

iPlasmaNano-XI

The 11th international symposium on
plasma nanoscience



4th - 8th
September
2022



Program

4th September

19:30 Welcome Cocktail at the swimming pool

5th September

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| 8:50- 11:00 Session 1 Chairwoman: Ana Borrás | |
| 8:50 - 9:00 | Opening: Kostya Ken Ostrikov & Uroš Cvelbar & Ana Borrás |
| 9:00 - 09:40 | Keynote: Nanoengineering of plasma polymers for Medicine and Beyond. <u>Krasimir Vasilev</u> |
| Chairman: Krasimir Vasilev | |
| 09:40 - 10:00 | Microfluidic plasma: a novel process intensification strategy for chemistry and chemical engineering. <u>Liangliang Lin</u> (online) |
| 10:00 - 10:20 | Current Advances in Plasma Oncology. Abraham Lin (online) Current Advances in Plasma Oncology. <u>Abraham Lin</u> (online) |
| 10:20 – 10:40 | Molecular dynamics simulations of nanoparticle growth in the context of plasma processing (online) <u>Pascal Brault</u> , Amaël Caillard, Soumya Atmane, Vanessa Orozco-Montes, William Chamorro-Coral |
| 10:40 – 11:00 | Energy-resolved ion mass spectrometry as a tool for effective analysis of plasma-surface interaction <u>Jan Benedikt</u> , Christian Schulze, He Li, Martin Müller, Sadegh Askari, Zoltan Donko |
| 11:00 - 11:30 Coffee and posters | |
| 11:30 - 13:30 Session 2 Chairman: Uros Cvelbar | |
| 11:30 - 12:10 | Keynote: Aerosol-assisted plasma deposition: from superhydrophobic to superhydrophilicity surfaces. <u>Anton Nikiforov</u> , Chuanlong Ma, Kostya (Ken) Ostrikov, Nathalie De Geyter, Rino Morent |
| Chairman: Anton Nikiforov | |
| 12:10 - 12:30 | Synthesis of nanosheets by discharges in liquid nitrogen A.V. Nominé, T. Gries, C. Noel, A. Nominé, V. Milichko, <u>T. Belmonte</u> |
| 12:30 - 12:50 | Studies on the non-equilibrium mass-momentum-energy synergistic transports in an argon arc plasma system (online) Chuan Fang, Zi-Ming Zhang, Yao-Ting Wang, Lan-Yue Luo, <u>He-Ping Li</u> |
| 12:50 - 13:10 | From polyynes to polyaromatics. C ₂ H ₂ plasmas for the production of interstellar dust analogues <u>V. J. Herrero</u> , M. Jiménez Redondo, I. Tanarro, R. J. Peláez, B. Maté, R. Carrasco, H. Sabbah, C. Joblin |
| 13:10 – 13:30 | Studies in the sheath of an asymmetric CCP with an optically trapped microparticle <u>Viktor Schneider</u> , Holger Kersten |
| 13:30 - 14:30 Lunch | |

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| 15:20 - 17:00 Session 3 Chairwoman: Carmen López-Santos | |
| 15:20 - 16:00 | Keynote: Adaptive Plasmas. <u>Michael Keidar</u> |
| Chairman: Michael Keidar | |
| 16:00 - 16:20 | Nanostructured thin films through the bottom-up magnetron sputtering deposition in Helium. <u>Asunción Fernández</u> |
| 16:20 - 16:40 | Synthesis and characterization of nanomaterials using (online) plasma approaches. <u>F. Rosei</u> |
| 16:40 - 17:00 | Proton acceleration using structured targets (online) <u>F.N. Beg</u> , M. Bailly-Grandvaux, J. Strehlow |
| 17:00 - 17:30 Coffee and posters | |
| 17:30 - 19:00 Session 4 Chairman: Thierry Belmonte | |
| 17:30 - 18:10 | Keynote: Electric Field Vector Deduced from Balance of Forces Exerted on a Fine Particle Immersed in Discharge Plasma <u>Masaharu Shiratani</u> , Toma Sato, Kunihiro Kamataki |
| Chairman: Masaharu Shiratani | |
| 18:10 - 18:30 | <i>Dielectric barrier discharges for the functionalization of TiO₂@carbon nanocomposites and cellulose nanocrystals. Joëlle Margot, Zineb Matouk and Mohamed Chaker (online)(*)</i> |
| 18:30 - 18:50 | Thin Film Nanostructuring by Surface Patterning at Oblique Angles A.M. Alcaide, M. Oliva-Ramírez, G. Regodon-Harkness, V. Rico, G. Alcalá, R.Alvarez, A. R. González-Elipe, <u>A. Palmero</u> |
| 18:50 - 19:10 | New generation Lithium based energy storage technologies <u>Yang Hui Ying</u> |
| 20:30-21:00 Gala Dinner: Robles Placentines | |

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6th September

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| 9:00- 11:00 Session 5 Chairman: Alberto Palmero | |
| 9:00 - 9:40 | Keynote: Rapid nanomaterials synthesis in charged plasma Microdroplets. <u>Paul Maguire</u> , Nourhan Hendaway, Harold McQuaid, Davide Mariotti |
| Chairman: Paul Maguire | |
| 9:40 - 10:00 | Microplasma jet-enabled gas-liquid synthesis of N-doped carbon quantum dots and potential as nanofertilisers (online) <u>V. Hessel</u> , H. Q. Pho, E.V. Rebrov, N. N. Tran, D. Losic |
| 10:00 - 10:20 | Plasma-assisted segregation of catalytic nanoparticles in perovskites for H ₂ production by photoelectrocatalysis V. Guigoz, S. Migot, S. Bruyère, R. Schneider, <u>T. Gries</u> |
| 10:20 - 10:40 | Neutral mass spectrometry for atmospheric pressure plasmas <u>Svetlana Radovanov</u> |
| 10:40 - 11:00 | CO ₂ dissociation by non-thermal plasmas operated at ambient condition P. Navascués, M. Oliva-Ramírez, J. Cotrino, A. R. González-Elipe, <u>A. Gómez-Ramírez</u> |
| 11:00-11:30 Coffee and posters | |
| 11:30-13:30 Session 6 Chairman: Thomas Gries | |
| 11:30 - 12:10 | Keynote: Low temperature plasmas for the synthesis of conductive carbon structures. <u>Eva Kovacevic</u> |
| Chairwoman: Eva Kovacevic | |
| 12:10 - 12:30 | DBD plasma pen for localized surface treatment and etching. <u>Oleksandr Polonskyi</u> , Lindsey Agnew, Torge Hartig, Joshua R. Uzarski, and Michael J. Gordon |
| 12:30 - 12:50 | Synergetic enhancement of the doping behavior, morphology and yield of PLA/PAni nanofibers via a pre-electrospinning plasma treatment of the polymeric solution, Yongjian Guo, Rouba Ghobeira, Zuxin Sun, Parisa Shali, Rino Morent, and <u>Nathalie De Geyter</u> (online) |
| 12:50 - 13:10 | Plasma-Printed Nanogold for Bacterial DNA Recognition with SERS <u>V. Shvalya</u> , A. Vasudevan, M. Modic, M. Abutoama, J. Zavašnik, C. Skubic, N. Nadižar, D. Rozman, U. Cvelbar |
| 13:10 - 13:30 | Nanoparticle-based SERS-active vanadium oxide coatings (online) Adéla Hanková, Tereza Košutová, Jan Hanuš, Anna Kuzminova, Eva Kočíšová, Alžbeta Kuižová, Marek Procházka, <u>Ondřej Kylián*</u> |
| 13:30 - 14:30 | Lunch |
| 15:00- 17:00 Session 7 Chairman: Victor Herrero | |
| 15:00 - 15:20 | Keynote: Plasma-assisted fabrication of multi-functional metal oxide systems for energy, environment and safety end-uses (online) <u>Davide Barreca</u> , Alberto Gasparotto, Chiara Maccato |
| 15:20 - 15:40 | Plasma nanofabrication of hybrid piezo/triboelectric Nanogenerators Xabier García-Casas, <u>Francisco J. Aparicio</u> , Ali Ghaffarinejad, Javier Castillo-Seoane, M. Carmen Lopez-Santos, Juan P. Espinos, Jose Cotrino, Juan R. Sánchez-Valencia, Angel Barranco, Ana Borrás |
| 15:40 - 16:00 | Role of Charges in the Kinetic Enhancement during |

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| | Deposition by Non-Classical Crystallization. Nong Moon Hwang |
| 16:00 - 16:20 | The Role of Different PECVD Modalities in the Fabrication of Silicon based Thin Film Structures for Photonics Applications (Online) <u>Peter Mascher</u> |
| 16:20 – 16:40 | Novel approaches to the gas aggregation of nanoparticles using low pressure plasma (online) D. Nikitin, J. Hanus, N. Khomiakova, P. Pleskunov, O. Kylián, Suren Ali-Ogly, P. Mares, J. Vyskočil, A. Choukourov, <u>H. Biederman</u> |
| 16:40 – 17:00 | Streamer dynamics at water surface: investigation of its charge, number, and propagation velocity (online). <u>Ahmad Hamdanv</u> |
| 17:00-17:30 Coffee and posters | |
| 17:30 – 18:30 Session 8 (Junior Session) Chairwoman: Ana Borrás | |
| 17:30 - 17:45 | Exploring Plasma-Induced Phase Transformations in One Dimensional Nanomaterials <u>Martin Košiček</u> , Janez Zavašnik', Uroš Cvelbar |
| 17:45 - 18:00 | Towards in situ plasma surface interaction studies utilizing a microplasma in a TEM, <u>L. Hansen</u> , N. Kohlmann, U. Schürmann, L. Kienle, and H. Kersten |
| 18:00 - 18:15 | Functionality and nanoporosity of HMDSO-derived plasma polymer Films. <u>Paula Navascués</u> , Dirk Hegemann |
| 18:15-18:30 | A coarse-grained approach for growth simulations of metal oxides and polymers on planar/nanostructured substrates. <u>Jorge Budagosky</u> , Xabier García-Casas, J. R. Sánchez-Valencia, Ángel Barranco, Ana Borrás |
| 19:00-Visit to Bodegas in Jerez de la Frontera | |

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7th September

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| 9:00- 11:00 Session 9 Chairman: Juan R. Sanchez-Valencia | |
| 9:00 - 9:40 | Keynote: Versatile plasma-based machine for a synthesis-by-design of graphene and derivatives at a gram-scale <u>Elena Tatarova</u> (Online) |
| 9:40 - 10:00 | Surface modifications of graphene materials and their properties by low temperature non-thermal plasma technology (Online) <u>Dusan Losic</u> , Faisal K Alosaimi, Tran T. Tung, J. Nine, Kamrul Hassan, |
| 10:00 - 10:20 | Plasma-Designed Multifunctional Carbon Nanostructures for Energy Storage Applications <u>Neelakandan Marath Santhosh</u> , Janez Zavašnik, Uroš Cvelbar |
| 10:20 - 10:40 | Plasmas and Acoustic Waves Come Together for the 2D Patterning of Thin Films. V. Rico, A. García-Valenzuela, H. Reichel, M. Oliva-Ramírez, G. Regodon-Harkness, A. M. Alcaide, A. Espino, T.C. Rojas, J. Palomares, A. Fakhfour, A. Borrás, A. Winkler, R. Alvarez, A. Palmero, <u>A. R. González-Elipe</u> |
| 10:40 – 11:00 | Characteristic length scales of plasma electrochemical reactors for nanomaterials synthesis. <u>Pai David</u> |
| 11:00 - 11:30 Coffee and posters | |
| 11:30 - 13:30 Session 10 Chairwoman: Asunción Fernandez-Camacho | |
| 11:30 - 12:10 | Keynote: Plasma (-enhanced ALD) for next-generation energy devices Adriana Creatore |
| Chairwoman: Adriana Creatore | |
| 12:10 - 12:30 | Plasma polymers in perovskite solar cells Lidia Contreras-Bernal, Jose Obrero-Perez, Francisco J. Aparicio, Fernando Nuñez-Galvez, Javier Castillo-Seoane, Karen Valez-Villalobos, Juan A. Anta, Ana Borrás, Juan R. Sanchez-Valencia, <u>Angel Barranco</u> |
| 12:30 - 12:50 | Metal and metal oxide porous thin films and nanostructures from metalorganic solid precursors. Jose Obrero-Perez, Francisco J. Aparicio, J. P. Espinós, Ana Borrás, <u>Juan R. Sanchez-Valencia</u> , <u>Angel Barranco</u> |
| 12:50 - 13:10 | Latest advances in wetting tunable and anti-icing surfaces by plasma deposition and laser patterning. Laura Montes, Victor Rico, Julio Mora, Miguel Gonzalez del Val, German de la Fuente, Luis Angurel, Agustin R. Gonzalez-Elipe, Ana Borrás, <u>Carmen Lopez-Santos</u> |
| 13:10 – 13:30 | Plasmas processes for stable silicon tin alloyed Nanocrystals (online). <u>Vladimir Svrcek</u> , Marius Buerkle, Davide Mariotti |
| 13:30 - 14:30 Lunch | |
| 15:20 - 17:00 Session 11 Chairman: Ángel Barranco | |
| 15:20 - 16:00 | Keynote: Potential of Nanoscale Functional Plasma Polymer Films <u>Dirk Hegemann</u> |
| Chairman: Dirk Hegemann | |
| 16:00 - 16:20 | Plasma polymerized nanomaterials for modulating cellular responses <u>Akash Bachhuka</u> |
| 16:20 - 16:40 | <i>Pulsed Laser Deposition: a flexible tool for the synthesis</i> |

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| | <i>of advanced functional materials. Mohamed Chaker (*)</i> |
| 16:40 – 17:00 | Microplasma Engineering of Nanomaterials Synthesis and Applications <u>Wei-Hung Chiang</u> (online) |
| 17:00 - 17:30 | Coffee and posters |
| 17:30 - 19:00 | Session 12 Chairman: Uros Cveblar |
| 17:30 - 18:10 | Keynote: Plasma electrification: An emerging technology for the synthesis of fuels and chemicals Xin Tu* (online) |
| 18:10 - 19:00 | Vision and insights night: Plasma nanoscience for clean energy, sustainable production, and zero-carbon world by Kostya Ostrikov (online) |
| Free night for tapas and city sightseeing | |

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8th September

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| 9:00- 11:00 Session 13 Chairman: Ramón Escobar | |
| 9:00 - 9:40 | Keynote: New Advances in HIPIMS PVD: Physics and Applications. <u>David Ruzic</u> |
| Chairman: David Ruzic | |
| 9:40 - 10:00 | Plasma based surface engineering solutions in additive Manufacturing. <u>R. Escobar Galindo</u> , J. Hernández-Saz, M. Sánchez-Pérez, T. C. Rojas, J. C. Sánchez-López, S. I. Molina |
| 10:00 - 10:20 | Real-time monitoring of HiPIMS metal growth on polymers with synchrotron-based X-ray scattering <u>Kristian A. Reck</u> , Yusuf Bulut, Matthias Schwartzkopf, Suzhe Liang, Zhuijun Xu, Jonas Drewes, Thomas Strunskus, Peter Müller-Buschbaum, Stephan V. Roth, Franz Faupel |
| 10:20 - 10:40 | Filtering reactive species as a tool to control plasma based thin film deposition techniques. <u>Johannes Berndt</u> , Dario Sciacqua, Andrea Jagodar, Eric von Wahl, Thomas Strunskus |
| 10:40 – 11:00 | Local microplasma effects under colloidal monolayers to produce staggered Si pillars Rodrigo Calvo Membibre, Paola Pellacani, Alejandro Fernández García, Carlota Ruiz de Galarreta Fanjul, Jan Siegel, <u>Miguel Manso Silván</u> |
| 11:00 - 11:30 Coffee and posters | |
| 11:30- 13:30 Session 14 Chairwoman: Ana Gómez-Ramírez | |
| 11:30 - 12:10 | Keynote: Organized DBD streamers for maskless chemical and topographic patterning of surfaces O. Polonskyi, T. Hartig, J. Uzarski, and <u>M.J. Gordon</u> |
| Chairman: Michael J. Gordon | |
| 12:10 - 12:40 | Keynote: Microscopic modelling of plasma-surface chemistry (online) <u>Erik C. Neyts</u> |
| 12:40 - 13:00 | Charge distribution and dynamics of nanoparticles during the plasma afterglow (online). <u>I. B. Denysenko</u> , M. Mikikian |
| 13:00 - 13:20 | Development of a Unified Numerical Model on Large-Amount Nanoparticle Formation by Tandem-Type Modulated Induction Thermal Plasmas with Intermittent Feedstock Feeding (on line) <u>Yasunori Tanaka</u> |
| CLOSING & Lunch | |