CONFERENCE PROGRAM

2026 INTERNATIONAL WORKSHOP

BIOMEDICAL APPLICATIONS, TECHNOLOGIES AND SENSORS

OCTOBER 15-16, 2026

UNIVERSITY OF NAPLES "PARTHENOPE"

IEEE BATS NAPOLI 2026

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 Sbrollini; 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 Vengríni; 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 - La Bersagliera Restaurant**

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 Sbrollini
S04.2 **09:10–09:20**	**Electrode Misplacement on Portable ECG: A Dataset Using KardiaMobile 6L** Meri Gjika; Beatrice Maria Salvatore; Agnese Sbrollini; 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-VCII 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 Vengríni; 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 Pratticò; 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