	Non-linear transport effects in chiral Tellurium <b>HUESO Luis E (Invited)</b>

Wednesday May 28

B10 Synthesis and Processes (I)

Chairperson(s): DIMOULAS Athanasios

LE LAY Guy

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10:30	603	Atomic monolayers as topological insulators: The case of indenene on SiC(0001) <b>CLAESSEN Ralph (Invited)</b>
11:00	1071	Spectroscopic evidence for topological edge states in the quantum spin-Hall insulator indenene <b>ERHARDT Jonas</b>
11:15	1614	Quantum confinement effects in the topological Dirac semimetal $\alpha$ -Sn on InSb(111) <b>MASSETTI Chiara</b>
11:30	140	Germanene-based topological field-effect transistor concepts <b>ZANDVLIET Harold J.W. (Invited)</b>

Wednesday May 28

B11 Synthesis and Processes (II)

Chairperson(s): CLAESSEN Ralph

HUESO Luise

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13:45	559	MBE Growth of topological materials and their applications in nanoelectronics <b>DIMOULAS Athanasios (Invited)</b>
14:15	2694	Proximity effect between 2D ferromagnetic and 2D ferroelectric materials <b>JEGO Cyriack</b>
14:30	1155	All-optical quality control of indenene intercalation into graphene/SiC <b>SCHMITT Cedric</b>
14:45	709	Structural and magnetic study of Mn <sub>1-x</sub> GexSb <sub>2</sub> Te <sub>4</sub> solid solutions for realization of magnetic topological insulators <b>SAFAROV Fuad</b>
15:00	977	Terahertz spintronic emission from 2D transition metal dichalcogenides and their van der Waals heterostructures <b>JAMET Matthieu (Invited)</b>

Thursday May 29

B12 Applications (III)

Chairperson(s): CHOI Suk-ho

KING Phil

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08:30	310	Catalysis based on topological materials <b>WANG Xia (Invited)</b>
09:00	2371	Flexible Approach for Tuning Quantum Transport in Topological Insulator Thin Films <b>MOREIRA Mafalda</b>
09:15	2917	A twist for tunable electronic and thermal transport properties of nanodevices <b>Milowska Karolina</b>
09:30	468	Topological materials for high performance magneto-thermoelectrics <b>PAN Yu (Invited)</b>

Thursday May 29

B13 Characterization (III)

Chairperson(s): WANG Xia

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10:30	540	Large-area MBE-grown Transition-Metal Dichalcogenide Monolayers and van der Waals Heterostructures via Assisted Nucleation <b>KING Phil (Invited)</b>
11:00	837	PtTe2 as a candidate material for the realization of THz active devices: a Time Resolved Photomission Study <b>ZACCHIGNA Michele</b>
11:15	545	Investigation of the structural, chemical and surface electronic properties of Bi <sub>2</sub> Se <sub>3</sub> derived compounds: Bi <sub>2</sub> Se <sub>3</sub> -ySy(y≤0.66), Bi1.993Cr0.007Se3 and Bi <sub>2</sub> MnSe <sub>4</sub> <b>BENHER Zipporah Rini</b>
11:30	3211	Proximity Induced p-wave Superconductivity in Dual Topological Insulator Superconductor Heterostructures <b>Kumar P. S. Anil (Invited)</b>