ISOCS Winter School 2023

"Environmental gas & odour sensing"

Bormio, 16-19 January 2023

DAY 1 (Monday, January 16): Environmental Odour Monitoring

8:40-8:55   Saverio De Vito (ENEA, President of ISOCS):
Welcome to participants and presentation of ISOCS

8:55-9:10   Laura Capelli (Politecnico di Milano, Educational chair of ISOCS):
Outline and scope of the winter school. The problem of odour pollution

9:10-10:10   Marzio Invernizzi (Politecnico di Milano):
Methods for the measurement of environmental odours: state of the art and open challenges

10:10-10:40   Break & discussion

10:40-11:40   Laura Capelli (Politecnico di Milano):
The use of gas sensors systems for environmental odour monitoring: potential, limitations, and future perspectives

11:40-12:00   Roberto Pasqua (Ellona)
Blind prediction test for odor concentration with an electronic nose: a real case of study

12:00-12:30   Discussion

12:30-13:30   LUNCH

13:30-17:30   Free time

17:30-19:30   PRACTICAL SESSION
Carmen Bax (Politecnico di Milano):
Design and execution of an environmental odour monitoring campaign: practical examples of strategies for odour source identification, sample collection, dilution, and analysis for e-nose training

19:30-21:30   DINNER

DAY 2 (Tuesday, January 17): Calibration techniques

8:30-9:30   Santiago Marco (IBEC):
            Assessment of the calibration accuracy of IOMS for odour concentration estimation, using model comparison methods

9:30-10:00 Break & discussion

10:00-11:00 Saverio De Vito (ENEA):
            Calibration Methodologies for Low Air Quality Sensors: State of the art and future outlook

11:00-12:00 Christian Bur (Saarland University):
            Advanced calibration strategies for IAQ sensors – transfer learning for addressing scalability limitations

12:00-12:30 Discussion

12:30-13:30 LUNCH

13:30-17:30 Free time

17:30-18:00 Saverio De Vito (ENEA)
            Calibrating Citizen Science Multisensors for mobile Air Quality assessment: A practical proposal from Air Heritage Project

18:00-19:30 PRACTICAL SESSION
            Theodosios Kassandros (University of Thessaloniki):
            Implementing a calibration function for low cost air quality sensor data

19:30-21:30 DINNER

DAY 3 (Wednesday, January 18): Mobile applications with drones/ robots

8:30-9:30   Achim J. Lillienthal (Örebro University):
            Modelling and sensor planning for environmental monitoring with gas sensors

9:30-10:30 Agustín Gutiérrez-Gálvez (University of Barcelona):
            Aerial monitoring of pollution and odour

10:30-11:00 Break & discussion

11:00-12:00 Patrick P. Neumann (BAM):
            Aerial-based Gas Tomography

12:00-12:30 Discussion

12:30-13:30 LUNCH

13:30-17:30 Free time

17:30-19:30 PRACTICAL SESSION
            Javier Alonso (University of Barcelona):
            Data Analysis and Multivariate Regression Modelling with Python for Gas Concentration Prediction: an Array of Commercial MOX Sensors as an Example of Chemical Sensing Unit

19:30-21:30 DINNER

DAY 4 (Thursday, January 19): Trace detection of air pollutants and wireless gas sensing networks (SENSOFT Project)

8:15-9:15   Eduard Llobet Valero (Universitat Rovira I Virgili):
Nanomaterials for trace detection

9:15-10:15   Pilar Pina (UNIZAR and INMA):
SERS for gas phase detection

10:15-10:45   Break & discussion

10:45-11:25   Jan Mitrovics (JLM Innovation):
IoT Technologies for distributed sensing

11:25-12:05   Andoni Beriain (UNA):
Energy limited communications in harvester assisted wireless sensor nodes

12:05-12:30   Discussion

12:30-13:30   LUNCH

13:30-18:00   Free time

18:00-19:30   PRACTICAL SESSION
Jan Mitrovics, Andoni Beriain, Eduard Llobet Valero (JLM Innovation, UNA, URV):
Demonstration of wireless gas sensing networks

19:30-21:30   DINNER