Dr. Vincenzo A. Riggio is an associate professor in Sanitary and Environmental Engineering at the Department of Environmental, Land and Infrastructure Engineering of the Polytechnic of Turin. Since 31st May 2021, he has been qualified to the full professorship in Sanitary and Environmental Engineering (Italian academic field 08/A2).

ACADEMIC POSITION, EDUCATION AND TITLES

- 31st May 2021: Qualified to the full professorship in Sanitary and Environmental Engineering.
- 24th October 2019: Associate professor in Sanitary and Environmental Engineering at Post – Doc fellow at the Department of Environmental, Land and Infrastructure Engineering of PoliTO.
- 4th April 2017: Qualified to the associate professorship in Sanitary and Environmental Engineering.
- October 2016 to October 2019: Tenure-track Assistant professor in Sanitary and Environmental Engineering at Post – Doc fellow at the Department of Environmental, Land and Infrastructure Engineering of PoliTO.
- February 2016 – October 2018: Post – Doc fellow at the Department of Environmental, Land and Infrastructure Engineering of PoliTO.
- May 2012 to May 2016: Post – Doc fellow at the Department of Environmental, Land and Infrastructure Engineering of PoliTO.
- March 2007 to March 2012: Research fellowship at the Department of Environmental, Land and Infrastructure Engineering of PoliTO.
- 21st April 2010: Ph.D. degree in Environmental Engineering at PoliTO.
- 17th May 2006: M.Sc degree in Environmental Engineering at PoliTO.

TEACHING AND ACADEMIC APPOINTMENTS AT NATIONAL AND INTERNATIONAL UNIVERSITIES

Master and Ph.D. degree:

- 2017-2018 – now: Professor of the Ph.D. course "*Wastewater treatment plants with low environmental and energy impact* " at PoliTO.
- 2016-2017 – now: Professor of the M.Sc. course "*Industrial plant*" at PoliTO.
- 2021-2022 - now: Teacher of the M.Sc. course "*Fixation and recycle of CO2 for greenhouse effect mitigation*"" at PoliTO.
- 2019-2020 – now: Teacher of the M.Sc. course "*Environmental Design*" at PoliTO.
- 2019-2020 – now: Teacher of the M.Sc. course "*Renewable energy resources*" at PoliTO.
- 2019-2020 – 2020-2021: Teacher of the M.Sc. course "*Climate Change Mitigation*" at PoliTO.

Post graduate Master:

- 2019-2020 – now: Teacher in the course "*Renewables*", at PoliTO.
- 2018-2019 – now: Teacher in the course "*Carbon Capture and negative Emission Technologies*", at PoliTO.
- 2016-2017: Teacher during permanent learning INPS VALORE PA 2016 *"Environmental investigation and biological risk for workers in italian* (Ambiente e tutela del Territorio – L'indagine ambientale e il rischio biologico nell'ambiente di lavoro)", at PoliTO
- 2015-2016 - 2017-2018: Teacher in the course "*Ottimizzazione degli impianti di trattamento acque*" at PoliTO.

VISITING PROFESSOR/SCIENTIST

- August 2019: Institutional Visit to Chile for the EU Remind Project in order to work about the environmental sustainability of mining activities.

PARTICIPATION AND COORDINATION OF RESEARCH GROUPS AND PROJECTS

He participated at more than 25 research projects and consulting activities (all activities related with SC 08/A2 and in particular to the SSD ICAR/03). He was co-manager of the ASP (Alta Scuola Politecnica) ZEGODI (Zero - waste goods display) project. The project involves the Polytechnic of Turin, the Polytechnic of Milan and the companies Procter & Gamble and Eurodisplay. The group coordinated by the undersigned has 7 Master's Degree students;

• He was advisor and co-advisor (and still is) of 25 Master's degree theses (or Specialist or Old Order) in Environmental and Land Engineering, Energy Engineering, Mechatronic Engineering, Industrial Biotechnology, Biology and Biotechnology;

• He was (and still is) tutor of 3 curricular internships and 2 post-graduate internships.

He has been the coordinator of two project:

- Feasibility study for the construction of a phytoremediation plant for the treatment of waste water produced by cement factory (2021-2021) funded by Cemental s.p.a.
- Optimization of microalgal strain growth protocols on planar LED photobioreactor with the aid of biokinetic models (2020-2021) funded by ENI s.p.a.
- Start-up activities on microalgae growing plants based on PBO's technology at SKID scale (2022-2023) funded by ENI s.p.a.

He participated to the following projects.

International Projects:

- Collaboration with the Aosta Valley Region Agriculture and Natural Resources Department and the University of Applied Science Western Switzerland during the Interreg IIIA RURECOTEC project (2007 - 2010) funded with European and regional funds.
- Strategic project RENERFOR (2008 - 2013).

- Research project TT: Co.Co. (Transboundary Torrents Knowledge and Communication) (2013 - 2014) included in the European Territorial Cooperation Objective 2007/2013, ALCOTRA Program, Axis 2, Measure 2.1
- Alperil research project (Alert of dangers in alpine basins) (2015-2015) included in the European territorial cooperation objective 2007/2013, ALCOTRA Program, Axis 2, Measure 2.2
- Research project Renewable Energies for Water Treatment and Reuse in Mining Industries in the Antofagasta mining region (Chile).

National projects and consultancy:

- Research project BET - Bioenergy Performance Studies of Biomass Wastes in Anaerobic Digestion (2007 - 2010).
- PROBIO research project (2009 - 2010) born in parallel with the experience conducted after the first year of BET.
- Research project ALGAENRG (2010 - 2013) funded by the Piedmont Region.
- The PolycalgNRG project (2012 - 2013) was born as an in-depth branch of the AlgaeNRG project.
- Five-year collaboration agreement with the Arcobaleno Cooperative for the development of complex systems suitable for the massive production of microalgae (2013 2018).
- Five-year collaboration agreement with the photobiology company MEG s.r.l. for the development of LED illuminators to be used in planar photobioreactors (2018 - ongoing) and to maximize microalgae growth.
- Framework Agreement between Politecnico di Torino and SMAT (2012 - 2018). Research area: Management of the SMAT wastewater treatment plants in Castiglione Torinese and Collegno. Research program: Energy optimization.
- Collaboration in research activities between the Polytechnic of Turin and Lavazza SpA relating to the analysis from an energy and environmental point of view of two different treatment systems for coffee waste: direct combustion and anaerobic digestion.
- Collaboration in research activities between the Polytechnic of Turin and Lavazza SpA relating to the analysis of the anaerobic digestion solution for the treatment of coffee waste and the analysis of the possibility of biomethane upgrading.
- Collaboration in research activities in the MIUR project - POR FESR 2014/2020 "Green Factory for Composites".
- Collaboration in research activities between the Polytechnic of Turin and ENI relating to the use of saline-tolerant microalgae for the treatment of production water from oil & gas.
- Collaboration in research activities between the Polytechnic of Turin and ENI relating to the supply of *Nannochloropsis Salina* inoculum for the ENI experimental CO2 biofixation plant in Ragusa.
- Collaboration in research activities between the Polytechnic of Turin and ENI relating to experimental activities for the optimization of microalgae growth and CO2 biofixation.

- Collaboration in research activities between Politecnico di Torino and ENI relating to the study aimed at the realization of a prototype of a planar photobioreactor with LED lighting to be used as a demo for future implementations.
- Collaboration in research activities between Politecnico di Torino and ZOOM srl relating to the optimization of wastewater and waste management in the Biopark ZOOM located in the municipality of Cumiana (TO).
- Collaboration in research activities between the Polytechnic of Turin and the Eurovision company for the implementation of a virtuous environmental system in the recovery of commercial exhibitors.
- Collaboration in research activities in the MIUR project - POR FESR 2014/2020 "Approach to the Circular Economy for the recycling of plastic packaging and end-of-life auto components" - RECIPLAST.
- Research project funded by SMAT concerning the “Impianto di depurazione Acque Reflue: gestione fanghi, MABR, produzione e metanazione idrogeno, annamox modeling”, (2020-2023).
- Research project funded by Marazzato concerning the “Ottimizzazione della sezione di trattamento biologico e relativa modellizzazione dell’impianto sito presso la piattaforma Azzurra (ex Lafumet) di Villastellone”, (2020-2022).

MAIN RESEARCH INTERESTS

Strong specialization in the following areas of environmental health engineering:

1. Phytoremediation hybrid plant;
2. Anaerobic digestion reactors;
3. Microalgal growing systems.

MORE INTERNATIONAL EXPERTISE

2019 – Invited speaker at COP25, Madrid.

2021 – Member of the organization committee of SIDIS 2021 International Congress

OTHER SCIENTIFIC MERITS

He is referee for several international peer-review ISI journals.

TECHNOLOGY TRANSFER

Co-founder of Everbloom s.r.l, a start-up working in the field of environmental biotechnology.

He is the inventor of two granted and sell patents:

o Patent number WO2013144983 (A1). "Profile section equipped with sealing systems for making a pressurized hydraulic circuit utilizable for the cultivation of photosynthetic organisms under controlled conditions (ITA), 2012";

o Patent with filing number 102018000010479 made on 21 November 2018. "Apparatus and method for the growth of photosynthetic microorganisms and the biofixation of carbon dioxide through a high-efficiency optical diffuser with variable spectrum and intensity".

AWARDS

- 2018 - Winner of the call for the Funding of Basic Research Activities (FFABR).
- 2020 – The phycotrone (a new laboratory pilot plant for controlled microalgae growth) was signed for the ADI design Index 2020.

PUBLICATIONS AND BIBLIOMETRIC INDEXES

Vincenzo Riggio has co-authored about 45 refereed publications in ISI journals, books, and international and national conference proceedings.

Situation from Scopus on 29th May 2023: number of publications 22, H-index 12, citations 847.