

PUBBLICATO ALL'ALBO WEB IN DATA

# UNIVERSITA' DEGLI STUDI DI GENOVA

AREA RICERCA, TRASFERIMENTO TECNOLOGICO E TERZA MISSIONE  
SERVIZIO RICERCA

D.R. n. 5624

IL RETTORE

- Visto il Decreto Rettorale n. 4877 del 17.10.2023, con il quale è stato indetto il concorso, per titoli e colloquio, per il conferimento di n. 1 borsa di ricerca post-laurea di tipo consolidator della durata di 12 mesi, eventualmente rinnovabile, dell'importo di €. 18.000,00 (diciottomila/00), per lo svolgimento di una ricerca sul tema: "Applicazione di processi a membrana alla depurazione di acque" presso il DCCI dell'Università degli Studi di Genova.
- Visto il Decreto Rettorale n. 5344 del 08/11/2023 con il quale è stata costituita la Commissione giudicatrice per il conferimento della suddetta borsa di ricerca;
- Visto il verbale della Commissione giudicatrice del concorso in parola, riunitasi in data 14.11.2023;
- Constatata la regolarità della procedura seguita;

DECRETA

Art. 1

Sono approvati gli atti del concorso di cui in premessa e la seguente graduatoria di merito:

1. Dott.ssa Ilaria Rizzardi                      punti 91/100

Sotto condizione dell'accertamento dei requisiti di cui al bando, è dichiarata vincitrice del concorso in parola la Dott.ssa Ilaria Rizzardi.

Genova, 23.11.2023

IL RETTORE

(F.to digitalmente)

PERSONAL INFORMATION

**Ilaria Rizzardi**



Sex female | Date of birth

| Nationality Italy

JOB APPLIED FOR  
POSITION  
PREFERRED JOB  
STUDIES APPLIED FOR  
PERSONAL STATEMENT

I am a PhD student with a strong research interest in the study of membranes and membrane processes mainly applied to water treatment. My research interests also include industrial chemistry, catalysis, and the application of membranes as contactors.

WORK EXPERIENCE

2020-2023

**Doctorate in science and chemical technologies**

Within the membrane & membrane research group and SIMAM spa, Università degli studi di Genova  
PhD project on membrane processes in wastewater treatments

Acquired knowledge:

- Good Knowledge of the membrane processes for wastewater treatment
- Good knowledge of the commercial membranes for the different applications in wastewater treatments
- Good knowledge of characterization techniques for membranes
- Good knowledge of membrane module preparation
- Good knowledge of biological wastewater treatments
- Good knowledge of analytical techniques for water characterization (COD, ammonia, TOC, phosphates, anions determination, hardness, alkalinity, TSS)
- Good capability in setting up of plants
- Good capability of writing (report, papers, abstract)
- Good capability of presenting the results in conferences (oral presentation and posters)
- Good capability of planning an experimental campaign.
- Replace with employer's name and locality (if relevant, full address and website)

2020-2023

**Tutoring**

- Laboratory tutoring, Fondamenti di Tecnologie Chimiche per l'Industria e per l'Ambiente (2° modulo).
- Laboratory tutoring, Chemistry and Technology of Catalysis

03/2019-03/2020

**Internship with grant**

Within the membrane & membrane research group, Università degli studi di Genova  
(<http://unige-membrane.weebly.com>)

Topic: Characterization of membranes and materials with image analysis and gas and liquid permeation

- 03/2019-03/2020 **Master's thesis**  
Within the membrane & membrane research group, Università degli studi di Genova  
Acquired knowledge:
- Good knowledge of catalyst preparation techniques (ion exchange, homogeneous precipitation, wet impregnation, dry impregnation) and characterization
  - Experience in the control of the dry reforming process in pilot plant
  - Good knowledge of membrane processes
  - Good knowledge of inorganic ceramic membranes (morphology, properties, uses, treatments)
  - Good knowledge of Gas chromatography
  - Good FAAS knowledge
- Good knowledge of some techniques for characterization of porous materials (77K nitrogen physisorption and pure gas permeation)

- 11/2016-02/2017 **Bachelor's degree internship**  
Within the membrane & membrane research group, Università degli Studi di Genova  
Acquired knowledge:
- Experience in using fuel cells
  - Good knowledge of the influence of operational variables on the performance of a fuel cell
  - Basic knowledge of Gas chromatography
  - Good knowledge of HPLC

## EDUCATION AND TRAINING

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- 2020-present **PhD student in Chemical Science and Technology**  
PhD course in Chemical and Materials Sciences and Technologies XXXVI cycle  
Università degli studi di Genova  
Project: Membrane application in wastewater treatment  
Supervisors: Prof. Antonio Comite, Ing. Daniele Matteucci  
Research areas: Industrial chemistry, membrane process, wastewater treatments sustainable processes, process intensification.  
Abstract:  
Membranes are devices that can be used within water purification processes to make the operation more efficient and sustainable. They are typically employed as separation units, but new uses such as aeration system will be investigated as part of the doctoral program. Replace with education or training organisation's name and locality (if relevant, country)
- 2017-2020 **Master's degree in Industrial Chemistry**  
Università degli studi di Genova  
Final score: 107/110  
Thesis: Dry reforming in rhodium-based catalytic membrane reactors  
Research Areas: Industrial chemistry, Catalysis, Plant and reactors, Sustainable process, Membrane.  
Abstract of the thesis:  
Dry reforming of methane (MDR) is a process which produce syngas while consuming the two main greenhouse gases (CO<sub>2</sub> and CH<sub>4</sub>). The purpose of the work is to develop an effective catalytic system consisting of a catalytic membrane that could be used in flow through mode in order to overcome the deactivation issue that affects the traditional Ni based catalyst.

## 2011–2017 Bachelor's degree in Chemistry and Chemical Technologies

Università degli studi di Genova, Genova (Italia)

Final score: 96/110

Internship report: Development of a plant for the evaluation of fuel cells and characterization of electrode membrane assembly (MEA).

Research areas: Industrial chemistry, membranes and catalysts, chemical technologies for industry and the environment, energy production from renewable sources.

Abstract:

DMFCs (Direct Methanol Fuel Cell) are a type of proton exchange membrane fuel cell (PEMFC) in which the fuel is methanol. During the internship, a plant was set up for the characterization of the performance of methanol-powered fuel cells equipped with an electrode-membrane assembly (MEA).

## PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	B2

Replace with name of language certificate. Enter level if known.

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user  
[Common European Framework of Reference for Languages](#)

Communication skills ▪ good communication skills gained through my experience in international conferences and during the period abroad in Germany

Organisational / managerial skills ▪ Good organisational skills acquired during my PhD

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Independent user	Independent user	PROFICIENT USER

Levels: Basic user - Independent user - Proficient user  
[Digital competences - Self-assessment grid](#)

Driving licence B

## ADDITIONAL INFORMATION

Publications  
Presentations  
Projects  
Conferences  
Seminars  
Honours and awards  
Memberships  
References  
Citations  
Courses  
Certifications

## PUBLICATIONS

- Rizzardi, I.; Bottino, A.; Capannelli G.; Costa, C.; Matteucci, D.; Pagliero, M.; Comite, A. "Membrane bubble aeration unit: Experimental study of the performance in lab scale and full-scale systems", *Journal of Membrane Science*, 685, 121927. DOI 10.1016/j.memsci.2023.121927
- Rizzardi, I.; Costa, C.; Pagliero, M.; Comite, A. "Hydrophobic membranes", in *Engineering with Membranes*, Book chapter in Serie: Current Trends and Future Developments on (Bio-) Membranes, Elsevier (Accepted)

## PUBLICATIONS AS CO-AUTHOR

- Comite, A.; Costa, C.; Pagliero, M.; Rizzardi, I.; "Influence of Carbon Based Nanofillers Addition on the Properties of Microporous Layers Prepared via Phase Inversion", *Chemical engineering transactions (AIDIC)*, 2021, VOL. 84
- Pagliero, M., Comite, A., Costa, C., Rizzardi, I., Soda, O., A Single Step Preparation of Photothermally Active Polyvinylidene Fluoride Membranes Using Triethyl Phosphate as a Green Solvent for Distillation Applications, *Membranes* 2021, 11(11), 896. DOI: 10.3390/membranes11110896.

## COMMUNICATIONS AT CONFERENCES AS PRESENTER AUTHOR

### Oral presentation

- Rizzardi, I.; Costa, C.; Comite, A.; Pagliero, M.; Santacesaria, E. "Study on the deactivation of Ni/Al<sub>2</sub>O<sub>3</sub> based catalysts in methane dry reforming" CAMURE-11 ISMR-10, Milan (on line), March 21-24, 2021
- Rizzardi, I.; Costa, C.; Pagliero, M.; Comite, A. "Contactor membrane reactors in the process of methane dry reforming" WOCST (world online conference on sustainable technologies), March 17-19, 2021, p 82
- Rizzardi I., A. Bottino, G. Capannelli, C. Costa, R. Firpo, D. Matteucci, M. Pagliero, A. Comite, E. "Application of hydrophobic hollow fibers polypropylene membranes as aerator devices in wastewater treatment", *Euromembrane 2021*, Copenhagen, November 28/11/2021- 02/12/2021.
- Rizzardi I., A. Bottino, G. Capannelli, C. Costa, R. Firpo, M. Pagliero, A. Comite "Membrane aeration unit: study of the oxygen mass transfer from air to water" XXII congresso nazionale della divisione di chimica industriale, Catania, November 7/11/2022-08/11/2022.
- Rizzardi I., Costa C., Pagliero M., Passaro F., Comite A. "Hydrophobic membrane bubble free aerator applied in MABR for simultaneous ammonia and COD removal" NYM, Naples, November 17/11/2022-19/11/2022.
- Rizzardi I., A. Bottino, G. Capannelli, C. Costa, M. Pagliero, A. Comite "Role of the membrane's properties on bubble formation, mass transfer coefficients and efficiencies during the aeration process", *Euromembrane 2022*, Sorrento 20/11/2022-24/11/2022
- Rizzardi I., Costa C., Pagliero M., Passaro F., Comite A. "Development of a Membrane Aerated Biofilm Reactor (MABR) for simultaneous COD and ammonia removal" ICCMR16, San Sebastián, 16/10/2023-18/10/2023

### Poster

- A. Comite, C. Costa, M. Pagliero, I. Rizzardi "Dry reforming of methane in catalytic rhodium-based membrane reactors", *HYPOTHESIS XV*, Cape Town (Online), June 3-5 2020
- Rizzardi, I.; Bottino, A.; Capannelli, G; Costa, C.; Firpo, R.; Pagliero, M.; Comite, A. "Biological nitrification process for ammonia removal in wastewater", *Green Chemistry Summer School*, Venice (on line), July 4-10, 2021
- Rizzardi, I.; Bottino, A.; Capannelli, G; Costa, C.; Firpo, R.; Matteucci, D.; Pagliero, M.; Comite, A. "Nitrification process for ammonia removal in biological reactor aerated with porous polymeric membranes", *XXVII Congresso nazionale della società chimica italiana*, September 14-23, 2021.
- Rizzardi, I.; Costa, C; Pagliero, M.; Comite, A. "Aeration unit by a membrane system in biological wastewater treatment", *EMS summer school, Aldeia da Serra (Portugal)*, 29/05- 3/06 2022.

## CO-AUTHOR in:

### Oral presentation

- M. Pagliero, I. Rizzardi, R. Firpo, C. Costa, A. Comite, "Photoactive PVDF membranes for direct solar membrane distillation", *Desalination for the Environment: Clean Water and Energy*, Las Palmas, 20/06/2022-23/06/2022.
- M. Pagliero, C. Costa, A. Comite, I. Rizzardi, Servida A. "Desalination by photothermal membrane distillation" XXII congresso nazionale della divisione di chimica industriale, Catania, November 7/11/2022-08/11/2022.
- M. Pagliero, C. Costa, A. Comite, I. Rizzardi "On-field testing of a photothermal membrane distillation plant for seawater desalination", *Euromembrane 2022*, Sorrento 20/11/2022-24/11/2022
- M. Pagliero, C. Costa, A. Comite, I. Rizzardi "Photothermal membrane distillation for

seawater desalination", Desalination for the Environment Clean Water and Energy, Cyprus, May 22/05/2023-26/05/2023.

- Comite A, Rizzardi I, Pagliero M, Costa C "Carbon dioxide dry reforming on catalytic membrane reactors and nickel-based catalysts", 30 years of INSTM: past, present and future of the Consortium, Bressanone (BZ), 22-25/01/2023,
  - Pastorino A., M. Pagliero, C. Costa, A. Comite, I. Rizzardi "Preliminary study on Ni-La-W based catalytic membrane reactors, feasibility and advantages", ICCMR16, San Sebastian, 16/10/2023-18/10/2023
  - A. Pastorino, I. Rizzardi, M. Pagliero, C. Costa, A. Comite, Study on new Ni based catalysts and catalytic membrane reactors in the Methane Dry Reforming and Reverse Water Gas Shift reactions. XXIII National Catalysis Congress GIC 2003 Genova, 14th-16th June 2023
- Poster
- Pagliero, M.; Costa, C.; Rizzardi, I.; Comite, A. "Preparation of hydrophobic porous membranes for membrane distillation using pore forming agents", XXVII Congresso nazionale della società chimica italiana, September 14-23, 2021.
  - M. Pagliero, A. Comite, C. Costa, I. Rizzardi, O. Soda, E. A. Mideksa "Preparation of mixed matrix hydrophobic PVDF membranes for distillation using carbon black" Euromembrane 2021, Copenhagen, 28/11/2021/ -2/12/ 2021.
  - M. Pagliero, A. Comite, C. Costa, I. Rizzardi, O. Soda, R. Firpo "A single step preparation of photothermally active PVDF membranes using TEP as green solvent for distillation application", XIII INSTM conference, Sestriere, 23/01/2022-26/01/2022.
  - A. Bottino, A. Comite, M. Pagliero, I. Rizzardi, Boero F., Cattaneo C., Tagliabue M. "Laboratory scale evaluation of petroleum dewatering industry trough membrane distillation" Euromembrane 2022, Sorrento 20/11/2022-24/11/2022.

**Work and Competency Area  
Taxonomy of Functions & Domains**

FUNCTION / DOMAIN category - EN	Catégorie FONCTION / DOMAINE - FR	Your domain
STATISTICS and general MATHEMATICS	STATISTIQUES et MATHÉMATIQUES générales	
ANALYSIS and INTELLIGENCE	ANALYSE et RENSEIGNEMENT	
KNOWLEDGE MANAGEMENT & ECONOMY	GESTION des CONNAISSANCES & ÉCONOMIE de la CONNAISSANCE	
SCIENCE and RESEARCH	SCIENCE et RECHERCHE	
INNOVATION and CREATIVITY	INNOVATION et CRÉATIVITÉ	
CLIMATE, ENVIRONMENT and NATURAL RESOURCES	CLIMAT, ENVIRONNEMENT et RESSOURCES NATURELLES	
AGRICULTURE	AGRICULTURE	
FORESTRY	SYLVICULTURE	
FISHERY and MARITIME AFFAIRS	PÊCHE et AFFAIRES MARITIMES	
ENTERPRISE and MARKETS	ENTREPRISES et MARCHÉS	
COMMERCE (general)	COMMERCE (général)	
COMPETITION and CONSUMERS	CONCURRENCE et CONSOMMATEURS	
TRADE	COMMERCE	
TAXATION and CUSTOMS	FISCALITÉ et DOUANE	
ECONOMICS	ÉCONOMIE	
FINANCIAL INSTRUMENTS and INSTITUTIONS, incl BANKING	INSTRUMENTS FINANCIERS et INSTITUTIONS FINANCIÈRES, y compris les BANQUES	
BUDGET, FINANCE, CONTRACTS and ACCOUNTING	BUDGET, FINANCES, CONTRATS et COMPTABILITÉ	
POLICY	POLITIQUE	
LAW	DROIT	
LAW ENFORCEMENT	APPLICATION du DROIT	
LEGAL OFFENSE, CRIMINOLOGY and FORENSICS	INFRACTIONS à la LOI, CRIMINOLOGIE et SCIENCES FORENSIQUES	
ANTI-FRAUD	LUTTE contre la FRAUDE	
INVESTIGATION, COMPLIANCE and INFRINGEMENT HANDLING	ENQUÊTES, VÉRIFICATION de CONFORMITÉ et TRAITEMENT des INFRACTIONS	
AUDIT, CONTROL and INSPECTION	AUDIT, CONTRÔLE et INSPECTION	
EVALUATION and QUALITY MANAGEMENT	ÉVALUATION et GESTION de la QUALITÉ	
PROGRAM / PROCESS / PROJECT MANAGEMENT	GESTION de PROJETS, PROGRAMMES et PROCESSUS	
OPERATIONAL and ADMINISTRATIVE SUPPORT and RESOURCES	SUPPORT et RESSOURCES OPÉRATIONNELS et ADMINISTRATIFS	
LOGISTIC SUPPORT	SUPPORT LOGISTIQUE	
TECHNICAL and LABORATORY WORK	TRAVAUX TECHNIQUES et TRAVAUX en LABORATOIRE	
TECHNOLOGIES and ENGINEERING in SCIENCE and INDUSTRY	TECHNOLOGIES et INGÉNIERIE dans les SCIENCES et l'INDUSTRIE	
ENERGY POLICIES and TECHNOLOGIES	POLITIQUES de l'ÉNERGIE et TECHNOLOGIES	
TRANSPORT (incl logistics)	TRANSPORT (y compris logistique)	
BUILDINGS and SUPPLIES (incl logistics)	BÂTIMENTS et FOURNITURES (y compris logistique)	
SAFETY, SECURITY and CRISIS MANAGEMENT	SÉCURITÉ, SÛRETÉ et GESTION de CRISE	
HEALTH	SANTÉ	
EMPLOYMENT (EU/national/regional level)	EMPLOI (UE/national/régional)	
LABOUR LAW	DROIT du TRAVAIL	
HUMAN RESOURCE MANAGEMENT	GESTION des RESSOURCES HUMAINES	
EDUCATION and TRAINING (general)	ÉDUCATION et FORMATION (général)	
CULTURE, HUMANITIES, PHILOSOPHY and HISTORY	CULTURE, SCIENCES HUMAINES, PHILOSOPHIE et HISTOIRE	
LANGUAGES and LINGUISTICS	LANGUES et LINGUISTIQUE	
MULTILINGUAL and TERMINOLOGY RESOURCES	RESSOURCES MULTILINGUES et TERMINOLOGIQUES	
CLASSIFICATION, STANDARDS and NOMENCLATURES	CLASSIFICATION, NORMES et NOMENCLATURES	
INFORMATION and DOCUMENT MANAGEMENT	INFORMATION et GESTION des DOCUMENTS	
COMMUNICATION and PUBLICATION	COMMUNICATION et PUBLICATION	
TELECOMMUNICATION and TELEPHONY	TÉLÉCOMMUNICATIONS et TÉLÉPHONIE	
INFORMATION and COMMUNICATION TECHNOLOGIES	TECHNOLOGIES de l'INFORMATION et de la COMMUNICATION	
IT TOOLS for SPECIFIC APPLICATION AREAS	OUTILS INFORMATIQUES pour des DOMAINES d'APPLICATION SPÉCIFIQUES	
(APPLIED) COMPUTER SCIENCE	INFORMATIQUE (APPLIQUÉE)	
INTER-INSTITUTIONAL RELATIONS	RELATIONS INTERINSTITUTIONNELLES	
JUSTICE and HUMAN/CIVIL RIGHTS	JUSTICE et DROITS HUMAINS/CIVILS	
SOCIAL SCIENCES and POLICIES	SCIENCES et POLITIQUES SOCIALES	
HUMAN GEOGRAPHY	GÉOGRAPHIE HUMAINE	
COHESION POLICY (EU/national level)	POLITIQUE de COHÉSION (UE/national/régional)	
REGIONAL POLICY (EU/national level)	POLITIQUE RÉGIONALE (UE/national/régional)	
DEMOGRAPHY and MIGRATION	DÉMOGRAPHIE et MIGRATION	
EXTERNAL RELATIONS	RELATIONS EXTÉRIEURES	

## Curriculum Vitae

- Autorizzo il trattamento dei dati personali contenuti nel mio curriculum vitae in base all'art. 13 del D. Lgs. 196/2003 e all'art. 13 GDPR 679/16.