

CURRICULUM VITAE

Andrea Ponzoni

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PRESENT POSITION

Nov. 2013: Researcher (permanent position) at CNR-INO Unit of Brescia (Italy)

PREVIOUS POSITIONS

Nov. 2011 – Nov. 2013: Researcher (permanent position) at CNR-IDASC Unit of Brescia (Italy)

Sept. 2010 – Nov. 2011: Researcher (RTD, temporary position) at CNR-IDASC Unit of Brescia (Italy)

Nov. 2005 – Sept. 2010: Post-doc at University of Brescia, Brescia (Italy)

Feb. 2001 – Dec. 2002: Fellowship at CNR-IMEM Unit of Parma (Italy)

EDUCATION

Nov. 2002 – Oct. 2005: PhD in Materials for Engineering, University of Brescia (Italy)

Nov. 1995 – Nov. 2000: Degree in Physics (legislation in force before DM 509/99), University of Parma (Italy)

APPOINTMENTS

Mar. 2022: Head of the CNR-INO unit of Lecco

RESEARCH ACTIVITY – RESUME

The main research activity of Andrea Ponzoni (AP) concerns the development of materials for solid-state gas sensors and the exploitation of these devices as components in sensing systems for specific applications.

As for materials, his focus is on nanostructured metal oxides and composite materials including metal oxides – graphene and metal oxides – metallic nanostructures. In particular, AP studies the correlation between the macroscopic electrical and sensing properties of the device and the features of the individual nanostructures, involving network and interface effects arising from compositional and morphological inhomogeneities of the materials. Recently, AP started to work on eco-friendly materials such as cellulose to develop these devices.

As for sensing systems, AP exploits these and commercial sensors to develop artificial olfactory systems, also called ‘electronic noses’ to detect target gases or odors (complex blends of several compounds) for agri-food and security applications. The goal is to develop a small, low-cost technology suitable for portable instrumentation or integration in the domestic or working place.

RESPONSIBILITY ROLES IN FUNDED PROJECTS

Principal Investigator of the project:

- ‘One dimensional, single-chain polymers for gas sensors through high-pressure technology (SCENT)’, ‘Third party project’ within the H2020-ATTRACT (project N. 777222), SCENT was awarded for funding after an open and competitive call. Project timing: May 2019 – Oct. 2020.

Head of research unit in the project:

- ‘Future Home for Future Communities (FHfFC)’, funded by Regione Lombardia within the 3° Accordo Quadro Regione Lombardia/CNR; Project timing: 15/12/2016-14/06/2019.
- ‘EMpowerment del PAzienTe In cAsa (EMPATIA@Lecco)’, funded by Regione Lombardia and Fondazione CARIPLLO within the call ‘Emblematiche Maggiori 2016 per la provincia di Lecco’. Project timing: 01/01/2017-30/06/2020.
- ‘Sniffer for concealed people discovery (SNOOPY)’ funded by the European Commission (FP7). Project timing: 01/01/2014-31/12/2016.
- ‘New approaches and methodologies for bioremediation of water contaminated by chlorinated aliphatic solvents (SUSBIOREM)’, funded by Regione Lombardia within the 2° Accordo Quadro Regione Lombardia/CNR. Project timing: 25/07/2013-31/10/2015.

PUBLICATIONS AND BIBLIOMETRIC H-INDEX

- AP is author/co-author of more than 100 publications, including 68 articles on peer-reviewed journals. His publications got more than 2500 citations (source: ISI Web of Science, Mar. 04, 2022).
- H-Index: 28 (ISI Web of Science); 30 (Scopus); 31 (Google Scholar).

STUDENT TUTOR ACTIVITIES

- PhD board: AP is member of the PhD board in Information Engineering of the University of Brescia since PhD cycle XXIX (academic year 2013/2014);
- Tutor of PhD students: of 2 PhD students in Information Engineering, University of Brescia; 1 PhD student in Materials Engineering, University of Brescia.
- External referee for PhD thesis: University of Ferrara, PhD in Physics (1 thesis), PhD in Biomedical and Biotechnological Sciences (1 thesis); University of Bordeaux, PhD in chemical-physics of condensed matter (1 thesis); University of Rome Tor Vergata, PhD in Electronic Engineering (1 thesis).
- B.Sc. students co-tutor: 2 students in Information Engineering, University of Brescia.

EDITORIAL ACTIVITIES

- Member of the editorial Board of the journal ‘Chemosensors’ since Apr. 2018;
- Editor of the Special Issue entitled ‘Gas Sensing Materials’ for the Journal ‘Sensors’;
- Sensors and Microsystems - Proceedings of the 17th National Conference, Brescia, Italy, 5-7 February 2013 ; Editors: C. Di Natale, V. Ferrari, A. Ponzoni, G. Sberveglieri, M. Ferrari; Lecture Notes in Electrical Engineering; Vol. 268; Springer International Publishing Switzerland (2014);
- Referee for scientific journals: ACS (ACS Appl Mater Interf, ACS Appl Nano Mater), APS (Phys Rev Appl, Phys Rev E, Phys Rev Lett), Elsevier (Appl Surf Sci, Sens Actuators B Chemical, Measurement), AIP (J Appl Phys).

CONFERENCES ORGANISATION

- 1st International Electronic Conference on Chemical Sensors and Analytical Chemistry (CSAC 2021). *Organizing Committee*.
- Eurosensors 2014, Brescia (Italy). *Publication chair*.
- 17° Conferenza Associazione Italiana Sensori e Microsistemi (AISEM), 2013, Brescia (Italy). *Local Organizing Chair*.
- 13th International Symposium on Olfaction and Electronic Noses (2009), Brescia (Italy). *Industrial Relations Committee*.

SELECTION OF 10 PUBLICATIONS

1. **Selective H₂S gas sensors based on ohmic hetero-interface of Au-functionalized WO₃ nanowires**; M. Punginsang, D. Zappa, E. Comini, A. Wisitsoraat, G. Sberveglieri, A. Ponzoni, C. Liewhiran; APPLIED SURFACE SCIENCE 571 (2022) 151262.
2. **Investigation of Reduced Graphene Oxide and a Nb-Doped TiO₂ Nanotube Hybrid Structure To Improve the Gas-Sensing Response and Selectivity**; V. Galstyan, A. Ponzoni, I. Kholmanov, M. M. Natile, E. Comini, S. Nematov, G. Sberveglieri; ACS SENSORS 4 (2019) 2094-2100.
3. **Cellulose Fibers Enable Near-Zero-Cost Electrical Sensing of Water-Soluble Gases**; G. Barandun, M. Soprani, S. Naficy, M. Grell, M. Kasimatis, K. L. Chiu, A. Ponzoni, F. Guder; ACS SENSORS 4 (2019) 1662-1669.
4. **The contributions of junctions and nanowires/nanotubes in conductive networks**; A. Ponzoni; APPLIED PHYSICS LETTERS 114 (2019) Article N. 153105.
5. **Reduced Graphene Oxide-TiO₂ Nanotube Composite: Comprehensive Study for Gas-Sensing Applications**; V. Galstyan, A. Ponzoni, I. Kholmanov, M. M. Natile, E. Comini, S. Nematov, G. Sberveglieri; ACS APPLIED NANO MATERIALS 1 (2018) 7098-7105.
6. **Finely Tuned SnO₂ Nanoparticles for Efficient Detection of Reducing and Oxidizing Gases: The Influence of Alkali Metal Cation on Gas-Sensing Properties**; S-H. Lee, V. Galstyan, A. Ponzoni, I. Gonzalo-Juan, R. Riedel, M.-A. Dourges, Y. Nicolas, T. Toupance T; ACS APPLIED MATERIALS & INTERFACES 10 (2018) 10173-10184.
7. **Chemical Tuning versus Microstructure Features in Solid-State Gas Sensors: LaFe_{1-x}Ga_xO₃, a Case Study**; M.M. Natile, A. Ponzoni, I. Concina, A. Glisenti; CHEMISTRY OF MATERIALS 26 (2014) 1505-1513.
8. **Structural and gas-sensing characterization of tungsten oxide nanorods and nanoparticles**; A. Ponzoni, V. Russo, A. Bailini, C.S. Casari, M. Ferroni, A. Li Bassi, A. Migliori, V. Morandi, L. Ortolani, G. Sberveglieri, C.E. Bottani; SENSORS AND ACTUATORS B 153 (2011) 340-346.
9. **Metal Oxide Nanowire and Thin-Film Based Gas Sensors for Chemical Warfare Simulants Detection**; A. Ponzoni, C. Baratto, S. Bianchi, E. Comini, M. Ferroni, M. Pardo, M. Vezzoli, A. Vomiero, G. Faglia, G. Sberveglieri; IEEE SENSORS JOURNAL, 8, 6 (2008), 735-742.
10. **Ultrasensitive and highly selective gas sensors using three-dimensional tungsten oxide nanowire networks**, A. Ponzoni, E. Comini, G. Sberveglieri, J. Zhou, S.Z. Deng, N.S. Xu, Y. Ding, Z.L. Wang; APPLIED PHYSICS LETTERS 88 (2006), 203101. *cover paper*.

Brescia, March 04th 2022
Andrea Ponzoni