SmartMat 2026

2nd International Conference on Smart Functional Materials and Sustainable Technologies

November 23–24, 2026 • Faculty of Sciences of Sfax, Tunisia

Preliminary Detailed Program

Program

ID codes: O-xx = oral presentation • P1-xx = poster, Monday 23 Nov • P2-xx = poster, Tuesday 24 Nov

12 oral presentations • 40 posters on Monday • 41 posters on Tuesday • 92 contributions in total

Monday 23-11-2026	
11:00 – 12:30	**SESSION 2 – Oral Presentations SmartMaT 2026** **Sustainable & Bio-Based Materials | Chair: Prof. Anouar Njeh**
11:00 – 11:15 O-01	**Valorization of Date Palm Agricultural Waste for the Development of Sustainable Bio-Based Composite Materials** BESBES Fatma – ENIS / CRMN Sousse – Tunisia
11:15 – 11:30 O-02	**Sustainable Valorization of Agricultural By-Products as Reinforcing Fillers in PBAT Biocomposite Films** FOURATI Yasmine – FSS – University of Sfax – Tunisia
11:30 – 11:45 O-03	**Experimental Assessment of Short Date Palm fiber Reinforced Silty Soil for sustainable Geotechnical Applications** LOUATI Fatma – ENIT – University of Tunis El Manar – Tunisia
11:45 – 12:00 O-04	**Sustainable Valorization of Macadamia Nut Shell Waste into High-Performance Activated Carbons for the Efficient Removal of Organic Micropollutants from Water** HARABI Souha – ISSAT Gabès – University of Gabès – Tunisia
12:00 – 12:15 O-05	**Physicochemical Characterization of Geranium Distillation Liquid Residue (Still Water) for Sustainable Valorization** BACCOUCHE Minyar – CERTE Borj Cedria / ESSTHS – University of Sousse – Tunisia
12:15 – 12:30 O-06	**Chemical Composition of Lycium arabicum Fruit Oil: A Rich Source of Essential ω-6 and ω-9 Fatty Acids, Phytosterols and Carotenoids** AFFES Marwa
12:30 – 13:30	**Lunch Break**

Monday 23-11-2026	
14:00 – 15:30	**SESSION 3 – Oral Presentations SmartMaT 2026** **Smart Functional Materials, Sensing & Energy | Chair: Dr. Sarra Missaoui**
14:00 – 14:15 O-07	**Multifunctional Li2Gd4(MoO4)7: Er3+/Tm3+/Yb3+ Nanophosphor for Temperature and Vacuum Pressure Sensors** BAHROUNI Yosra – LR_2001_ES_21, FSS – University of Sfax – Tunisia
14:15–14:30 O-08	**Thermal Enhancement of Piezoelectric Output in PVDF-HFP/MWCNT Composite Films** JABALLI Sawssan – FSS – University of Sfax – Tunisia
14:30–14:45 O-09	**Impact of Functional Grading Profiles on Lamb Wave Characteristics in Piezoelectric–Piezomagnetic Composite Plates** GHARSELLAOUI Rim – FSS – University of Sfax – Tunisia
14:45–15:00 O-10	**Structural, Morphological, Magnetic, and Magnetocaloric Properties of La0.75Dy0.05Sr0.1A0.1MnO3 (A = Sr, Ba) Manganites** BACCARI Marwa – FSS – University of Sfax – Tunisia
15:00–15:15 O-11	**New Intelligent Converter Solutions to Improve Energy Efficiency Performance in Photovoltaic Systems** ALBOU Ahmed – ENIS – University of Sfax – Tunisia
15:15–15:30 O-12	**Numerical Calibration and Validation of a Residual-Stiffness Fatigue Model for High-Density Polyethylene** SAHNOUN Yessin – LASEM, ENIS – University of Sfax – Tunisia
15:30 – 16:00	**Coffee Break**
15:30 – 17:00	**SESSION 4 – Poster Session – Day 1 SmartMaT 2026** **39 posters (P1-01 to P1-39) | Chair: Dr. Ayda Bouhamed**
Sustainable & bio-based materials, waste valorization	
P1-01	**Rhodamine B-Functionalized Chitosan–Sardine Protein Isolate Composite Films with Enhanced Optical, Fluorescent, and Bioactive Properties** BENAZAZA Yousra – University of Sfax – Tunisia
P1-02	**Thermoplasticized Bread Waste and PBAT Blends for Sustainable Biodegradable Packaging** BOUZIDI Samar
P1-03	**Influence of Nanocellulose Type on the Stabilization and Physicochemical Properties of Beeswax-in-Water Pickering Emulsions** EJAJE Abderrahmane
P1-04	**Fabrication and Characterisation of Free-Standing Porous and Non-Porous PCL/PCL-PEO Films Using Spin Coating Technique** HAREES M. Mohamed – E.G.S. Pillay Engineering College, Nagapattinam – India
P1-05	**Mechanical and Microstructural Properties of a Ternary Alkali-Activated Binder Based on Illito-Kaolinitic Clay, Silica Fume and Phosphogypsum** JRAD Zainab – ISSTE Gabès – University of Gabès – Tunisia
P1-06	**Valorization of Smectic Clay from Southern Tunisia as a Hydraulic Barrier for Phosphogypsum Storage: Mineralogical Characterization and Hydraulic Performance** LOUATI Fatma – ENIT – University of Tunis El Manar – Tunisia
P1-07	**Alkali-Activated Geopolymer Materials Derived from Mining Waste: Microstructural Characterization and Environmental Assessment** MEFTEH Samir – LaSCOM, FSS – University of Sfax – Tunisia
P1-08	**From Starch to Sustainable Materials: A Green Grafting in Deep Eutectic Solvents** NAJAHI Amira – FSS – University of Sfax – Tunisia

Monday 23-11-2026	
P1-09	**Production of Low-Cobalt Willemite-Based Ceramic Glazes Using Natural Silica Sand (Jebel El Menchar, Tunisia)** ROMDHANI Yamina – LaSCOM, FSS – University of Sfax – Tunisia
P1-10	**Green Synthesis of Silver Nanoparticles Using Wheatinan for Gelatin-Based Antimicrobial Packaging Films** SELLAMI Emna – ENIS – University of Sfax – Tunisia
Environment, water treatment & bioactive natural products	
P1-11	**Extraction accélérée par solvant de Salvia officinalis : efficacité d'extraction, teneur en polyphénols et potentiel biologique** ACHOIK Yahia – LR3E, ENIG – University of Gabès – Tunisia
P1-12	**Dual Application of CTAB-Modified Zeolite and a Zeolite-Derived Membrane for Diclofenac Adsorption and Pharmaceutical Wastewater Treatment** ALOULOU Hajer – FSS – University of Sfax – Tunisia
P1-13	**Bacillus Biosurfactants as Bio-Based Functional Molecules: Physicochemical Properties and Antimicrobial Activities** BOUAZIZI Oumaima – ENIS – University of Sfax – Tunisia
P1-14	**Eco-Friendly Enzymatic Synthesis of Biosurfactant Using a Fungal β-Glucosidase for Oil Spill Remediation** BOUDABBOUS Manel – LBME, CBS – University of Sfax – Tunisia
P1-15	**Electric Field Stimulation of Halotolerant Plant Growth-Promoting Rhizobacteria for Enhanced Agricultural Resilience** BOUSSADA Samira – University of Bordj Bou Arreridj – Algeria
P1-16	**Volutaria lippii: Phytochemical Profile and In Vitro Antioxidant and Anti-Tyrosinase Properties** BSAIHIA Mayssa – FSS – University of Sfax – Tunisia
P1-17	**Iron-Modified Natural Sand as a Heterogeneous Fenton Catalyst for Methylene Blue and Textile Wastewater Treatment** CHIBANI Nayla – ATES Research Unit, FSS – University of Sfax – Tunisia
P1-18	**Chemical Profiling and Antioxidant Potential of a Methanol/Water Extract from Phoenix dactylifera L. Seeds** FAIDI Abir – LR17ES08, FSS – University of Sfax – Tunisia
P1-19	**From Waste Conditioning to Nutrient Recovery: Exploring the Multifunctional Potential of Moringa oleifera** HADJ MANSOUR Yosra – GEET, ENIS / FSS – University of Sfax – Tunisia
P1-20	**Ziziphus lotus Leaves as an Antioxidant Biomaterial: A Multi-Technique Characterization** HAMDAOUI Nourhène
P1-21	**Integrated Valorization of Rapeseed (Brassica napus L.) in Tunisia: Oil Characterization and Dairy Cow Feed Formulation** HERZI Sameh – CRRA Sidi Bouzid – Tunisia
P1-22	**Multi-Matrix Assessment of Suspected Microplastics in Wastewater-Influenced Environments of Riyadh, Saudi Arabia** MALLEK Maryam – FSS – University of Sfax – Tunisia
P1-23	**Eco-Friendly Treatment of Colored Wastewater Using Green Flocculants** OTHMANI Bouthaina – GEET, ENIS – University of Sfax – Tunisia
P1-24	**Fluoride Adsorption on Walnut Shell-Derived Activated Carbon: Kinetic and Thermodynamic Insights** OULED MOHAMED Mariem – ENIG – University of Gabès – Tunisia
P1-25	**Integrated Valorization of Carob (Ceratonia siliqua L.) into Functional Ingredients for the Development of Sesame-Based Spreads** TOUNSI Leila – LAPVA, ENIS – University of Sfax – Tunisia

Monday 23-11-2026	
Smart functional materials, sensors & energy	
P1-26	**Geometric Optimization of Double-Diffusive Convection in Tubular Solar Stills: Performance of Iso-Volumetric Trough Configurations** AZZOUZ Raouia
P1-27	**Nonlinear Solitary Waves in Semiconductor Layers for Non-Destructive Testing** DHIB Abderrahmen – LPM, FSS – University of Sfax – Tunisia
P1-28	**Deciphering the Structure–Property Interplay in Multiphase Polymer–Ceramic Hybrid Films** GUESMI Nesrine – FSS – University of Sfax – Tunisia
P1-29	**Optimizing Vanadium Redox Flow Battery Performance Through Bio-Inspired Flow-Field Design** HAMROUNI Jacer – ENIS – University of Sfax – Tunisia
P1-30	**Stored Energy and Bending Behaviour of Eco-Friendly Functionally Graded Plates** MEZGHANI Houcem – ENIS – University of Sfax – Tunisia
P1-31	**Influence of Geometry and Printing Temperature on 3D-Printed CNT/TPU Piezoresistive Sensors** Dhivakar RAJENDRAN – MST – TU Chemnitz– Germany
P1-32	**Enhanced Hydroquinone Sensing Using WS2-Modified Screen-Printed Carbon Electrodes** SOULA Maroua – FSS – University of Sfax – Tunisia
P1-33	**A Circular-Economy Route to Ceramic Membranes: Kaolin and Invasive Blue Crab Shells for Efficient Wastewater Treatment** ATTIA Afef– ATES Research Unit, FSS – University of Sfax – Tunisia
Hybrid & inorganic materials: structure and properties	
P1-34	**Structural, Morphological and Dielectric Properties of LaSrFe0.5Ti0.5MnO6 Double Perovskite for Thermoelectric Applications** ABDELHEDI Mariem – LPM, FSS – University of Sfax – Tunisia
P1-35	**Structural, Morphological, Magnetic, and Magnetocaloric Properties of Nd0.57Sr0.43MnO3 Manganite** BACCARI Sonia – FSS – University of Sfax – Tunisia
P1-36	**From Zinc Chloride to Highly Crystalline ZnO: A Multi-Technique Study of a Simple Co-precipitation Route** BOUJELBENE Yassmine – FSS – University of Sfax – Tunisia
P1-37	**Study on Structural, Morphological, and Conduction Relaxation Properties of YbNbO4 Ceramic Driven by Correlated Barrier Hopping** BOUZAYANI Mohamed Mounir – FSS – University of Sfax – Tunisia
P1-38	**New Insights into Bismuth (III)-Based Co-crystal with Potential Antibacterial Activity Against Clinically Relevant Pathogens** ELLEUCH Nour – LR11ES51, FSS – University of Sfax – Tunisia
P1-39	**Structural Analysis, XPS Investigation, and Optical Properties of Cu2+-Doped Lead-Free K2SnCl6** GAROUI Iheb – FSS – University of Sfax – Tunisia
P1-40	**A Novel Organic–Inorganic Hybrid Fluoridoantimonate(III): Synthesis, Crystal Structure, Vibrational Spectroscopy and Optical Properties** IBN CHARGUI Nermine – LR11ES51, FSS – University of Sfax – Tunisia

Tuesday 24-11-2026	
14:00 – 15:30	**SESSION 7 – Poster Session – Day 2 SmartMaT 2026** **40 posters (P2-01 to P2-40) | Chair: Dr. Slim Naifar**
Sustainable & bio-based materials, waste valorization	
P2-01	**Enhancing Thermal Storage in Paper Waste Bio-Composites via Graphite Percolation Networks** ALOUI Hasna – LaMMA Sfax – Tunisia
P2-02	**Development and Thermal Characterization of PEG/PE Composites Incorporating Eggshell Waste and Graphite for Sustainable Building Applications** BEN ARIBIA Wafa
P2-03	**Beyond Conventional Wool Utilisation: Alkaline Conversion of a Keratin-Rich Biomass for Circular Material Valorisation** BENABDALLAH Bouchra – USTO-MB, Oran – Algeria
P2-04	**Sustainable Co-Valorization of Hazardous Pb-Zn Mine Tailings and Waste Glass in Metakaolin-Based Ternary Geopolymeric Binders** HAJ ALI Hajer – LaSCOM, FSS – University of Sfax – Tunisia
P2-05	**Dielectric Characterization of Interfacial Adhesion in Bio-Based Plasticized Cellulose Acetate/Kraft Fiber Composites** SHAL Youssef – LaMaCoP, FSS – University of Sfax – Tunisia
P2-06	**Upgrading Washing-Sand Fines into Compressed Earth Blocks** TRABELSI Houcem – ENIT – University of Tunis El Manar – Tunisia
P2-07	**Effect of Alkaline Treatment on the Structural, Mechanical and Water Absorption Behaviour of Date Palm Fibre/LDPE Biocomposites** ZAIDI Ghonya – ISSAT Gabès – University of Gabès – Tunisia
P2-08	**Citric Acid Modification of Gelatin Fibres and Implications for Technical Gelatin–Cellulose Composites** ZOKIROV Xolbek – University of Business and Science, Namangan – Uzbekistan
Environment, water treatment & bioactive natural products	
P2-09	**Plant-Derived Biosorbents for Sustainable Methylene Blue Removal: Surface Properties and Adsorption Behaviour** BADIS Dalila – University of Tipaza – Algeria
P2-10	**Green Synthesis of Gd-Doped ZnO for Photocatalytic Degradation of MB** BEN BRAHIM Mayssa – FSS – University of Sfax – Tunisia
P2-11	**Investigating the Antibacterial and Antibiofilm Efficiency of ZnO Nanoparticles** BEN CHAABEN Oumaima – LM2EM, FSS – University of Sfax – Tunisia
P2-12	**Chemical Composition and Antibacterial Activity of Solenanthus tubiflorus Murb. Essential Oil: In Vitro and In Silico Investigation** DALLALI Dhouha – LR17ES08, FSS – University of Sfax – Tunisia
P2-13	**In Vitro Assessment of Antioxidant, Anti-Inflammatory and Antibacterial Activities of Alginate Oligosaccharides from Dictyota spiralis** KHAMMASSI Houssem – LGEM, ENIS – University of Sfax – Tunisia
Smart functional materials, sensors & energy	
P2-14	**Size-Dependent Optical and Electrochemical Behavior of Green-Synthesized Mo-Based Transition Metal Dichalcogenide** AFFES Syrine – FSS – University of Sfax – Tunisia
P2-15	**Laser-Induced Graphene Strain Sensors on PDMS-Coated Polyimide** AL-HAMRY Ammar – MST, TU Chemnitz – Germany
P2-16	**Temperature Response and Thermal Stability of PEG-Modified CNT/TPU/SBS Self-Sensing Filaments** AYEDI Imen – TU Chemnitz – Germany

Tuesday 24-11-2026	
P2-17	**Effect of Natural Pollen Incorporation on the Properties and Humidity-Sensing Performance of PVA/Gelatin Films** BAHLOUL Khouloud – FSS – University of Sfax – Tunisia
P2-18	**Biochar-Modified PVDF-HFP/BaTiO3 Composite Films: Mechanical Reinforcement and β-Phase Enhancement for Energy Harvesting** BEN BRAHIM Mohamed Hedi – ENIS – University of Sfax – Tunisia
P2-19	**Electrolyte Salt Effect on the Electrochemical Performance of O3-Type NaCu0.2Fe0.4Mn0.4O2 Cathode for Sodium-Ion Battery** BEN SLIMA Ichrak – LaSCOM, FSS – University of Sfax – Tunisia
P2-20	**Engineering Bio-Based Conductive Nanocomposites: Anisotropic Electrical Transport and Mechanical Performance** BOUAZIZ Chaima – FSS – University of Sfax – Tunisia
P2-21	**Comparative Study of Legendre and Chebyshev Polynomial Methods for 2D and 3D Indoor Temperature Reconstruction Using Acoustic Travel Time Tomography** DARDOURI Abir – FSS – University of Sfax – Tunisia
P2-22	**Substrate-Dependent Optical Architecture of PVA Thin-Film Waveguides: Refractive-Index Reconstruction and Interface Effects** FAHEM Salma – NANOMISENE, CRMN / ESSTHS – University of Sousse – Tunisia
P2-23	**Electrochemical Detection of Uric Acid Using a TiO2–MoSe2 Nanocomposite Modified Electrode** HADJ KACEM Yosra
P2-24	**Composition Optimization and Plasma-Assisted Interfacial Engineering of Flexible Lead-Free Magnetoelectric Harvesters** LOUATI Fatma – MST, TU Chemnitz / LPM, FSS – Germany / Tunisia
P2-25	**Engineering MoS2 Nanosheets Through Liquid-Phase Exfoliation for Electrochemical Sensing** MHIRI Sirine – FSS – University of Sfax – Tunisia
P2-26	**Finite-Element Homogenization of a Flexible BaTiO3/PDMS Piezoelectric Composite Reinforced with Date Palm Fibres** CHARBTI Hadile – LASEM, ENIS – University of Sfax – Tunisia
P2-27	**Composition-Dependent Ionic Transport in PEO-Based Gel Polymer Electrolytes for Solar Energy Applications** NISHONOV Azizbek – Namangan State Technical University – Uzbekistan
P2-28	**Ball Milling of NCFS-PVDF/BC Cathodes: A Route to Enhanced Reversible Capacity in Sodium-Ion Batteries** TRABELSI Kaouther – FSS – University of Sfax – Tunisia
P2-29	**Atomic Layer Deposition-Engineered NiO/SCCNT Composites for Non-Enzymatic Lactate Sensing** WALI Ratiba – LaMaCoP, FSS – University of Sfax – Tunisia
Hybrid & inorganic materials: structure and properties	
P2-30	**Sintering Temperature Effect on the La0.45Pr0.05Ca0.4854Sr0.0146MnO3 Manganite** ABDELHEDI Wadie – FSS – University of Sfax – Tunisia
P2-31	**Enhancement of the Magnetocaloric Effect through Particle-Size Reduction in La0.75Bi0.05Sr0.2MnO3** ATHIMEN Chaima – LPM, FSS – University of Sfax – Tunisia
P2-32	**Tetraquabis(2-amino-3-nitropyridine)bis(sulfato)copper(II): Synthesis, Spectroscopic Characterization and Antibacterial Properties** BOUAZIZ Emna – FSS – University of Sfax – Tunisia
P2-33	**Effect of Ni Substitution at the Mn Site on the Structural, Magnetic and Magnetocaloric Properties of Pr0.55Sr0.45Mn1-xNixO3 Manganites** BOUJELBENE Nouha – FSS – University of Sfax – Tunisia

Tuesday 24-11-2026	
P2-34	**α-NaCuPO4 for Photocatalytic Hydrogen Evolution and Rhodamine B Decolorization** ESSALEM Soulef – FSS – University of Sfax – Tunisia
P2-35	**Synthesis and Structural, Vibrational and Photoluminescence Properties of Eu3+-Doped Zn2Te3O8 Ceramics** HADDAOUI Salma – FSS – University of Sfax – Tunisia
P2-36	**Synthesis and Photoluminescence Properties of a New Zero-Dimensional Antimony(III) (Qx-H)4Sb2Cl10 Hybrid** JARBOUI Sahar
P2-37	**Structural, Optical, and Electrical Properties of a Novel Zero-Dimensional Hybrid Semiconductor** JINAOUI Sirine – FSS – University of Sfax – Tunisia
P2-38	**Synthesis, Crystal Structure, Hirshfeld Surface Analysis and Spectroscopic Characterization of a New Hybrid Organic–Inorganic Tin(IV) Chloride Salt** LOULOU NKHILI Nouha – FSS – University of Sfax – Tunisia
P2-39	**Framework Reorganization Governing Optical Transparency and Dielectric Switching in [TMA]4[Zn(SCN)4][Zn(SCN)3Cl]** MTAR Soulayma – FSS – University of Sfax – Tunisia
P2-40	**Theoretical description of the magnetocaloric effect in Pr0.67Sr0.33MnO3 manganite based on mean-field theory** Wadii Mabrouki – FSS – University of Sfax – Tunisia
P2-41	**Influence of reduced Cu thickness on magnetoresistance in Co/Cu multilayers: A spin-dependent scattering analysis** Bassem Elsafi – ENET'Com
15:30 – 16:30	**Association Presentations & Awards Ceremony**

Preliminary