

COMMUNICATIONS

Oral communications will last 12 minutes, followed by 3 minutes of discussion.

SCIENTIFIC AWARDS

Scientific Awards will be presented during the conference:

- “Marco Mascini” Award
- «Young Researcher» Award
- SIOF Thesis and PhD Awards

SCIENTIFIC COMMITTEE (in alphabetical order)

Francesco Baldini, CNR-IFAC, Sesto Fiorentino (FI)
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Stefano Casalini, Università di Padova
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Department of Industrial Chemistry “Toso Montanari”

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Isacco Gualandi



GS 2025

Interdivisional Sensors Group Workshop

“Sensors and biosensors as strategic tools for health, food safety, and environmental monitoring”

15-17th December 2025



CNR, Bologna

Via Piero Gobetti, 101, Bologna

Monday 15th December

12:00-13:00 SIOF Annual Meeting

13:00-14:20 Registration

14:20-14:30 Opening Cerimony

14:30-15:15 “Marco Mascini” Award: Prof.
A. Roda

Biosensors in the field: still a dream or reality

15:15-15:30 **O1 - Noemi Bellassai**

Non-invasive pre-implantation genetic testing of cell-free DNA for monogenic diseases using superparamagnetic particle-based plasmonic assay

15:30-15:45 **O2 - Simone Ventisette**

Epitope-Imprinted Polynorepinephrine Nanoparticles for Advanced Affinity Assays

15:45-16:00 **O3 - Blanca Cassano**

Polydopamine-based One-Pot Immobilization of PQQ-GDH on Graphite Electrodes for Reliable Glucose Sensing

16:00-16:15 **O4 - Stefano Zampolli**

Applications of MEMS-based gas sensing systems

16:00-16:30 **O5 - Tatsiana Pobat**

MicroNIR/Chemometric Platform for Rapid Trihalomethanes Screening in Water

16:30-16:50 Tea Break

16:50-17:05 **O6 - Alessio Bruttomesso**

Advanced Technology from Lens to System

17:05-17:20 **O7 - Valentina Marassi**

FFF as a microfluidic platform for nanozyme-based biosensors: ultra-small pyramidal Pt nanoparticles for robust and ultra-sensitive chemiluminescent assays

17:20-17:35 **O8 - Agata Checco**

Development of a multiparametric electrochemical sensor for the monitoring of Nickel, Copper and Zinc in wastewater and surface water

17:35-17:50 **O9 - Erica Belforte**

Activity based (bio)sensor for the monitoring of MutyH DNA glycosilase

17:50-18:05 **O10 - Alexandru Dron**

2D Metal-Covalent Organic Framework as a versatile water-based ink for the development of electrochemical sensors

18:05-18:20 **O11 - Stefano Gianvittorio**

Electrochemical (bio)sensing platform fabrication by coupling inkjet- and 3D printing

18:20-18:35 **O12 - Luca Sartorelli**

Electrochemical sensing of glucose using a flexible fully ink-jet printed wearable platform

18:35 Cocktail party in UNIBO

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Tuesday 16th December

09:00-09:12 **Aw1 - Giulia Crotti**

Modelling and design of nonlinear metasurfaces for the control of light by light

09:12-09:24 **Aw2 - Maria Eleonora Temperini**

A new IR nanospectroscopy platform to investigate the influence of static electric fields on molecular systems

09:24-09:36 **Aw3 - Gabriele Calusi**

Optical Mode Level Repulsion in Hyperuniform disordered systems

09:36-09:48 **Aw4 - Carlo Anelli**

Development of an optical sensor based on absorption of infrared radiation for detection of urea in aqueous solutions

9:48-10:00 **Aw5 - Adolfo Mazzotti**

Electrical and optoelectronic properties of two-dimensional BP/MoS₂ heterojunctions

10:00-10:15 **O13 - Alessandra Cutaia**

Molecularly imprinted polypyrrole-based POF dual sensor for dopamine detection exploiting plasmonic and voltammetric methods

10:15-10:30 **O14 - Enrico Cozzani**

The “ODOR-GC” Project: detection of odorous molecules by means of a compact and MEMSbased gas-chromatographic system

10:30-10:45 **O15 - Riccardo Desiderio**

Development of novel biosensing tools based on gold nanoparticle/luciferase nanotags

10:45-11:00 **O16 - Alessandro Esposito**
A Versatile and ultrasensitive SERS-Based Biosensing Platform for oligonucleotides detection in Biomedicine

11:00-11:30 Coffee Break

11:30-11:45 **O17 - Ambra Fioravanti**
Development of innovative gas sensors for H₂ leak in production, storage and use sites

11:45-12:00 **O18 - Ilaria Rea**
Plasmonic-assisted biosilica nanoplateforms enable intracellular SERS sensing and in vivo label-free Raman imaging

12:00-12:15 **O19 - Simone Fortunati**
Chemically-modified gold screen-printed electrodes-based voltammetry coupled with machine learning for rapid screening of Alternaria toxins in food samples

12:15-12:30 **O20 - Giulia Elli**
Electrolyte-Gated Field-Effect Transistors-Based Sensor for Nanoplastics Detection

12:30-12:45 **O21 - Alfonso Sierra Parilla**
Biochar as a functional, sustainable nanomaterial for 2nd generation biosensor development: Lactate as a case study

12:45-13:00 **O22 - Marco Malferrari**
Micrometric Electrochemical Sensors for the Investigation of Cellular Differentiation and Photodynamic Therapy

13:00-14:30 Lunch & Poster Session

14:30-15:00 "Young Researcher" Award: Dr. A. Scroccarello

From in-solution plasmonic sensing to nanostructured sensing film-based analytical devices: the path taken

15:00-15:15 **O23 - Matteo Sensi**
Electrolyte-Gated Transistors Biosensors for Healthcare Applications

15:15-15:30 **O24 - Valentina Pifferi**
Bimodal and enantiomeric (photo)electrochemical analysis of Tryptophan by MWCNTs and BT2T4 modified electrode

15:30-15:45 **O25 - Muhammad I. H. L. Zein**
Guide RNA Design Targeting the Mitochondrial D-loop Region of Sus scrofa and Its Application in CRISPR/Cas12a Electrochemical Biosensing for Food Authentication

15:45-16:00 **O26 - M. Grazia Donato**
Sensing by Optical and Acoustic trapping

16:00-16:15 **O27 - Verdiana Marchianó**
Free-Standing Polydopamine Hydrogels as Electrodes for Edible Enzymatic Glucose Biosensors

16:00-16:30 **O28 - Chiara Vincenzi**
Design and Preliminary Evaluation of an Electrochemical Biosensor for Anticancer Drug Screening Applications

16:30-16:50 Tea Break

16:50-17:05 **O29 - Adriano Colombelli**
Real-Time Label-Free Cytokine Detection with Gold Nanoprism Arrays

17:05-17:20 **O30 - Sarassunta Ucci**
Integration of Lab-on-Tip Optical Fiber Biosensors into Microfluidic Systems

17:20-17:35 **O31 - Francesca Bruno**
Systematic Study and Optimization of Multiple Gold Electrodeposition Procedures on 3D-Printed Electrodes for Electrochemical Sensing

17:35-17:50 **O32 - Federico M. Vivaldi**
Solid state electrochemical sensor for the detection of hydrogen

17:50-18:05 **O33 - Elisabetta Primiceri**
Development of innovative MIP based sensors for liquid biopsy

18:05-18:20 **O34 - Giada D'Altri**
Electrochromic analog control based on Organic Electrochemical Transistors and driven by dopamine sensing at the gate electrode

18:20-18:35 **O35 - Lisa R. Magnaghi**
From Lab to Field: Technology Transfer of Sensor Technologies from Pavia - Smart Labels for Food Quality Monitoring

19:30 Social Dinner - A Balùs Restaurant

Wednesday 17th December

- 09:00-09:15 **O36 - Giulia Siciliano**
Highly Sensitive CNTs-modified MIP-based electrochemical sensor for Selective Cyromazine Detection
- 09:15-09:30 **O37 - Paolo Bollella**
Allosteric Modulation Towards Sensitive Enzyme-based Amperometric Biosensors
- 09:30-09:45 **O38 - Francesco Baldini**
Label-free optical detection of binding protein FKBP12
- 09:45-10:00 **O39 - Mattia Carbone**
Colorimetric smart sensor for fish freshness evaluation
- 10:00-10:15 **O40 - Nicholas Kassouf**
Optimizing chemiluminescence reaction catalyzed by a two-dimensional Cu-based Metal-Organic Framework by design of experiment
- 10:15-10:30 **O41 - Federica Mariani**
Multisensing Electronic Platform for Real-Time Wound Healing Monitoring
- 10:30-10:45 **O42 - Serena Chiriaco**
Lab-on-chip technologies for extracellular vesicle enrichment and detection
- 10:45-11:30 Coffee break & poster session**
- 11:30-11:45 **O43 - Gabriele Giagu**
Phage-powered electrochemiluminescence immunosensors for virus quantification

- 11:45-12:00 **O44 - Elena Sossich**
Peptide-Based Biosensor for Early Detection of Multiple Sclerosis via Activated VLA-4⁺ Cells
- 12:00-12:15 **O45 - Dmitry S. Muratov**
Fast and flexible resistive humidity sensors on quasi-1D Zr1-xTixS3 nanoswords
- 12:15-12:30 **O46 - Maria Vittoria Balli**
Ruthenium complexes as electrochemiluminescent labels for advancing PCR-free nucleic acids detection
- 12:30-12:45 **O47 - Alessia Foscari**
Extracellular vesicles detection through electrochemical devices: a new conservative approach to liquid biopsy
- 12:45-13:00 **O48 - Myriam Alfonsini**
Engineering Intrinsically Disordered Aptamers: A Combined GaussianAccelerated MD and Experimental Strategy

13:00

Closing Remarks

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Posters

- P01 - Babar Ali**
Self-assembled nanostructured substrates for ATR-SEIRA spectroscopy
- P02 - Raffella Biesuz**
From Lab to Field: Technology Transfer of Sensor Technologies from Pavia - NEMO Device: Optimization for Water Quality Monitoring
- P03 - Alessandra Bonanni**
2D Carbon Allotropes for Nucleic Acid Biosensing
- P04 - Mattia Bosi**
EGOT-based time temperature integrator for food cold-chain monitoring
- P05 - Chiara Capolungo**
Synthesis, characterization, and application of new luminescent biopolymer probes for micro- and nanoplastics detection
- P06 - Alessandro Carvani**
Detection of Microplastics in Aqueous Solutions Using Impedance Spectroscopy
- P07 - Camilla Casciello**
A microneedle-based platform for the detection of Amyotrophic Lateral Sclerosis (ALS) biomarker
- P08 - Francesco Casnati**
Fluorescent sensor in complex polymeric matrix mimicking extracellular matrix
- P09 - Giulia Cazzador**
Laser-Induced Graphene Cardboard Electrodes for Sustainable Histamine Detection in Food Packaging
- P10 - Mattia Celant**
Electrodeposition of metals onto the gate terminal of electrolyte-gated transistors for sensing applications

P11 - Francesco Chiavaioli

Simultaneous dual biomarker monitoring using step-wise SnO₂ coated lossy mode resonance fiber sensor

P12 - Adriano Colombelli

Optical Aptasensor for On-Chip Tyramine Detection: Advancing Food Safety Through Plasmonics

P13 - Luca De Stefano

Engineering Gold Nanocluster in PEGDA Hydrogel for SERS-based Food Quality Assessment

P14 - Flavio Della Pelle

CO₂ laser-induced graphenic films on eco-friendly paper substrates for sensing and biosensing

P15 - Paolo Di Battista

Integrated paper/transition metal dichalcogenides colorimetric device for the nanozymatic-sensing of glutathione in saliva

P16 - Ida Valeria Di Cristoforo

Sonochemical-Assisted Formulation (SAF) of water-based conductive ink for sensors and biosensors on flexible and paper substrates

P17 - Camilla Didò

Functional evaluation of polypyrrole (PPy) after optimization of sensor Based on molecularly imprinted polymer (MIP) for PFOA detection

P18 - Luisa Stella Dolci

Design of Layered NiAl-LDH and Pyramidal Pt Nanoparticles for Sensing Applications

P19 - Dounia El Fadil

Colorimetric paper-based kit for the selective determination of melatonin

P20 - Anna Emanuele

A field-deployable, software-controlled platform for electrochemical in-flow monitoring of heavy metals in water

P21 - Luigi Falciola

UPcycling SOOT for sustainable nanocomposites-based electroanalytical sensors

P22 - Sara Ferrara

Fluorescent Probes for biosensing applications

P23 - Ambra Fioravanti

“LIVESTAQSENS”: network of AI-calibrated CH₄ and NH₃ chemical sensors for livestock farming

P24 - Luca Fiore

Smart paper-based electrochemical sensor for real-time monitoring of carvacrol release from functionalized porous materials

P25 - Alessandro Fracassa

Stimuli-Responsive Luminophore Drives Mechanism Switch for Highly Efficient Electrochemiluminescence Immunosensing

P26 - Guglielmo Emanuele Franceschi

From Lab to Field: Technology Transfer of Sensor Technologies from Pavia - NEMO Device Optimization for Water Disinfection Monitoring

P27 - Stefano Giordani

Towards sensitive chemiluminescent cardiac stress detection: optimization of platinum nanozyme systems

P28 - Pietro Giuseppe Gucciardi

Raman Spectroscopy in optical and acoustic traps for micro- and nano-plastics detection: advancements in the SAMOTHRACE project

P29 - Diana Guadalupe Jimenez Rivas

Molecularly Imprinted polypyrrole polymers: A strategy for the determination of glyphosate in real samples.

P30 - Elisa Lazzarini

An Innovative Chemiluminescent Approach to Type III CRISPR-Cas Nucleic Acid Sensing

P31 - Giorgia Leotta

Oxygen paper-based sensor integrated into a multi-sensor array for an Organ-on-a-Chip device

P32 - Filippo Lugli

Portable electrochemical sensoristic system for the on-site measurement of cannabinoids

P33 - Maria Grazia Manera

Optimizing Plasmonic Nanocrystals for Enhanced Fluorescence: New Trends in Optical Sensing Technologies

P34 - Mariagrazia Manera

Reduced Graphene Oxide–Gold Nanoparticle Hybrid Substrate for Surface-Enhanced Raman Detection of Pesticides

P35 - Chiara Mariani

Singling Out the Electrochemiluminescence Profile in Microelectrode Arrays

P36 - Claudia Martínez Asenjo

New coreactant set to enhance electrochemiluminescence for bead-based immunoassays

P37 - Monica Elizabeth Mosquera Ortega

Pristine Bamboo-Derived Biochar for the Electrochemical Detection of Amoxicillin in Aqueous Samples

P38 - Massimiliano Negri

Development of Capillary PDMS-Based Microcolumns for Portable Chromatographic Gas Analysis Systems

P39 - Andrea Pace

Miniaturized CRP immunosensor for spaceflight health diagnostics

P40 - Davide Paolini

Integrated 3D-printed/paper electrochemical device for the direct quantitative sensing of Amitraz

P41 - Michael Douglas Pecanha De Souza
Smart Composites for Water Screening: rGO-Lysine/Chitin nanocrystals for Glyphosate Detection

P42 - Valentina Pifferi
Designing Gold-based Electrodes for the Future: Sensitivity, Stability, and Bimodality

P43 - Laura Pigani
Electrochemical Sensors for Hashish Cannabinoid Profilin

P44 - Kamila Tassone Polisel
Surface-Deacetylated Chitin Nanocrystals (CsNCs) for Biocompatible Sensing

P45 - Alessandro Puzzello
Electrochemical Immunosensor based on Microneedles Array for the Detection of Amyotrophic Lateral Sclerosis Biomarkers in Human Interstitial Skin Fluid

P46 - Laura Lupita Rodriguez Martinez
Liquid Crystal-Templated Silver Electrodeposits for the Electrochemical Detection of Haloacetic Acids

P47 - Leonardo Rossi
Core breakage analysis in Shape sensing for structural health monitoring

P48 - Leonardo Rossi
 ϕ -OTDR applied in on-bridge vehicle detection

P49 - Lorenzo Rucco
Integration of Rolling Circle Amplification and Electrochemical Sensing for C-circles DNA Detection

P50 - Annalisa Scroccarello
CO₂-laser plotter towards the development of a paper-based colorimetric analytical kit for sodium hypochlorite determination in milk

P51 - Alessandro Silvestri
In-vitro Dopamine Sensing and Enhanced iPSC-

Derived Neuronal Differentiation on a CNT-Based Electroactive Cell Culturing Platform

P52 - Mauro Tomassetti
New electrochemical sensor device, based on Arduino, for measurements of residue charge of primary alkaline batteries

P53 - Sara Tombelli
Long-Period Fiber Gratings combined with advanced functional polymers for biosensing

P54 - Mengzhen Xi
Immuno-affinity electrochemiluminescence for virus detection

P55 - Chiara Zanardi
Unusual amperometric detection of ions using machine learning applied to hexacyanoferrate and graphene oxide modified electrodes

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