

FCSE-2024 Symposium program

KEY TO SESSION NUMBERS:

| | |
|----|------------------------------------|
| S1 | Plasma-based processes |
| S2 | Hard protective coatings |
| S3 | Bio-related and other applications |
| S4 | High entropy films |
| S5 | Optical films |
| S6 | Advanced characterization |
| S7 | FCSE perspectives |

Sunday, June 2, 2024

SHORT COURSES

Location: MIL Campus – Université de Montréal

Registration: Atrium B-140

Short courses: Rooms A-3541 and A-3551

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| 8:00 – 9:00 | Welcome Desk Opens – Atrium B-140 |
| 8:30 – 9:00 | Continental breakfast |
| 9:00 – 12:00 | <p>Short course A – Room A-3541</p> <p>Plasma deposition of thin films and related processing of materials</p> <p style="text-align: right;">A. Anders <i>Leibniz Institute of Surface Engineering, Leipzig, Germany</i></p> |
| 12:00 – 13:00 | <p>Short course B – Room A-3551</p> <p>Stress evolution during thin film growth by physical vapor deposition</p> <p style="text-align: right;">G. Abadias <i>CNRS-Université de Poitiers, Poitier, France</i></p> |
| 12:00 – 13:00 | Lunch (included) and discussions – Atrium B-140 |
| 13:00 – 17:00 | Continuation of the short courses |

Monday Morning, June 3, 2024

ORAL PRESENTATIONS

Location: MIL Campus – Université de Montréal

Registration: Atrium B-140

Presentations: A-1502.1

8:30
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8:50

OPENING CEREMONY
Welcome address, acknowledgements, and introductory remarks.

Session 1: Plasma-based processes

Moderators: To come

8:50
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9:20

S1-1 – Invited
Atomic scale heating in plasma deposition processes

A. Anders
Leibniz Institute of Surface Engineering, Leipzig, Germany

9:20
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9:30

S1-2
What is the temperature of a target during DC magnetron sputtering?

S. Muhl, J. Cruz, A. Garzon
Instituto de Investigaciones en Materiales, UNAM, Mexico City, Mexico

9:30
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10:00

S1-3 – Invited
Advanced laser diagnostics on reactive plasmas at interfaces

S. Reuter
Polytechnique Montréal, Montreal, QC, Canada

10:00
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10:30

Break

Session 2: Hard protective coatings

Moderators: To come

10:30
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11:00

S2-1 – Invited
Low-temperature synthesis of dense, hard, stress-free ceramic coatings using metal-ion irradiation

I. Petrov^{1,2}, L. Hultman¹, J. Greene^{1,2}, G. Greczynski¹
¹ Thin Film Physics Division, Department of Physics (IFM), Linköping University, Linköping, Sweden
² Materials Research Laboratory, University of Illinois, Urbana, IL, USA

Monday Morning, June 3, 2024 - continued

ORAL PRESENTATIONS

Location: MIL Campus – Université de Montréal

Presentations: Room A-1502.1

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| 11:00 – 11:10 | <p>S2-2 Steered high-power-density plasma sputtering as an alternative to HiPIMS K. Thomas¹, F. Klimashin², A. Lümkmann¹, J. Kluson¹, M. Ucik¹, M. Jilek¹, J. Michler², T. Edwards² ¹ Platit AG, Granges, Switzerland ² EMPA, Dübendorf, Switzerland</p> |
| 11:10 – 11:20 | <p>S2-3 Influence of Al-Ti ratio and bias on the structure and mechanical properties of AlTiN coatings J. Nohava¹, P. Hausild², J. Kalas³, S. Zierler⁴, J. Sondor³ ¹ Anton Paar TriTec SA, Corcelles, Switzerland ² Czech Technical University in Prague, Prague, Czech Republic ³ Platit, s.r.o. Roznov pod Radhostem, Czech Republic ⁴ Anton Paar, Graz, Austria</p> |
| 11:20 – 11:30 | <p>S2-4 Effect of substrate material on the tribological behaviour of AlTiCrN/AlTiN-coated tool steels M. Muhammed¹, M. Javidani¹, T. E. Sadrabadi¹, M. Heidari², T. Lévassieur², M. Jahazi³ ¹ Department of Applied Science, University of Quebec at Chicoutimi, QC, Canada ² DK SPEC, St-Nicolas, QC, Canada ³ Department of Mechanical Engineering, École de Technologie Supérieure, QC, Canada</p> |
| 11:30 – 11:40 | <p>S2-5 Insights on the pulsed-DC powder-pack boriding process: The role of the electric charge on the growth of the boride layer and the semiconductor behavior of the boriding media M. Olivares-Luna¹, J. L. Rosales-Lopez¹, L. E. Castillo-Vela¹, K. D. Chaparro-Pérez¹, A. M. Delgado-Brito², I. Mejía-Caballero¹, I. E. Campos-Silva¹ ¹ Instituto Politécnico Nacional, Grupo Ingeniería de Superficies, SEPI-ESIME, Mexico City, Mexico ² Tecnológico de Estudios Superiores de Jocotitlán, Jocotitlán, Mexico</p> |
| 11:40 – 12:10 | <p>S2-6 – Invited Thin film materials design & some thoughts on complexity and sustainability J. M. Schneider Materials Chemistry, RWTH Aachen University, Aix-la-Chapelle, Germany</p> |
| 12:10 – 13:30 | <p>Lunch, Beginning of Poster Session & Exhibit – Atrium B-140 For details, see below</p> |

Monday Afternoon, June 3, 2024 - continued

ORAL PRESENTATIONS

Location: MIL Campus – Université de Montréal

Presentations: Room A-1502.1

Session 3: Bio-related and other applications

Moderators: To come

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| 13:30 – 14:00 | S3-1 – Invited Advancing biomedical applications through plasma surface modification: A promising frontier S. Carvalho <i>CEMMPRE, Department of Mechanical Engineering, University of Coimbra, Portugal</i> |
| 14:00 – 14:10 | S3-2 Study of the influence of the alkaline-trimethoxypropylsilane treatment of eucalytus fibers on the mechanical and interface properties of their low-density polyethylene matrix composite K. H.-S. N'Tsule¹, D. Koffi¹, K. N. Segbeaya² <i>¹ Université du Québec à Trois-Rivières, Trois-Rivières, QC, Canada</i> <i>² Université de Kara, Kara, Togo</i> |
| 14:10 – 14:20 | S3-3 Towards a durable thin hydrophobic textile finishing: light-curing process “photopolymerization” for stretch textiles A. Ibrahim, J. Decaens, O. Vermeersch, V. Izquierdo <i>Groupe CTT, Saint-Hyacinthe, QC, Canada</i> |
| 14:20 – 14:30 | S3-4 Novel ampoule-liked microwave plasma column process for the sulfurization of a polycrystalline CVD graphene C. Modérie¹, R. Martel², L. Stafford¹ <i>¹ Department of Physics, Université de Montréal, Montreal, QC, Canada</i> <i>² Department of Chemistry, Université de Montréal, Montreal, QC, Canada</i> |
| 14:30 – 17:00 | Poster session & Exhibit Continued – Atrium B-140 |
| 17:00 – 17:50 | Evening Lecture – Invited – Room A-1502.1 Holistic life cycle engineering for a sustainable circular economy C. Herrmann <i>Technische Universität Braunschweig and Fraunhofer Institute for Surface Engineering and Thin Films, Brunswick, Germany</i> |
| 18:30 – 21:00 | Conference Dinner Location: Polytechnique Montreal – Lassonde Building |

Tuesday Morning, June 4, 2024

ORAL PRESENTATIONS

Location: MIL Campus – Université de Montréal

Registration: Atrium B-140

Presentations: Room A-1502.1

Session 4: High entropy films

Moderators: To come

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| 8:40 – 9:10 | <p>S4-1 – Invited Effect of carbon on the microstructure and properties of TiZrNbTaFeC high entropy alloy carbide coatings</p> <p style="text-align: right;">J.-W. Lee^{1,2,3,4}, I. Rahmadtulloh^{1,5}, B.-S. Lou^{6,7}, C.-J. Wang⁵</p> <p>¹ Department of Materials Engineering, Ming Chi University of Technology, New Taipei, Taiwan ² Center for Plasma and Thin Film Technologies, Ming Chi University of Technology, New Taipei, Taiwan ³ Department of Mechanical Engineering, Chang Gung University, Taoyuan, Taiwan ⁴ High Entropy Materials Center, National Tsing Hua University, Hsinchu, Taiwan ⁵ Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei Taiwan ⁶ Chemistry Division, Center for General Education, Chang Gung University, Taoyuan, Taiwan ⁷ Department of Orthopaedic Surgery, New Taipei Municipal TuCheng Hospital, Chang Gung Memorial Hospital, Taiwan</p> |
| 9:10 – 9:20 | <p>S4-2 Advanced microscopic characterization strategies to better understand dynamics of Zr-Cu-Ag PVD thin film metallic glasses</p> <p style="text-align: right;">P. Steyer¹, L. Roiban¹, S. Dassonneville¹, A. Borroto², J.-F. Pierson²</p> <p>¹ INSA de Lyon, Laboratoire MATEIS, Villeurbanne, France ² Université de Lorraine, Institut Jean Lamour, Nancy, France</p> |
| 9:20 – 9:30 | <p>S4-3 Cold sprayed anti-biofouling coatings based on high entropy alloys</p> <p style="text-align: right;">M. Ettelaei, S. Alidokht</p> <p style="text-align: center;"><i>Department of Mechanical Engineering, Memorial University of Newfoundland, St. John's, NL, Canada</i></p> |
| 9:30 – 10:00 | <p>S4-4 – Invited High-entropy Hägg phases; A case study of nitrides, carbides, and diborides</p> <p style="text-align: right;">P. H. Mayrhofer</p> <p style="text-align: center;"><i>Institute of Materials Science and Technology, TU Wien, Vienna, Austria</i></p> |
| 10:00 – 10:30 | Break |

Tuesday Morning, June 4, 2024 - continued

ORAL PRESENTATIONS

Location: MIL Campus – Université de Montréal

Presentations: Room A-1502.1

Session 5: Optical films

Moderators: To come

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| 10:30 – 11:00 | <p>S5-1 – Invited Amorphous oxides mixtures for coatings of gravitational wave detectors C. S. Menoni¹, A. Davenport¹, S. Castro-Lucas¹, R. Osovsky-Shpilman¹, S. Bhowmick¹, A. Markosyan², R. Bassiri², M. Fejer², F. Schiettekatte³, M. Chicoine³, R. Zhang⁴, J. Jiang⁴, H.-P. Cheng⁴ ¹ Dept. of Electrical and Computer Engineering, Colorado State University, Fort Collins, CO, USA ² Gintzon Lab, Stanford University, Stanford, CA, USA ³ Department of Physics, Université de Montréal, Montreal, QC, Canada ⁴ Department of Physics, Northeastern University, Boston, MA, USA</p> |
| 11:00 – 11:10 | <p>S5-2 Design and fabrication of color-generating multilayer thin-film optical filters for silicon solar cells P. Bhattacharyya, C. White, R. Kleiman, P. Mascher Department of Engineering Physics and Centre for Emerging Device Technologies, McMaster University, Hamilton, ON, Canada</p> |
| 11:10 – 11:20 | <p>S5-3 Enabling smart windows with rationally designed coatings M. R. Anthony Raj, G. B. Muthuperumal, W. Skene Université de Montréal, Montreal, QC, Canada</p> |
| 11:20 – 11:30 | <p>S5-4 Protective coatings for optical fiber used in telecommunication networks R. El Abdi, R. L. Pinto Université de Rennes, Institut de Physique de Rennes, Rennes, France</p> |
| 11:30 – 11:40 | <p>S5-5 The effect of copper layer on AlCIPc thin film B. Abdel Samad, Z. Kabore Department of Physics and Astronomy, Université de Moncton, Moncton, N-B, Canada</p> |
| 11:40 – 12:10 | <p>S5-6 – Invited Real-time growth monitoring of ultrathin Ag layers for use as transparent conductive electrodes G. Abadias CNRS-Université de Poitiers, Poitiers, France</p> |
| 12:10 – 13:40 | <p>Lunch, Continuation of Poster Session, Exhibit & Announcement of the Poster Awards – Atrium B-140</p> |

Tuesday Afternoon, June 04, 2024

ORAL PRESENTATIONS

Location: MIL Campus – Université de Montréal
Presentations: Room A-1502.1

Session 6: Advanced characterization

Moderators: To come

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| 13:40 – 14:10 | S6-1 – Invited Towards reliable X-ray photoelectron spectroscopy of thin films G. Greczynski <i>Thin Film Physics Division, Department of Physics (IFM), Linköping University, Linköping, Sweden</i> |
| 14:10 – 14:20 | S6-2 Creating a digital twin and how it helps to speed up your coating development T. vom Braucke ¹ , N. Bierwisch ² ¹ GP Plasma, Medina, OH, USA ² SIOmec, Ummanz, Germany |
| 14:20 – 14:30 | S6-3 Investigation of the mechanical properties of sculptured thin films by nanoindentation J. Nikitina, L. Grinevičiūtė <i>Department of Laser Technologies, Center for Physical Sciences and Technologies, Vilnius, Lithuania</i> |
| 14:30 – 14:40 | S6-4 Enhancement of refrigeration system efficiency through the utilisation of nanolubricants and nanorefrigerants: An overview T. Babarinde, D. Madyira <i>Dept. of Mechanical Engineering Science, University of Johannesburg, Johannesburg, South Africa</i> |
| 14:40 – 14:50 | S6-5 Giant step bunching and Ehrlich-Schwöbel-barrier in thin heteroepitaxial films of strontium titanate on magnesium oxide (100) substrates E. Familsatarian ¹ , K. Kohlmann ¹ , D. Gückelhorn ¹ , A. Sarkissian ² , E. Carbone ¹ , P. Antici ¹ , A. Ruediger ¹ ¹ INRS - Énergie, Matériaux et Télécommunications, Montreal, QC, Canada ² Plasmionique, Varennes, QC, Canada |
| 14:50 – 15:00 | S6-6 Optimization and application of HiPIMS hafnium oxynitride (HfO _x N _y) thin films in MOS structures M. Puzniak ¹ , W. Gajewski ¹ , R. Mroczynski ² , M. Zelechowski ¹ ¹ TRUMPF Huettinger Sp. z o.o., Zielonka, Poland ² Institute of Microelectronics and Optoelectronics, WUM, Warsaw, Poland |
| 15:00 – 15:30 | Break |

Tuesday Afternoon, June 4, 2024 – continued

ORAL PRESENTATIONS

Location: MIL Campus – Université de Montréal
Presentations: Room A-1502.1

Session 7: FCSE perspectives

Moderators: To come

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| 15:30 – 16:00 | S7-1 – Invited Thin film technologies for low carbon energies in a Green Deal context F. Schuster <i>CEA, Paris-Saclay, France</i> |
| 16:00 – 16:10 | S7-2 Taking on the challenge for high-volume coating of metallic plates for hydrogen applications using PVD technology P. Immich, R. Bosch, R. Jacobs, T. Karla, M. Horstink, P. Broekx, K. Fuchigami <i>IHI Hauzer Techno Coating B.V., Venlo, Holland</i> |
| 16:10 – 16:20 | S7-3 From Nano to Micro: When ALD meets with PVD to enhance coating performance F. Papa ¹ , A. Sharma ² , S. Tsianikas ³ , X. Maeder ³ , C. Guerra ² ¹ GP Plasma, Medina, OH, USA ² Swiss Cluster AG, Spiez, Switzerland ³ Empa Thun, Thun, Switzerland |
| 16:20 – 16:30 | S7-4 Progress in laser patterning techniques for efficient mass production of flexible microelectronic devices with sputtered coatings L. Josephson, M. Simmons, M. Kleyn, J. Vlach <i>Intellivation LLC, Loveland, CO, USA</i> |
| 16:30 – 17:00 | S7-5 – Invited Leveraging “external innovation” to enhance the success of commercializing advances in functional coatings & surface engineering C. H. Stoessel <i>StoesselConsulting / SputterTek LLC, Palo Alto, CA, USA</i> |
| 17:00 – 17:15 | Closing remarks and Visit of the facilities |

Poster Sessions, June 3-4, 2024

POSTER PRESENTATIONS

Location: MIL Campus – Université de Montréal

Posters: Atrium B-140 – Posters will be available during both days

Posters A: Hard & protective coatings and related applications

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| A1 | <p>Dynamic combinatorial 2D synthesis of materials using PVD-HiPIMS technology N. Chaâbane¹, J.-P. Poli², F. Schuster¹ ¹ <i>Université Paris-Saclay, CEA, INSTN, Gif Sur Yvette, France</i> ² <i>Université Paris-Saclay, CEA, DRT, Gif Sur Yvette, France</i></p> |
| A2 | <p>Different TiAlN coating architecture for enhanced solid particle erosion protection B. Millan-Ramos, P. Renato Avila, S. Brown, L. Martinu, J. E. Klemberg-Sapieha <i>Department of Engineering Physics, Polytechnique Montréal, Montreal, QC, Canada</i></p> |
| A3 | <p>Optimisation of tribological parameters for plasma nitriding and DLC coatings deposited on AISi 52100 steel J. Solis-Romero, S. S. Roblero-Aguilar, V. A. Castellanos-Escamilla, M. Alvarez-Noriega, D. Y. Vargas-López <i>SEP/TecNM/Instituto Tecnológico de Tlalnepantla, Tlalnepantla de Baz, Mexico</i></p> |
| A4 | <p>Characterization of spray formed and vacuum induction melted AISi D2 cold work tool steel V. Rodríguez¹, A. Ruiz¹, V. Nadimpalli², D. Bue² ¹ <i>Universidad Michoacana de San Nicolás de Hidalgo, Morelia, Michoacán, Mexico</i> ² <i>Technical University of Denmark, Kongens Lyngby, Denmark</i></p> |
| A5 | <p>Novel approaches in surface engineering: Enhancing adhesion and stress management through interface design for wear-resistant coating T. Ebrahimi Sadrabadi¹, M. Javidani¹, M. Muhammed¹, M. Jahazi² ¹ <i>Department of Applied Science, University of Quebec at Chicoutimi, Chicoutimi, QC, Canada</i> ² <i>Department of Mechanical Engineering, École de Technologie Supérieure, Montreal, QC, Canada</i></p> |
| A6 | <p>Comparison of tool performance in machining Inconel 718 superalloy Y. Wu^{1,2}, N. Côté², M. Azzi¹, S. Bélanger³, E. Péloquin³, L. Martinu¹, J. Klemberg Sapieha¹ ¹ <i>Department of Engineering Physics, Polytechnique Montréal, Montreal, QC, Canada</i> ² <i>Centre Technologique En Aérospatiale, Longueuil, QC, Canada</i> ³ <i>Optimum-Canada, Mercier, QC, Canada</i></p> |
| A7 | <p>Mechanical and tribological properties of (CoCrFeNiMn)_{1-x}Ti_x high-entropy thin films synthesized by magnetron sputtering L. Wu, T. Liang, R. Chromik <i>McGill University, Montreal, QC, Canada</i></p> |

Poster Sessions, June 3-4, 2024 - continued

POSTER PRESENTATIONS

Location: MIL Campus – Université de Montréal

Posters: Atrium B-140 – Posters will be available during both days

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| A8 | <p>Structure and mechanical properties of (Al,B,Cr,Si,Ti)-based thin films A. Kirnbauer¹, P. Konecny¹, R. Hahn², S. Kolozsvari³, P. Mayrhofer¹ ¹ TU Wien, Thin Film Materials Science Division, Vienna, Austria ² TU Wien, Christian Doppler Laboratory for Surface Engineering of high-performance Components, Vienna, Austria ³ Plansee Composite Materials GmbH, Lechbruck am See, Germany</p> |
| A9 | <p>Ti-Induced Effects on Microstructural and physical properties of MoNbTaTi_xW Refractory High-Entropy Alloy Thin Films B. Bandla, S. K. Katta, V. G. Kotnur <i>School of Engineering Sciences and Technology, University of Hyderabad, Telangana, India</i></p> |
| A10 | <p>Mechanical and tribological properties of (AlCoCrNiSi)_{100-x}N_x thin films T. Liang¹, S. Alidohkt^{2,1}, R. Chromik¹ ¹ Department of Mining and Materials Engineering, McGill University, Montreal, QC, Canada ² Department of Mechanical Engineering, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, St. John's, NL, Canada</p> |
| <p>Posters B: Functional coatings and surface modifications for biomedical, electronic and other applications</p> | |
| B1 | <p>Epitaxially grown gold (100) surfaces for oxygen reduction reactions K. Kohlmann¹, D. Guay¹, A. Sarkissian², C. Schindler³, A. Ruediger¹ ¹ Centre Énergie, Matériaux, Télécommunications, Institut national de la recherche scientifique, Varennes, QC, Canada ² Plasmionique Inc., Varennes, QC, Canada ³ Department of Applied Sciences and Mechatronics, Munich University of Applied Sciences, Munich, Germany</p> |
| B2 | <p>Quantifying impact of tension on PLA chains mobility when modifying polymer exclusion nets W. Simon¹, M.-J. Dumont², A. Karthikeyan³, J. R. Tavares¹ ¹ Polytechnique Montréal, Montreal, QC, Canada ² Université Laval, Laval, QC, Canada ³ University of Ottawa, Ottawa, ON, Canada</p> |
| B3 | <p>Electrostatic and electrochemical doping of metal-oxides ion-gated transistors J.R. Herrera Garza¹, L.P. Camargo², R.K. Azari¹, L.C. da Silva Neres³, S. Khaleel¹, M.S. Barbosa⁴, C. Santato¹, F. Soavi⁵ ¹ Department of Engineering Physics, Polytechnique Montréal, Montreal, QC, Canada ² Chemistry Department, CCE, State University of Londrina (UEL), Londrina, PR, Brazil ³ Institute of Chemistry, São Paulo State University (UNESP), Araquara, SP, Brazil ⁴ Institute of Chemistry, Federal University of Goiás (UFG), GO, Brazil ⁵ Department of Chemistry "Giacomo Ciamician", Alma Mater Studiorum Università di Bologna, Bologna, Italy</p> |

Poster Sessions, June 3-4, 2024 - continued

POSTER PRESENTATIONS

Location: MIL Campus – Université de Montréal

Posters: Atrium B-140 – Posters will be available during both days

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| B4 | <p>Period-doubling bifurcations as route to chaos in resistively switching $\text{Hf}_{0.5}\text{Zr}_{0.5}\text{O}_2$ thin films S. Obernberger¹, K. Kohlmann¹, A. Sarkissian², P. Antici¹, C. Schindler³, A. Ruediger¹ ¹ <i>Centre Énergie, Matériaux, Télécommunications, Institut national de la recherche scientifique, Varennes, QC, Canada</i> ² <i>Plasmionique Inc., Varennes, QC, Canada</i> ³ <i>Dept. of Applied Sciences and Mechatronics, Munich University of Applied Sciences, Munich, Germany</i></p> |
| B5 | <p>Charge carrier transport in sepia melanin S. Khaleel, Z. Gao, A. Camus, C. Santato <i>Polytechnique Montréal, Montreal, QC, Canada</i></p> |
| B6 | <p>Boron nitride nanotube buckypaper surface functionalization by exposure to planar gliding air plasma discharge O. Mostafa¹, S. Walker², S. Coulombe² ¹ <i>Department of Mechanical Engineering, McGill University, Montreal, QC, Canada</i> ² <i>Department of Chemical Engineering, McGill University, Montreal, QC, Canada</i></p> |
| B7 | <p>Boosting the atmospheric water harvesting of carbon-xerogels S. Alavitabari¹, D. Brassard¹, S. Ponton¹, R. Boudreault², P.-L. Girard-Lauriaut³, J. R. Tavares¹ ¹ <i>Chemical Engineering Department, Polytechnique Montréal, Montreal, QC, Canada</i> ² <i>Awn Nanotech Inc., Dorval, QC, Canada</i> ³ <i>Chemical Engineering Department, McGill University, Montreal, QC, Canada</i></p> |
| B8 | <p>Release of pest repellents from the surface of a biodegradable polymer D. Klassen¹, A. Karthikeyan², J. R. Tavares¹, M.-J. Dumont³ ¹ <i>Polytechnique Montréal, Montreal, QC, Canada</i> ² <i>University of Ottawa, Ottawa, ON, Canada</i> ³ <i>Université de Laval, Laval, QC, Canada</i></p> |
| B9 | <p>Plasma processes based on aerosols for functional coating deposition M. Feron^{1,2,3}, R. Clergereaux^{2,1}, V. Orlandi^{2,3,1,4}, T. Bourriane⁵, A.-F. Mingotaud⁶, M. Kahn^{1,3} ¹ <i>CNRS</i> ² <i>Laplace</i> ³ <i>LCC, Toulouse, France</i> ⁴ <i>CNES, Paris, France</i> ⁵ <i>Météo France</i> ⁶ <i>IMRCP, Toulouse, France</i></p> |
| B10 | <p>Nanoparticle collection and in-flight functionalization during femtosecond pulsed laser micromachining G. Zeppetelli, A.-M. Kietzig, S. Coulombe <i>Department of Chemical Engineering, McGill University, Montreal, QC, Canada</i></p> |

Poster Sessions, June 3-4, 2024 - continued

POSTER PRESENTATIONS

Location: MIL Campus – Université de Montréal

Posters: Atrium B-140 – Posters will be available during both days

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| B11 | <p>Preparation of hydrocarbon thin-films by injection of pentane aerosols into an atmospheric-pressure DBD using a direct liquid reactor injector</p> <p>A. Yazdanpanah¹, L. Cacot¹, M. El Rachidi¹, R. Clergereaux², M. Kahn³, L. Stafford¹ ¹ <i>Physics Department, Université de Montréal, Montreal, QC, Canada</i> ² <i>LAPLACE, Université de Toulouse, CNRS, INPT, UPS, Toulouse, France</i> ³ <i>LCC, CNRS (UPR 8241), Université de Toulouse, France</i></p> |
| B12 | <p>Enhancing heavy metal ion adsorption: Thiol-functionalized adsorbents via atomic layer deposition and vapor-phase silanization</p> <p>V. Rozyyev^{1,2,3}, F. Gao^{3,4}, Y. Liub^{2,3,4}, R. Shevate¹, R. Pathak¹, A.U. Mane¹, S.B. Darling^{3,2,4}, J.W. Elam^{1,3} ¹ <i>Applied Materials Division, Argonne National Laboratory, Lemont, IL, USA</i> ² <i>Pritzker School of Molecular Engineering, University of Chicago, Chicago, IL, USA</i> ³ <i>Advanced Materials for Energy-Water Systems Energy Frontier Research Center, Argonne National Laboratory, Lemont, IL, USA</i> ⁴ <i>Chemical Sciences and Engineering Division, Argonne National Laboratory, Lemont, IL, USA</i></p> |
| B13 | <p>Development of a multi-walled carbon nanotube filter for detaining immunosuppressive T-Cells and inducing the activation of effector T-Cells</p> <p>G. Di Placido, L. Hein, S. Coulombe <i>McGill University, Montreal, QC, Canada</i></p> |
| B14 | <p>Electrophoretic deposition of a strongly adhering multi-walled carbon nanotube coating by addition of a plasma polymer interlay</p> <p>L. Hein¹, S. Coulombe¹, R. Cecere², R. Mongrain¹ ¹ <i>McGill University, Montreal, QC, Canada</i> ² <i>McGill University Health Center, Montreal, QC, Canada</i></p> |
| B15 | <p>Layer-by-layer self- assembly of interfacial design of conjugated polymers for boosted triboelectric nanogenerator performances</p> <p>N. T. Debele <i>Myongji University, Seoul, South Korea</i></p> |
| B16 | <p>Quantum spin pumping in normal/bearded zigzag graphene nanoribbon</p> <p>H. Tian¹, S. Wang² ¹ <i>School of Physics and Electronic Engineering, Linyi University, Linyi, China</i> ² <i>College of Science, Jinling Institute of Technology, Nanjing, China</i></p> |

Poster Sessions, June 3-4, 2024 - continued

POSTER PRESENTATIONS

Location: MIL Campus – Université de Montréal

Posters: Atrium B-140 – Posters will be available during both days

Posters C: Optical films and energy-related applications

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| C1 | <p>Stress development in amorphous optical thin films: mechanisms of stress generation and the role of the sputtering parameters</p> <p>P. Avila, B. Baloukas, O. Zabeida, J. Sapieha, L. Martinu <i>Department of Engineering Physics, Polytechnique Montréal, Montreal, QC, Canada</i></p> |
| C2 | <p>Synthesis, microstructural, optical, and mechanical properties of SiN_x thin films deposited by LPCVD and reactive sputtering, and their integration into photonic integrated circuits</p> <p>A. Radi¹, L. Mehrvar¹, B. Ahammou¹, A. Zitouni¹, B. Le Drogoff¹, M. Chaker¹, M. Ménard² ¹ <i>Institut National de la Recherche Scientifique - Énergie, Matériaux et Télécommunications (INRS-EMT), Varennes, QC, Canada</i> ² <i>Department of Electrical Engineering, École de Technologie Supérieure, Montreal, QC, Canada</i></p> |
| C3 | <p>Silver-based transparent conductors with improved optical performance and environmental stability</p> <p>P. Rumsby, B. Baloukas, O. Zabeida, L. Martinu <i>Department of Engineering Physics, Polytechnique Montréal, Montreal, QC, Canada</i></p> |
| C4 | <p>Low-loss Al₂O₃ and SiO₂ thin films for photonics deposited by plasma-assisted reactive magnetron sputtering</p> <p>P. Torab Ahmadi¹, M. Chesaux², J. Wojcik², D. Deligiannis², P. Mascher¹, J. D. B. Bradley¹ ¹ <i>Department of Engineering Physics and Centre for Emerging Device Technologies, McMaster University, Hamilton, ON, Canada</i> ² <i>Intlvac Inc., Halton Hills, ON, Canada</i></p> |
| C5 | <p>Optical and structural properties of Ag-polymer nanocomposites prepared by combination of gas phase methods</p> <p>Z. Krtouš¹, P. Pleskunov¹, T. Kosutova¹, M. Cieslar¹, M. Dopita¹, B. Baloukas², L. Martinu², J. Kousal¹ ¹ <i>Charles University, Prague, Czech Republic</i> ² <i>Department of Engineering Physics, Polytechnique Montréal, Montreal, QC, Canada</i></p> |
| C6 | <p>Preparation and characterization of a transparent photovoltaic solar cell with chloroaluminium phthalocyanine (ClAlPc) et du fullerene (C60) as active materials</p> <p>Z. Kabore, B. Adel Samad <i>Université de Moncton, Moncton, N-B, Canada</i></p> |
| C7 | <p>The capabilities to form periodically modulated coatings and their applications for spatial filters and polarizers</p> <p>L. Grineviciute¹, J. Nikitina¹, K. Staliunas² ¹ <i>Center for Physical Sciences and Technology, Vilnius, Lithuania</i> ² <i>UPC, Dep. de Física, Terrassa, Barcelona, Spain</i></p> |

Poster Sessions, June 3-4, 2024 - continued

POSTER PRESENTATIONS

Location: MIL Campus – Université de Montréal

Posters: Atrium B-140 – Posters will be available during both days

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| C8 | <p>a-Si:H/SiO₂ HR coatings for gravitational wave detection A. Lussier¹, B. Baloukas², S. Roorda¹, L. Martinu², F. Schiettekatte¹ ¹ Université de Montréal, Montreal, QC, Canada ² Polytechnique Montréal, Montreal, QC, Canada</p> |
| C9 | <p>Exploring optoelectronic properties of magnetron-sputtered nanoparticles with finite-difference time-domain method P. Pleskunov¹, Z. Krtouš², M. Protsak¹, T. Košutová³, M. Cieslar⁴, L. Martinu², A. Choukourov¹ ¹ Department of Macromolecular Physics, Charles University, Prague, Czech Republic ² Department of Engineering Physics, Polytechnique Montréal, Montreal, QC, Canada ³ Department of Condensed Matter Physics, Charles University, Prague, Czech Republic ⁴ Department of Physics of Materials, Charles University, Prague, Czech Republic</p> |
| C10 | <p>FAPbI₃-based perovskite thin film using evaporation and atomic layer deposition M. Jeong, H. S. Chang <i>Chungnam National University, Daejeon, South Korea</i></p> |
| C11 | <p>Bragg-reflector-enhanced electrochromic devices with adjustable optical performance M. Crouan, B. Baloukas, O. Zabeida, J. Sapiuha, L. Martinu <i>Department of Engineering Physics, Polytechnique Montréal, Montreal, QC, Canada</i></p> |
| C12 | <p>Influence of the deposition pressure on the memory effect of sputtered electrochromic WO₃ thin films B. Faceira¹, L. Teulé-Gay¹, H.-Y. Huang², Y.-C. Huang², C.-L. Dong², M. Maglione¹, A. Rougier¹ ¹ Univ. Bordeaux, CNRS, Bx INP, ICMCB, Pessac, France ² Research Center for X-ray Science & Department of Physics Tamkang University, Tamsui, Taiwan</p> |
| <p>Posters D: Advanced characterization</p> | |
| D1 | <p>Modeling study of interface fracture toughness of thermal barrier coating at high temperature R. Liu, S. K. Essa <i>Department of Mechanical and Aerospace Engineering, Carleton University, Ottawa, ON, Canada</i></p> |

Poster Sessions, June 3-4, 2024 - continued

POSTER PRESENTATIONS

Location: MIL Campus – Université de Montréal

Posters: Atrium B-140 – Posters will be available during both days

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| D2 | <p>Atomistic insights into the effect of hydrogen on the structure and mechanical properties of amorphous silicon nitride</p> <p>Y. Ouldhnini, B. Ahammou, K. Kaur Ghuman, M. Chaker <i>Institut National de la Recherche Scientifique (INRS), Varennes, QC, Canada</i></p> |
| D3 | <p>Exploring the structural and mechanical properties of deposited SiN_x thin films through molecular dynamics simulations</p> <p>B. Ahammou, Y. Ouldhnini, K. Kaur Ghuman, M. Chaker <i>Institut National de la Recherche Scientifique (INRS), Varennes, QC, Canada</i></p> |
| D4 | <p>In plasma ion beam analysis</p> <p>L.-C. Fortier¹, M. Chicoine¹, S. Chouteau¹, M. Clause², É. Lalande¹, A. Lussier¹, G. Terwagne², S. Roorda¹, L. Stafford¹, F. Schiettekatte¹</p> <p>¹ <i>Department of Physics, Université de Montréal, QC, Canada</i> ² <i>Department of Physics, Université de Namur, Namur, Belgium</i></p> |
| D5 | <p>Using XPS on arsenic adsorption to follow the mechanism on surface</p> <p>M. Vázquez-Lepe¹, A. Martínez-Gómez², M. Flores-Gómez³, C. Gómez-Hermosillo²</p> <p>¹ <i>Department of Project Engineering, Universidad de Guadalajara, Guadalajara, Jalisco, Mexico</i> ² <i>Department of Chemical Engineering, Universidad de Guadalajara, Guadalajara, Jalisco, Mexico</i> ³ <i>Department of Water and Energy, Universidad de Guadalajara, Guadalajara, Jalisco, Mexico</i></p> |
| Posters E: Special posters | |
| E1 | <p>Sustainability for materials research: A Quebec approach</p> <p>L. Cacot, M. Boiteux, L. Stafford <i>Université de Montréal, Montreal, QC, Canada</i></p> |
| E2 | <p>GCM-Laboratories - details to come</p> |

Wednesday Morning, June 5, 2024

INTERACTIVE WORKSHOPS

Location: Polytechnique Montréal, Main Building

Registration: B-415

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| 8:00 – 9:00 | Welcome Desk Opens |
| 8:30 – 9:30 | Continental breakfast |
| | Workshop A – Room B-405 Spectroscopic ellipsometry: Case and tricks of the trade N. Hong¹ , B. Baloukas ² <i>¹ J.A. Woollam Co, Inc., Lincoln, NE, USA</i> <i>² Polytechnique Montréal, Montreal, QC, Canada</i> |
| 9:30 – 10:30 | Workshop B – Room B-401 Tribo-mechanical surface characterization J. Nohava¹ , M. Reza ¹ , S. Brown ² <i>¹ Anton Paar TriTec SA, Corcelles, Switzerland</i> <i>² Polytechnique Montréal, Montreal, QC, Canada</i> |
| | Workshop C – Room B-429 Developing an understanding of surface chemistry - Multi-technique electron spectroscopy-based investigation J. Lallo¹ , J. Lefebvre ² <i>¹ Thermo Fischer Scientific,</i> <i>² Polytechnique Montréal, Montreal, QC, Canada</i> |
| 10:30 – 10:45 | Break, coffee and refreshments – Room B-415 |
| 10:45 – 12:00 | Continuation of the workshops |
| 12:00 – 13:00 | Lunch (included) and discussions – Room B-415 |

Wednesday Afternoon, June 5, 2024

INTERACTIVE WORKSHOPS

Location: Polytechnique Montréal, Main Building

Registration: Room B-415

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| | <p>Workshops A: Hands-on workshop in the laboratory – Spectroscopic ellipsometry Location: Optical characterization laboratory – 5th floor</p> |
| 13:00 – 16:30 | <p>Workshops B: Hands-on workshop in the laboratory – Tribo-mechanical characterization Location: Tribo-mechanical characterization laboratory – 2nd floor</p> |
| | <p>Workshops C: Hands-on workshop in the laboratory Location: Surface characterization laboratory – 5th floor</p> |