

EUROPEAN CURRICULUM VITAE FORMAT



PERSONAL INFORMATION

Name	MALAGU', CESARE
Address	UNIVERSITY OF FERRARA, DEPARTMENT OF PHYSICS AND EARTH SCIENCES, VIA SARAGAT,1, 44121 FERRARA, ITALY
Telephone	+39(0532)974294
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E-mail	malagu@fe.infn.it
Nationality	Italian
Date of birth	23 FEBRUARY 1974

WORK EXPERIENCE

- Dates (from – to) 1997 to present
- Name and address of employer University of Ferrara, Department of Physics and Earth Sciences, Technological Centre, Via Saragat 1, 44121 Ferrara
- Occupation or position held Associate Professor
- Main activities and responsibilities Currently he coordinates the theoretical activity in the semiconductor field at Sensor and Semiconductor Laboratory and is responsible of the sensor group and is president of a startup called SCENT S.r.l.

TEACHING EXPERIENCE

Department of Physics
Sensors 2010-present, General Physics II 2011-present

Department of Chemistry
General Physics I 2006-2011

Engineering Department
General Physics II 2003-2007

EDUCATION AND TRAINING

- Dates (from – to) 1997-2001
- Name and type of organisation providing education and training University of Ferrara
- Principal subjects/occupational skills covered Environmental and industrial monitoring of gas emissions.
Title of PhD thesis: "Sensori per tetraidrofurano e metanolo: dal modello alla caratterizzazione".
The main objective of the Ph.D. work was to show the potential of chemo-resistive sensors for industrial technology transfer and basic interpretation of semiconductor physics applied to nanostructured semiconductors. The scholarship was funded by MONTELL (now BASEL Italia).
- Title of qualification awarded PhD in Physics
- Level in national classification (if appropriate)

PERSONAL SKILLS AND COMPETENCES

*Acquired in the course of life and career
but not necessarily covered by formal
certificates and diplomas.*

MOTHER TONGUE

OTHER LANGUAGES

- Reading skills
- Writing skills
- Verbal skills

- Reading skills
- Writing skills
- Verbal skills

- Reading skills
- Writing skills
- Verbal skills

ORGANISATIONAL SKILLS AND COMPETENCES

*Coordination and administration of
people, projects and budgets; at work, in
voluntary work (for example culture and
sports) and at home, etc.*

TECHNICAL SKILLS AND COMPETENCES

*With computers, specific kinds of
equipment, machinery, etc.*

ADDITIONAL INFORMATION

ITALIAN

ENGLISH

Indicate level: excellent.
Indicate level: excellent.
Indicate level: good.

FRENCH

Indicate level: good.
Indicate level: good
Indicate level: basic.

SPANISH

Indicate level: good.
Indicate level: basic.
Indicate level: basic.

Since the end of my PhD, in January 2001, I attended Professor Martinelli in the coordination of the research activities of the Sensors and Semiconductors Laboratory .
Since 2010 I'm the coordinator of the Sensors Group at the same laboratory.

Material science: semiconductor physics, mainly electrical, optical and transport properties in semiconductor oxides and silicon for basic research in chemical sensors and concentration photovoltaic.

Modelling of nanostructured semiconductors.

Studies in Impedance spectroscopy;

Determination of shallow and deep defects through photoluminescence spectra measurements;
Expertise in nanoscience and nanotechnology; in particular:

Study of the surface barrier and mechanism of Fermi level pinning

Realisation of semiconducting gas sensors by means of thick film technology

X Ray Diffraction, Transmission and Scanning Tunneling Microscopy and Spectroscopy,

Determination of Schottky barrier height and Work function in semiconductors.

Author of about 70 papers in peer-reviewed journals and several contributions to the proceedings of international conferences, reviewer and of numerous journals of physics and material science and member of editorial board of 4 international journals. H-factor 23. In the last 3 years he has participated to the following conferences:

- 1) Malagu', A. Giberti, M. A. Ponce and C. M. Aldao "Intra-grain oxygen diffusion influence on conductivity of polycrystalline semiconducting compounds." International Meeting on Chemical Sensors 2014, Buenos Aires, Argentina.
- 2) B. Fabbri, S. Gherardi, A. Giberti, V. Guidi, C. Malagù "Sensing of Gaseous Malodors

For more information go to

<http://europass.cedefop.europa.eu/en/documents/curriculum-vitae>

<http://www.cerco-lavoro.info/lavoro/curriculum-vitae/>

- in Landfills and Waste Treatment Plants" AMA Conference 2013 14-16 May 2013 Nürnberg Exhibition Centre, Germany.
- 3) Cesare Malagù "Transport mechanisms in polycrystalline tin oxide: field-assisted and thermionic emission, intra-grain oxygen diffusion and non-parabolic barriers." Invited at The International Workshop on Semiconductor Gas Sensors (SGS 2012), 11-15 September 2012 Cracov.
 - 4) Cesare Malagù "Tunneling through surface barrier and oxygen in-diffusion in nanostructured SnO₂ gas sensors" (ISOEN 2011) May 2-5, 2011 Rockefeller University New York City, USA.
 - 5) Cesare Malagù, Alessio Giberti "Conductivity of nanostructured tin oxide modulated by intergrain oxygen diffusion" AISEM 2011- Rome, 7-9 February 2011.
 - 6) Cesare Malagù Invited Chairman at Zeroemission 2011, 14-16 September 2011, Rome. "The seasons of solar energy: CPV efficiency and competitiveness" Opening of the session and introduction by the Chair.
 - 7) Cesare Malagù "L'illusione del fotovoltaico?" Relazione su invito al convegno "Smart City/Città creativa: idee in movimento" Sala Polivalente-Regione Emilia-Romagna, Viale Aldo Moro 50, Bologna 24 giugno 2011.
 - 8) Cesare Malagù "Fotovoltaico a concentrazione con separazione spettrale." Seminario su invito tenuto in occasione di: OIKOS Fonti di energia e tecnologie di conversione Ferrara, 14 marzo 2011, Nuovi Istituti Biologici .

RESEARCH AND DEVELOPMENT PROJECTS

- 1) Project entitled "Studio di fattibilità riguardante un metodo di separazione fra differenti specie di gas emessi dallo scarico di un motore alimentato a bioetanolo utilizzando come rivelatori sensori di gas a ossidi metallici semiconduttori (MOX)." Lamborghini S.p.A. 2011-2013.
- 2) Responsible of the Unit for the project "Dispositivi fotovoltaici nanostrutturati e a film sottile per uso in sistemi a concentrazione con separazione spettrale" (FIRB 2008) Futuro in ricerca.
- 3) "Progettazione, realizzazione e sperimentazione di cristalli di silicio per esperimenti di channeling con fasci di cariche negative". (PRIN 2008)
- 4) European Project VII Framework Program, APOLLON Project, "Multi-approach for high efficiency integrated and intelligent concentrating PV modules (systems) Project", (2008-13).

LAST 3 YEARS MAIN PUBLICATIONS

- 1) A. Giberti, B. Fabbri, A. Gaiardo, V. Guidi and C. Malagù, "Resonant Photoactivation of Cadmium Sulfide and its Effect on the Surface Chemical Activity" Appl. Phys. Lett. 104, 222102 (2014); <http://dx.doi.org/10.1063/1.4881179>;
- 2) S. Rampino, F. Pattini, C. Malagù, L. Pozzetti, M. Stefancich, M. Bronzoni "Application of a substrate bias to control the droplet density on Cu(In,Ga)Se₂ thin films grown by Pulsed Electron Deposition" Thin solid Films, 562, (2014), Pages 307-313; <http://dx.doi.org/10.1016/j.tsf.2014.04.091>;
- 3) Carotta, M.C., Fioravanti, A., Gherardi, S., Ghiotti, G., Morandi, S., Giberti, A., Malagù, C., "(Ti,Sn) solid solutions as functional materials for gas sensing" Sensors and Actuators, B: Chemical 194 (2014), pp. 195-205;
- 4) A. Giberti and C. Malgù "Current-voltage characteristics of nanostructured SnO₂ films" Thin Solid Films 584 (2013) pp. 683-688;
- 5) Wagner, T., Kohl, C.-D., Malagù, C., Donato, N., Latino, M., Neri, G., Tiemann, M. "UV light-enhanced NO₂ sensing by mesoporous In₂O₃: Interpretation of results by a new sensing model" Sensors and Actuators, B: Chemical (2013) 187 , pp. 488-494;
- 6) Castro-Hurtado, I., Malagù, C., Morandi, S., Pérez, N., Mandayo, G.G., Castaño, E.

- "Properties of NiO sputtered thin films and modeling of their sensing mechanism under formaldehyde atmospheres", *Acta Materialia* 61 (4) , (2013) pp. 1146-1153;
- 7) C.M. Aldao, C. Malagu' "Non-parabolic intergranular barriers in tin oxide and gas sensing" *JOURNAL OF APPLIED PHYSICS* 2, (2012) 024518-1-024518-5;
 - 8) V. Guidi, M.C. Carotta, B. Fabbri, S. Gherardi, A. Giberti, C. Malagù, "Array of sensors for detection of gaseous malodors in organic decomposition products" *Sensors and Actuators B* 174 (2012) 349– 354;
 - 9) Wagner, T. , Kohl, C.D, Morandi, S., Malagù, C., Donato, N., Latino, M., Neri, G., Tiemann, M. "Photoreduction of mesoporous In₂O₃: Mechanistic model and utility in gas sensing" *Chemistry- A European Journal* Volume 18, Issue 26, 25 June 2012, Pages 8216-8223;
 - 10) Cesare Malagù, Alessio Giberti, Sara Morandi, and Celso M. Aldao "Electrical and spectroscopic analysis in nanostructured SnO₂: "Long-term" resistance drift is due to in-diffusion" *J. Appl. Phys.* 110, 093711 (2011);
 - 11) C. M. Aldao, D. A. Mirabella, M. A. Ponce, A. Giberti, and C. Malagù "Role of intragrain oxygen diffusion in polycrystalline tin oxide conductivity", *JOURNAL OF APPLIED PHYSICS* 109, 063723 (2011);
 - 12) A. Giberti, M.C. Carotta, C. Malagù, C. M. Aldao, M. S. Castro, M. A. Ponce, R. Parra "Permittivity measurements in nanostructured TiO₂ gas sensors" *Physica Status Solidi (a)* 208, No. 1, 118–122 (2011);