

2026 IEEE INTERNATIONAL WORKSHOP

Biomedical Applications, Technologies and Sensors

9th edition | Naples, Italy | 15–16 October 2026 University of Naples “Parthenope”

Program Schedule

Thursday, October 15

Room: Aula Magna

Poster Session | 10:00–18:15 | P01–P08

TIME	PROGRAM
10:00–12:30	Registration
12:30–13:30	Light Lunch
14:00–14:15	Opening Ceremony
14:15–14:45	K1 • Keynote Lecture — Laura M. Lechuga
14:45–15:45	S01 • Special Session #05 – Part I Optic and Electronic Sensors for Real-Time Physiological Monitoring
15:45–16:15	Coffee Break
16:15–16:45	K2 • Keynote Lecture — Andrea Nicolò
16:45–17:30	S02 • General Track – Part I Biomedical Data Acquisition and AI Decision Support
17:30–18:15	S03 • Special Session #02 Multimodal Intelligent Sensing and AI-Driven Biomarkers: From Engineering to Clinical Translation.
20:00	Gala Dinner

Friday, October 16

Room: Aula Magna

Poster Session | 08:00–16:30 | P01–P08

TIME	PROGRAM
08:00–08:30	Registration
08:30–09:00	K3 • Keynote Lecture — Srećko Valić
09:00–10:00	S04 • General Track – Part II Physiological Signals, Movement Analysis and Biometrics
10:00–11:00	S05 • General Track – Part III Imaging, Dosimetry and Biomedical Monitoring
11:00–11:15	Coffee Break
11:15–12:00	S06 • Special Session #01 Electronic circuits for bio-signal applications.
12:00–13:00	S07 • General Track – Part IV Biosensing Materials and Platforms
13:00–14:00	Lunch
14:00–14:45	S08 • Special Session #03 Intelligent Electronic Measurement Systems for Quality and Safety in Biomedical Applications
14:45–15:30	S09 • Special Session #05 – Part II Optic and Electronic Sensors for Real-Time Physiological Monitoring
15:30–15:45	Coffee Break
15:45–16:15	S10 • Special Session #04 AI-Enabled Biomedical Sensors and Systems
16:15–16:30	Closing Ceremony

DETAILED PROGRAM

Thursday, October 15

10:00–12:30 | Registration

Poster Session | 10:00–18:15 | P01–P08

12:30–13:30 | Light Lunch

14:00–14:15 | Opening Ceremony

K1 | Keynote Lecture | Thursday, 15 October | 14:15–14:45

From Nanophotonics to Clinical Diagnostics: Rapid and Multiplexed Biosensing at the Point of Care

Laura M. Lechuga

Nanobiosensors and Bioanalytical Applications Group, Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC, BIST and CIBER-BBN, Spain

Chair: Ivo Rendina, National Research Council, Italy

S01 14:45–15:45 Special Session #05 – Part I	
Optic and Electronic Sensors for Real-Time Physiological Monitoring	
Chair(s): Michele Riccio, University of Naples Federico II, Italy, Elena De Vita, University of Naples "Parthenope", Italy	
SLOT / TIME	PAPER DETAILS
S01.1 14:45–14:55	Design and Experimental Evaluation of a Wearable Fiber Bragg Grating Sensor for Heart Rate and Respiratory Rate Monitoring Maria Regious Nansereko; Isabel del Pilar Moscol Albanil; Martina Pulcinelli; Bashir Bwogi; Emiliano Schena; Daniela Lo Presti
S01.2 14:55–15:05	Vascular Aging Analysis Using the Acceleration Plethysmogram Acquired by Fiber Bragg Grating Sensors Mariaconsiglia Cuomo; Gianluca Diana; Elena De Vita; Agostino Iadicicco; Giuseppe Longo; Rosalba Liguori; Gloria Cosoli; Stefania Campopiano
S01.3 15:05–15:15	Upcycling Cigarette Filter Waste into Piezoresistive Sensors for Radial Pulse Monitoring Pegah Zarafshani; Fabrizia Cilento; Flavio Esposito; Lucia Sansone; Stefania Campopiano; Muhammad Zahid; Agostino Iadicicco; Michele Giordano
S01.4 15:15–15:25	A Machine Learning Approach to Football Injury Prediction Using XSEED Shinguard Wearable Data Giuseppe Longo; Gabriele Santicchi; Rosalba Liguori; Luigi Di Benedetto; Gian Domenico Licciardo, Prof.; Aldo Comi; Alfredo Rubino
S01.5 15:25–15:35	A Model-Based FOM for Energy-Efficient Edge-AI Inference on STM32 Platforms Maria Gragnaniello; Alessandro Borghese; Vincenzo Romano Marrazzo; Eleonora Santoro; Luca Maresca; Michele Riccio
15:35–15:45	Technical interval

15:45–16:15 | Coffee Break

K2 | Keynote Lecture | Thursday, 15 October | 16:15–16:45
Breathing Monitoring in Sports and Exercise: Importance and Applications

Andrea Nicolò

University of Rome “Foro Italico”, Italy

Chair: **Stefania Campopiano**, University of Naples "Parthenope", Italy

S02 16:45–17:30 General Track – Part I	
Biomedical Data Acquisition and AI Decision Support	
Chair(s): Pisana Placidi , University of Perugia, Italy	
SLOT / TIME	PAPER DETAILS
16:45–16:50	Technical interval
S02.1 16:50–17:00	Automated Preprocessing and Coregistration of Multimodal Biomedical Images for Molecular and Morphological Data Integration Cecilia Castellani; Gabriele Cruciani; Laura Goracci; Maria Fedorova; Linda Hammerich; Keida Kanxheri
S02.2 17:00–17:10	Improving Cognitive Workload Classification via Multimodal Analysis Erica Iammarino; Meri Gjika; Ilaria Marcantoni; Agnese Sbröllini; Laura Burattini
S02.3 17:10–17:20	A Novel Physicochemical Sensing System with Sensor Fusion and Supervised Machine Learning for Multimodal Stool Screening of Selected Diseases Andrej Tóth; Samuel Furka; Jerguš Vengrini; Saul Dueñas Casas; Daniel Furka
S02.4 17:20–17:30	Offline Malaria RAG: Safe Knowledge Synthesis with Small Language Models Saad Abouzahir; Mostafa Salem; Hosni Ghedira; Mohammad Yaqub; Abdulmotaleb El Saddik
S03 17:30–18:15 Special Session #02	
Multimodal Intelligent Sensing and AI-Driven Biomarkers: From Engineering to Clinical Translation	
Chair(s): Maria Giovanna Bianco , Camilla Calomino , University Magna Graecia of Catanzaro, Italy	
SLOT / TIME	PAPER DETAILS
17:30–17:35	Technical interval
S03.1 17:35–17:45	Morphological Similarity Networks and Explainable Machine Learning in Parkinson's Disease Camilla Calomino; Andrea Quattrone; Maria Giovanna Bianco
S03.2 17:45–17:55	Improving Hippocampal Sclerosis Characterization in Epilepsy Through Machine Learning Imputation Using missForest Algorithm Maria Celeste Bonacci; Federica Aracri; Valerio Riccardo Aquila; Ilaria Sammarra; Maria Eugenia Caligiuri; Alessia Sarica; Antonio Gambardella
S03.3 17:55–18:05	A 3D-Printed Tracheostoma Interface for Spirometry in Total Laryngectomy Patients Daniele Latella; Federico Occhiuzzi; Elena Stuppia; Filippo Laganà; Luigi Volpini; Eugenia Allegra
S03.4 18:05–18:15	Miniaturized PVDF Pyroelectric Sensor for Respiratory Airflow Monitoring in Tracheostomized Patients Federico Occhiuzzi; Daniele Latella; Elena Stuppia; Filippo Laganà; Antonio Brunetti; Luigi Volpini; Eugenia Allegra
20:00	Gala Dinner

DETAILED PROGRAM

Friday, October 16

08:00–08:30 | Registration

Poster Session | 08:00–16:30 | P01–P08

K3 | Keynote Lecture | Friday, 16 October | 08:30–09:00

Antioxidant and Health-Promoting Properties of Pumpkin Seed Oil: Insights from In Vitro and In Vivo Studies

Srećko Valić

University of Rijeka, Croatia

Chair: Antonino S. Fiorillo, University Magna Graecia of Catanzaro, Italy

S04 09:00–10:00 General Track – Part II	
Physiological Signals, Movement Analysis and Biometrics	
Chair(s): Flavio Esposito, University of Naples "Parthenope", Italy	
SLOT / TIME	PAPER DETAILS
S04.1 09:00–09:10	Multilead Electrocardiographic Features Across Blood Pressure Categories: An Exploratory Study Meri Gjika; Martina Andrenacci; Laura Burattini; Agnese Sbröllini
S04.2 09:10–09:20	Electrode Misplacement on Portable ECG: A Dataset Using KardiaMobile 6L Meri Gjika; Beatrice Maria Salvatore; Agnese Sbröllini; Laura Burattini
S04.3 09:20–09:30	Microwave Radars for Human Movement Analysis: Recent Advances and Perspectives Fabrizio Lorenzo Carcione; Paolo Brasiliano; Elena Bergamini; Emanuele Cardillo
S04.4 09:30–09:40	Minimum Number of Walking Steps Required for Fall-Risk Classification Using Inertial Gait Parameters Luisa Ruiz-Ruiz; Melisa Pilla Barroso; Fernando Seco; Antonio R. Jimenez
S04.5 09:40–09:50	Ultrasound-Based Hand Gesture Biometrics for Subject Authentication Stefano Franceschini; Francesca Bifulco; Roberta Diana; Michele Ambrosanio; Giuseppe Cesarelli; Fabio Baselice
09:50–10:00	Technical interval
S05 10:00–11:00 General Track – Part III	
Imaging, Dosimetry and Biomedical Monitoring	
Chair(s): Agostino Iadicicco, University of Naples "Parthenope", Italy	
SLOT / TIME	PAPER DETAILS
S05.1 10:00–10:10	A CMOS Image Sensor for Real Time Scattered X-Ray Monitoring in Interventional Radiology Giulia Angelucci; Keida Kanxheri; Livio Fanò; Massimiliano Paolucci; Roberto Di Lorenzo; Ludovica Miseo; Martina Iacco; Ivo Palini; Leonello Servoli
S05.2 10:10–10:20	Development of Flexible a-Si: H Detectors for Medical Dosimetry and Beam Monitoring Keida Kanxheri; HASPIDE Collaboration
S05.3 10:20–10:30	Visualizing Osteoporosis: Time-Domain Panoramic-Contour Based Imaging in Multi-Layered Concentric Voxel Nishtha Shrivastava; Prasant Kumar Sahu; Debalina Ghosh
S05.4 10:30–10:40	Low-Cost near-Field Microwave Assessment of Osteoporosis-Related Bone Dielectric Variations Using S-Parameter Feature Extraction Giovanni Lasagni; Marco Badii; Stefano Maddio; Monica Righini; Stefano Selleri
S05.5 10:40–10:50	Paper-Based Luminescent Sensor for Early Detection of Workers' Exposure to Airborne Nanomaterials Fabio Boccuni; Francesca Tombolini; Riccardo Ferrante; Francesca Sebastiani; Claudio Natale; Eleonora Monti; Davide Sangaletti; Renato Grigolon Capelo; Athanassia Athanassiou
S05.6 10:50–11:00	Performance of Hydrogenated Amorphous Silicon Temperature Sensors for Microwave Thermal Ablation in Agar Solidified Dissipative Environment Fabio Cappelli; Giulia Petrucci; Augusto Nascetti; Nicola Lovecchio; Marta Cavagnaro; Caputo Domenico

11:00–11:15 | Coffee Break

S06 11:15–12:00 Special Session #01	
Electronic circuits for bio-signal applications	
Chair(s): Giuseppe Ferri, Riccardo Olivieri, University of L'aquila, Italy	
SLOT / TIME	PAPER DETAILS
11:15–11:20	Technical interval
S06.1 11:20–11:30	A CCII and DI-VCH Based Instrumentation Amplifier for Biomedical Applications Riccardo Olivieri; Gianluca Barile; Vincenzo Stornelli; Giuseppe Ferri
S06.2 11:30–11:40	A Current-Mode Bioimpedance Measurement System Riccardo Olivieri; Gianluca Barile; Vincenzo Stornelli; Giuseppe Ferri
S06.3 11:40–11:50	TinyML-Guided Reconfiguration of a Programmable ECG Front-End Anna Sabatini; Luca Notarianni; Roberto Bagnato; Davide Cacciari; Marco Santonico; Giorgio Pennazza; Luca Vollero
S06.4 11:50–12:00	A Fused Deposition Modeling 3D-Printed Thermoresistive Sensor for Biomedical Applications Elisa Montaldi; Paolo Esposito; Gianluca Barile; Vincenzo Stornelli; Giuseppe Ferri
S07 12:00–13:00 General Track – Part IV	
Biosensing Materials and Platforms	
Chair(s): Domenico Caputo, University of Rome “La Sapienza”, Italy	
SLOT / TIME	PAPER DETAILS
S07.1 12:00–12:10	Flexible AuNPs@PEGDA Hydrogel Platform for LSPR-Based Refractive Index Sensing: Toward Wearable Sweat Monitoring Andrea De Luca; Lucia Sansone; Flavio Esposito; Stefania Campopiano; Federico Pecorari; Michele Giordano; Agostino Iadicicco
S07.2 12:10–12:20	Flexible Metal-Polymer Plasmonic Membranes for Enhanced Optical Detection of Biomarkers Federica Granata; Marialaura Coluccio; Francesco Gentile; Giuseppe Coppola
S07.3 12:20–12:30	Fiber Optic Interferometry Biosensing for Honey Bee Immune Response Attena Rashidi; Flavio Esposito; Federica Granata; Carmine Vitagliano; Alessio Avino; Lucia Sansone; Adriana Sacco; Anubhav Srivastava; Stefania Campopiano; Giuseppe Coppola; Michele Giordano; Gennaro Di Prisco; Agostino Iadicicco
S07.4 12:30–12:40	Contact-Free Magnetomechanical Proximity Sensing Using U-Shaped Asymmetric Notched Polymer Optical Fibre Sensors with Magnetic Composite Apex Coatings Jerguš Vengrini; Daniel Furka; Andrej Tóth; Samuel Furka
S07.5 12:40–12:50	Plasmonic Metasurfaces and Self-Assembled Gold Nanoparticle Films for PCA-Assisted SERS Detection and Discrimination of Shiga Toxin Variants: From Buffer to Human Serum Alessia Milano; Amalia D'avino; Valentina Marchesano; Massimo Rippa; Bryan Guilcapi; Maurizio Brigotti; Stefano Morabito; Gianluigi Ardissino
12:50–13:00	Technical interval

13:00–14:00 | Lunch

S08 | 14:00–14:45 | Special Session #03**Intelligent Electronic Measurement Systems for Quality and Safety in Biomedical Applications**Chair(s): **Filippo Laganà**, University Magna Graecia of Catanzaro, Italy, **Salvatore Calcagno**, “Mediterranea” University, Reggio Calabria, Italy

SLOT / TIME	PAPER DETAILS
S08.1 14:00–14:10	Dual-Wavelength NDIR Sensor System for Real-Time Authentication of Bergamot Essential Oil Laura Manin; Elena Stuppia; Filippo Laganà; Syed Islam; Antonino S. Fiorillo; Salvatore Andrea Pullano
S08.2 14:10–14:20	System for in Situ Monitoring of Rainwater and Soil in Agriculture Elena Stuppia; Laura Manin; Filippo Laganà; Syed Islam; Antonino S. Fiorillo; Salvatore Andrea Pullano
S08.3 14:20–14:30	Wrist-Worn Human Activity Recognition Exploiting on-Sensor ML Alfonso Messina; Alessia Lazzaro; Alberto Arciello; Demetrio Iero; Massimo Merenda
S08.4 14:30–14:40	An EEG-EMG Based CNN-LSTM Interface to Classify Motor Gestures and Estimate Cognitive and Muscular Effort for Passive Upper-Limb Exoskeletons Luigi Bibbo; Filippo Laganà; Salvatore Calcagno; Mario Versaci; Giovanni Angiulli
14:40–14:45	Technical interval

S09 | 14:45–15:30 | Special Session #05 – Part II**Optic and Electronic Sensors for Real-Time Physiological Monitoring**Chair(s): **Michele Riccio**, University of Naples Federico II, Italy, **Elena De Vita**, University of Naples "Parthenope", Italy

SLOT / TIME	PAPER DETAILS
S09.1 14:45–14:55	UV-Induced Fluorescence Quenching in Zeolite 3A/Carbon Composites for Passive Optical UV Dosimetry Maksym Stetsenko; Tetiana Margitych; Salvatore Andrea Pullano; Olga Kapush; B. S. Atdaev; Antonino S. Fiorillo
S09.2 14:55–15:05	Engineering PEGDA Gold Nanoparticle Carbon Black Nanocomposites for Electrochemical Transduction Valeria Nocerino; Bruno Miranda; Principia Dardano; Sara Colella; Vincenzo Vedi; Amina Antonacci; Vincenzo Mazzaracchio; Luca Fiore; Fabiana Arduini; Luca De Stefano; Viviana Scognamiglio
S09.3 15:05–15:15	Vancomycin Tolerance of MRSA Biofilms Engineered by 3D Bioprinting M. Aversa; E. Roscetto; M. Balato; G. Balato; V. Nocerino; C. Petrarca; M. Vitelli; L. Costanzo; M.R. Catania; L. De Stefano; Principia Dardano
S09.4 15:15–15:25	From Dielectric to Plasmonic Metasurfaces: Engineering Bound States in the Continuum for Biochemical Sensing Bruno Miranda; Gianluigi Zito; Ivo Rendina; Francesco Dell'Olio; Teresa Natale; Silvia Romano
15:25–15:30	Technical interval

15:30–15:45 | Coffee Break

S10 | 15:45–16:15 | Special Session #04**AI-Enabled Biomedical Sensors and Systems**Chair(s): **Salvatore Andrea Pullano**, University Magna Graecia of Catanzaro, Italy

SLOT / TIME	PAPER DETAILS
S10.1 15:45–15:55	Design, Implementation, and Bench Validation of a Wearable Strain-Gauge Glove for Edge-AI Upper-Limb Rehabilitation Diego Pellicanò; Mariangela Arruzzo
S10.2 15:55–16:05	Resilient Predictive Diagnostics for Wearable Biosensors via Uncertainty-Aware Deep Learning and Explainable AI Alessandro Del Prete; Zahida Mashaallah; Flora Amato
S10.3 16:05–16:15	Direct Metabolomic Classification from FID Signals: A Case Study on ALS Giuseppe Longo; Giandomenico Solimando; Carmen Marino; Rosalba Liguori; Manuela Grimaldi; Giuseppe Sorrentino; Stefano Cirillo; Anna Maria D'Ursi; Giuseppe Polese; Alfredo Rubino

16:15–16:30 | Closing Ceremony

DETAILED PROGRAM

Poster Session

Thursday, 15 October | 10:00–18:15

Friday, 16 October | 08:00–16:30

PS Poster Session 15–16 October Biomedical Applications, Technologies and Sensors	
POSTER	PAPER DETAILS
P01 SS #03	Thermal Organization and Phase Behavior Analysis in Tomato Seed Oil Through Calorimetry Laura Manin; Damir Klepac; Srecko Valic
P02 SS #03	Integrated Monitoring of Renewable Energy and Assistive Technologies in Smart Homes Danilo Praticò; Gaetano Silipo; Fabio La Foresta; Domenico De Carlo; Filippo Laganà
P03 SS #04	Embedded Temporal Convolutional Network for Real-Time Rehabilitation Exercise Monitoring Adrian H Morales; Md Rifatul Islam; Alwathiqbellah Ibrahim; Salvatore A. Pullano; Md Maruf Hossain Shuvo
P04 SS #04	Modeling the Effects of Exercise Intensity and Duration on Insulin Sensitivity for an Artificial Pancreas Digital Twin Samiul Bari; Guido Lastra Gonzalez; Salvatore A. Pullano; Md Maruf Hossain Shuvo
P05 SS #04	Personalized Glycemic Insight Generation from Wearable Sensors Using Retrieval-Augmented Large Language Model Md Rifatul Islam; Md Sakib Hasan; Tamzidul Hoque; Salvatore A. Pullano; Md Maruf Hossain Shuvo
P06 SS #04	In-Memory Computing for AI-Enabled Biomedical Sensing and Applications S M Mojahidul Ahsan; Mohammad Sakib Shahriar; Md Maruf Hossain Shuvo; MD Sakib Hasan; Tamzidul Hoque
P07 General Track	Admittance-Domain Open/Load de-Embedding for High-Impedance Measurements Using an AD5941-Based Custom Front-End Carmine Villani Delle Vergini; Caputo Domenico; Pisana Placidi
P08 General Track	Optimization of Ag/AgCl Potentiometric Electrodes on Flexible Kapton Substrates for Chloride Detection Fabio Cappelli; Giulia Petrucci; Angelica Checchi; Daniela De Venuto; Francesca Costantini; Gabriele Favero; Greta Peruzzi; Alessandro Ciccola; Nicola Lovecchio; Caputo Domenico
P08 General Track	Auditory N100 and P300 ERP Responses Across Varying Oddball Sequences: A Pilot Study Tatiana Moposita,Ivo Rendina; Vito Mocella