

## PROGETTI DI RICERCA@CNR - Curriculum vitae (max. 2 pages)

### PERSONAL INFORMATION

Family name, First name: **Rizzi Gian Andrea**

Researcher unique identifier: **ORCID:** <http://orcid.org/0000-0001-5201-8104>

**Web of Science Research ID:** [AAS-4874-2021](https://scholar.google.it/citations?user=Xj-OXYsAAAAJ&hl=it)

**Google Scholar:** <https://scholar.google.it/citations?user=Xj-OXYsAAAAJ&hl=it>

**Research Gate:** <https://www.researchgate.net/profile/Gian-Rizzi>

Date of birth: **22.07.1962**

Nationality: **Italian**

URL for web site: <http://wwwdisc.chimica.unipd.it/surfacescience/info%20Rizzi.htm>

### EDUCATION

**1993 - Professional Habilitation in Chemistry** - Department of Chemical Sciences (DiSC), Padova University (UNIPD).

**1991 - PhD in Chemical Sciences-** DiSC, UNIPD

**1990 – 1<sup>st</sup> National School on Synchrotron Light - Santa Margherita di Pula (CA)** – October 1990.

**1986 - Master Degree - Chemistry** (110/110 cum laude) – DiSC, UNIPD.

### CURRENT POSITION

**2006-to date – Associate Professor** (SSD 03/B1, Fundamentals of Chemical Sciences and Inorganic Systems – previous CHIM/03, General and Inorganic Chemistry) – DiSC, UNIPD.

### PREVIOUS POSITIONS

**1991-2006 – Assistant Professor** (CHIM/03) – DiSC, UNIPD.

### FELLOWSHIPS

**1988–1989 - Chemistry Department – University of Hawaii – USA**, Scholarship received from Fondazione A. Gini Padova, Italy.

### SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

**2010–to date**

**Number of Postdocs: 1**

**Number of PhD Students: 2**

**Number of Master (MsC) Students: 6**

**Guest PhD candidates from Tsinghua University, Beijing, China: 2**

### TEACHING ACTIVITIES

**2019 to date – X-ray Photoelectron Spectroscopy course for the PhD School of Science and Engineering of Materials and Nanostructures (SIMN)** - UNIPD, Italy

**2015-to date - General and Inorganic Chemistry Laboratory, BSc Degree Course in Materials Science**, UNIPD, Italy.

**2015-to date – Inorganic and Solid-State Chemistry, BSc Degree Course in Materials Science**, UNIPD, Italy.

**2006–2014 – General and Inorganic Chemistry, BSc Degree in Agriculture**, UNIPD, Italy.

**2006–2014 – Material preparation and characterization laboratory, BSc Course in Materials Science**, UNIPD, Italy.

### ORGANISATION OF SCIENTIFIC MEETINGS

**2016 – Organizer -XLVI National Congress – Inorganic Chemistry Division – Italian Chemical Society**, Padova, Italy, 14 -17/11/2016

**2020 – Organizer - Second Congress of the EnerCHEM interdivisional group – Italian Chemical Society (EnerChem2), Padova, Italy, 12-14/02/2020.**

#### **INSTITUTIONAL RESPONSIBILITIES**

**2019-to date - Member of the Teaching Committee - Degree in Materials (BSc + Msc) Science, UNIPD, Italy.**

**2015-to date - Member of Teaching Board of the PhD School of Science and Engineering of Materials and Nanostructures (SIMN) - UNIPD, Italy.**

**2006-to date – Responsible of the Inorganic Chemistry and Material Science laboratory for students - DiSC, UNIPD.**

**1991-to date – Member of evaluation commissions (> 50) for BSc and MSc Degrees in Chemistry, Industrial Chemistry, Materials Science.**

**2021- Component of Molecular Sciences PhD School commissions for the yearly evaluation of PhD Students activity – DiSC, UNIPD, Italy.**

**2020 - Chairman of the Committee for the Admission to the SIMN School – A.A. 2021/22 – UNIPD, Italy.**

**2016 - Member of Examination Committees, PhD in Physics - Università della Calabria, Arcavacata di Rende (CS), Italy**

**2014-2015 – Coordinator of the National Project for Scientific Degrees – Materials Science.**

**2002 - Member of the Examination Committee for the permanent hiring of a University Research Scientist (CHIM/03) - Department of Chemical Sciences, Catania University, Italy.**

#### **MEMBERSHIPS OF SCIENTIFIC SOCIETIES**

**2013-to date - Member of the National Interuniversity Consortium of Materials Science and Technology (INSTM).**

**2014-to date - Member of the Italian Chemical Society.**

#### **MAJOR COLLABORATIONS**

- Prof. Christian Durante – Department of Chemical Science, UNIPD.

- Prof. Luca Gavioli - Math and Physics Department, Università Cattolica del Sacro Cuore, Brescia Italy.

- Prof. Chiara Maurizio, Physics and Astronomy Department, UNIPD.

- Prof. Zhengjun Zhang, director of the Key Laboratory of Advanced Materials (MOE), School of Materials Science and Engineering, Tsinghua University, Beijing, China.

**Appendix: All ongoing and submitted grants and funding of the PI and of the Team Members  
(Funding ID)**

**On-going Grants**

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role of PI or Team Member</i>	<i>Relation to current proposal</i>
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**Grant applications (Please indicate "No funding" when applicable):**

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role of PI or Team Member</i>	<i>Relation to current proposal</i>
-					
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## Ten Years Track Record (max. 2 pages)

### INVITED PRESENTATIONS TO PEER-REVIEWED INTERNATIONALLY ESTABLISHED CONFERENCES, INTERNATIONAL ADVANCED SCHOOLS, ACADEMIC INSTITUTIONS

2016 – Synchrotron light in chemistry and life sciences: actual state and perspectives - "Model Catalysts Surface Structure by X-ray Photoelectron Spectroscopy" DISC, UNIPD, Italy

### EDITORIAL ACTIVITY

2021 - Guest Editor of a *Nanomaterials* special issue “Trends in Metal Oxide Thin Films: Synthesis, Characterization and Applications”.

2020-to date - Member of the Editorial Board of *Nanomaterials*.

### REVIEWING ACTIVITY

- Reviewer for ISI international journals (*ACS Applied Materials & Interfaces*, *Applied Surface Science*, *Biosensors and Bioelectronics*, *Ceramics International*, *Cleaner Engineering and Technology*, *Electrochimica Acta*, *International Journal of Hydrogen Energy*, *Journal of Magnetism and Magnetic Materials*, *Journal of Nanoscience and Nanotechnology*, *Journal of Power Sources*, *Materials Science in Semiconductor Processing*, *Nanomaterials*, *Physica E: Low-Dimensional Systems and Nanostructures*, ...)

### RESEARCH PROJECTS

2014-2016 - Coordinator of a P-DISC UNIPD Research project: “DVD substrates as platforms for oxide/TiO<sub>2</sub> and metal/TiO<sub>2</sub> nanostructured photoelectrocatalysts and sensors”.

2017-2019 – Team Member of Padova research Unit a National Project (PRIN2017) - Multielectron transfer for the conversion of small molecules: an enabling technology for the chemical use of renewable energy (MULTI-e).

2016-2018 – Team Member of Padova Research Unit in a National Project (PRIN2015) - Solar driven chemistry: new materials for photo- and electro-catalysis (SMARTNESS)

2013-2015 – Team Member of Padova Research Unit in 1 EU Research projects (FCH-JU-2011-1: CATHCAT: Novel catalyst materials for the cathode side of MEAs suitable for transportation applications (<http://cathcat.eu/index.php/home>).

### SUMMARY OF THE RESEARCH ACTIVITY

The research activity of Prof. Rizzi has been focused on the growth, structural and chemical characterization of ordered, surface stabilized, oxide and metal nano-phases, of potential relevance as sensors model catalysts and, more recently, electrocatalysts and photoelectrocatalysts. Prof. Rizzi has gained a remarkable and long-standing know-how in the use of photoemission spectroscopies and other standard surface science techniques. The chemical properties and the reactivity of these ultra-thin films and films are studied by IR spectroscopies, temperature programmed desorption (TPD) and Raman spectroscopy. The photo-electrocatalytic properties have been studied by standard electrochemical techniques and more advanced photoelectrochemical measurements, encompassing electrochemical impedance spectroscopy (EIS) and intensity modulated photocurrent spectroscopy (IMPS). The current research topic of Prof. Rizzi is the preparation and characterization of materials used as photoanodes and photocathodes for water-splitting and photoelectrochemical sensors. He was recently involved in the development of innovative 2D materials for sustainable energy conversion devices (fuel cell, batteries, supercapacitors) and catalytic processes for solar fuel generation.

## Publications

Please, indicate the total n. publications, the H-Index, the averaged IF and the top publications of the last 10 years (no page limits max. 15 publications)

The scientific activity of Prof. G.A. Rizzi (**H-index = 28; averaged IF = 4.02**) is documented by **109 publications**, and by 12 oral/poster communications to national and international conferences.

A list of representative publications of the last 10 years is proposed in the following.

- 1) L. Girardi, G.A. Rizzi, L. Bigiani, D. Barreca, C. Maccato, C. Marega, G. Granozzi  
“Copper vanadate nanobelts as anodes for photoelectrochemical water splitting: influence of CoO<sub>x</sub> overlayers on functional performances”  
*ACS Applied Materials & Interfaces*, 2020, **12**, 31448.
- 2) F. Sgarbossa, G. Maggioni, G.A. Rizzi, S.M. Carturan, E. Napolitani, W. Raniero, C. Carraro, F. Bondio, I. Piš, D. De Salvador  
“Self-limiting Sb monolayer as a diffusion source for Ge doping”  
*Applied Surface Science*, 2021, **541**, 148532.
- 3) X. Huai, L. Girardi, R. Lu, S. Gao, Y. Zhao, Y. Ling, G.A. Rizzi, G. Granozzi, Z. Zhang  
“The mechanism of concentric HfO<sub>2</sub>/Co<sub>3</sub>O<sub>4</sub>/TiO<sub>2</sub> nanotubes investigated by intensity modulated photocurrent spectroscopy (IMPS) and electrochemical impedance spectroscopy (EIS) for photoelectrochemical activity”  
*Nano Energy*, 2019, **65**, 104020.
- 4) R. Brandiele, V. Amendola, A. Guadagnini, G.A. Rizzi, D. Badocco, P. Pastore, A.A. Isse, C. Durante, A. Gennaro  
“Facile synthesis of Pd<sub>3</sub>Y alloy nanoparticles for electrocatalysis of the oxygen reduction reaction”  
*Electrochimica Acta*, 2019, **320**, 134563.
- 5) S. Shuang, L. Girardi, G.A. Rizzi, A. Sartorel, C. Marega, Z. Zhang, G. Granozzi  
“Visible light driven photoanodes for water oxidation based on novel r-GO/β-Cu<sub>2</sub>V<sub>2</sub>O<sub>7</sub>/TiO<sub>2</sub> nanorods composites”  
*Nanomaterials*, 2018, **8**, 544.
- 6) T. Kosmala, D. Mosconi, G. Giallongo, G.A. Rizzi, G. Granozzi  
“Highly efficient MoS<sub>2</sub>/Ag<sub>2</sub>S/Ag photoelectrocatalyst obtained from a recycled DVD surface”  
*ACS Sustainable Chemistry & Engineering*, **2018**, 6, 7818.
- 7) V. Perazzolo, R. Brandiele, C. Durante, M. Zerbetto, V. Causin, G.A. Rizzi, I. Cerri, G. Granozzi, A. Gennaro  
“Density functional theory (DFT) and experimental evidences of metal–support interaction in platinum nanoparticles supported on nitrogen- and sulfur-doped mesoporous carbons: synthesis, activity, and stability”  
*ACS Catalysis*, 2018, **8**, 1122.
- 8) J. Zheng, L. Calvillo, C. Valero-Vidal, C. Marega, P. Sekar, S. Shuang, L. Girardi, S. Agnoli, G.A. Rizzi, G. Granozzi  
“Ag-vanadates/GO nanocomposites by aerosol-assisted spray pyrolysis: Preparation and structural and electrochemical characterization of a versatile material”  
*ACS Omega*, **2017**, 2, 2792.
- 9) R. Brandiele, C. Durante, E. Grądzka, G.A. Rizzi, J. Zheng, D. Badocco, P. Centomo, P. Pastore, G. Granozzi, A. Gennaro  
“One step forward to a scalable synthesis of platinum–yttrium alloy nanoparticles on mesoporous carbon for the oxygen reduction reaction”  
*Journal of Materials Chemistry A*, **2016**, 4, 31.
- 10) J. Zheng, L. Calvillo, G.A. Rizzi, G. Granozzi

“VO<sub>2</sub>/V<sub>2</sub>O<sub>5</sub>:Ag nanostructures on a DVD as photoelectrochemical sensors”  
*ChemPlusChem*, 2016, **81**, 391.

- 11) V. Tripkovic, J. Zheng, G.A. Rizzi, C. Marega, C. Durante, J. Rossmeisl, G. Granozzi  
“Comparison between the oxygen reduction reaction activity of Pd<sub>5</sub>Ce and Pt<sub>5</sub>Ce: the importance of crystal structure”  
*ACS Catalysis*, 2015, **5**, 6032.
- 12) C. Marega, J. Maculan, G.A. Rizzi, R. Saini, E. Cavaliere, L. Gavioli, M. Cattelan, G. Giallongo, A. Marigo, G. Granozzi  
“Polyvinyl alcohol electrospun nanofibers containing Ag nanoparticles used as sensors for the detection of biogenic amines”  
*Nanotechnology*, **2015**, 26, 075501.
- 13) L. Brigo, N. Michieli, L. Artiglia, C. Scian, G.A. Rizzi, G. Granozzi, G. Mattei, A. Martucci, G. Brusatin  
“Silver nanoprism arrays coupled to functional hybrid films for localized surface plasmon resonance-based detection of aromatic hydrocarbons”  
*ACS Applied Materials & Interfaces*, **2014**, 6, 7773.
- 14) G. Giallongo, C. Durante, R. Pilot, D. Garoli, R. Bozio, F. Romanato, A. Gennaro, G.A. Rizzi, G. Granozzi  
“Growth and optical properties of silver nanostructures obtained on connected anodic aluminum oxide templates”  
*Nanotechnology*, **2012**, 23, 325604.
- 15) L. Artiglia, A. Zana, G.A. Rizzi, S. Agnoli, F. Bondino, E. Magnano, E. Cavaliere, L. Gavioli, G. Granozzi  
“Water adsorption on different TiO<sub>2</sub> polymorphs grown as ultrathin films on Pt(111)”  
*Journal of Physical Chemistry C*, **2012**, 116, 12532.