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Giorgio Vilardi

Curriculum Vitae ai fini della pubblicazione

Place Rome, Italy
Date 20/01/2022

Part I – General Information

Full Name	Giorgio Vilardi
Citizenship	Italian
Spoken Languages	Italian, English, Spanish

Part II – Education and Academic position

Type	Year	Institution	Notes (Degree, Experience)
University graduation	11/2010-07/2013	Università di Roma La Sapienza	Bachelor of Environmental Engineering, 108/110
University graduation	10/2013-07/2015	Università di Roma La Sapienza	Master of Environmental Engineering-Hydraulic degree, 110/110 with Honor and Excellence Path (percorso d'eccellenza)
Engineer Professional Exam	2015	Università di Roma La Sapienza	Professional Engineer Exam, written part 1 (52/60), part 2 (54/60), part 3 (55/60) and oral part (60/60)
PhD	11/2015-10/2018 discussion 18/02/2019	Università di Roma La Sapienza	PhD in Chemical Engineering with Honor and title of Doctor Europaeus
Post-Doc (assegnista di ricerca)	01/12/2018-30/11/2020	Università di Roma La Sapienza-Dipartimento di Ingegneria Chimica	Process Intensification, Nanocatalyst production, Process simulation & Control,

		Materiali Ambiente	Chemical Plants design and optimization, wastewater treatment processes
Post-Doc (assegnista di ricerca)	01/12/2020-today (30/11/2022)	Università di Roma La Sapienza-Dipartimento di Chimica e Tecnologie del Farmaco in collaborazione con DICMA	Process simulation & Control, Chemical Plants design and optimization, gas vectors upgrading, computational fluid dynamics, solid waste thermal-chemical conversion, exergy analysis
Lecturer and member of Chemical Engineering Degree Didactic Board (membro del CdA in Ingegneria Chimica e dei Materiali)	09/2020-today	Università di Roma La Sapienza-Facoltà di Ingegneria Civile e Industriale	Computer Aided Process Control, ING-IND/25, 3 CFU/ECTS
ASN II fascia	19/11/2020-today (19/11/2029)	National Scientific qualification as associate in the Italian higher education system, in the call 2018/2020 (Ministerial Decree n. 2175/2018) for the disciplinary field of 09/D3 - Chemical plants and technologies	

Part III – Appointments

IIIA – Academic Appointments

Start	End	Institution	Position
05/2017	07/2017	University of Granada, Chemical Engineering Department	PhD researcher (visiting)
06/2018	08/2018	University of Granada, Chemical Engineering Department	PhD researcher (visiting)

Part IV – Teaching experience

Year	Institution	Lecture/Course
2016/2017	Università di Roma La Sapienza	6h of lessons in the course of Laboratory of micro/nano-particles, ING-IND/25, (responsible Prof. de Caprariis) Master in Nanotechnology Engineering

2017/2018	Università di Roma La Sapienza	6h of lessons in the course of Laboratory of micro/nano-particles, ING-IND/25, (responsible Prof. de Caprariis) Master in Nanotechnology Engineering
2018/2019	Università di Roma La Sapienza	6h of lessons in the course of Laboratory of micro/nano-particles, ING-IND/25, (responsible Prof. de Caprariis) Master in Nanotechnology Engineering
2018/2019	Università di Roma La Sapienza	30h of seminars on Fluid Machinery Applied to Chemical Industry (Control and Maintenance) for Master students in Chemical Engineering
2019/2020	Università di Roma La Sapienza	2h of seminars in *Intensified Production of Nanoparticles*, ING-IND/25, PhD Course in Electrical, Materials, Raw Materials and Nanotechnology
2019/2020	Università di Roma La Sapienza	10h (1 CFU/ECTS) as responsible of the PhD course *Power to Gas: Plant Unit Design and Exergy Analysis*, PhD Course in Energy and Environment
2020/2021	Università di Roma La Sapienza	30h (3 CFU/ECTS) *Computer Aided Process Control*, ING-IND-25, Master of Chemical Engineering, English degree
2020/2021	Università di Roma La Sapienza	6h PhD course, *Exergy and Energy Analysis for the Optimization of Industrial Plants*, ING-IND/25, PhD degree Chemical Processes for the Industry and the Environment
2021/2022	Università di Roma La Sapienza	30h (3 CFU/ECTS) *Computer Aided Process Control*, ING-IND-25, Master of Chemical Engineering, English degree
2021/2022	Università di Roma La Sapienza	8h of lessons (exercitations) *Sistemi di Controllo degli Impianti Chimici* (responsible Prof. Nicola Verdone), ING-IND-25, Master of Chemical Engineering, Italian degree
2019-today	Università di Roma La Sapienza	Member of the exam commission of the courses Sistemi di Controllo degli Impianti Chimici and Progettazione degli Impianti Chimici II (responsible Prof. Nicola Verdone), ING-IND-25, Master of Chemical Engineering, Italian degree, as subject expert (Cultore della Materia)
2021-	Università di Roma La Sapienza	Responsible of the course “Energy recovery from waste” in the course of Higher

2022	Education (Corso di Alta Formazione) Urban Mining and Circular Economy for the production of secondary raw materials (Urban mining ed economia circolare per la produzione di materie prime secondarie)

Part V - Society memberberships, Awards and Honors

Year	Title
2017-today	Member of Italian Association of Chemical Engineers (AIDIC)
2018-today	Member of Euroscience
2018-2019	President of the Youth AIDIC Working Group
2019	Doctor Europaeus title- the requirements to be met are based on those recommended by the European University Association in 2005 and comprise the points: (i) Intra-European co-supervision of the doctoral dissertation project by two professors from different EU countries or EU associates (excluding Italy) in addition to supervision by a member of Sapienza; (ii) Intra-European assessment of the dissertation by two professors (usually the two co-supervising professors) from different EU countries or EU associates (excluding Italy) in addition to assessment by a member of the Sapienza; (iii) Intra-European multilingualism, i.e. the candidate must demonstrate linguistic skills in at least three of the 24 official languages of the EU. At least two of these languages must be used in defending the dissertation. (iv) Intra-European research mobility, i.e. at least three months must be spent abroad for the purpose of research at the research institutes of the two co-supervisors in their respective EU countries or EU associates. (v) Intra-European composition of the examination committee: the examination committee must consist of authorised examiners from three EU countries (including Italy), whereby the committee should usually include the three supervisors
2021	Minerva Prize to Scientific Research (Vincitore del Premio Minerva alla ricerca scientifica) III edition
2021	Most Cited Article since 2018 Chinese Journal of Chemical Engineers (Elsevier): “Heavy metals adsorption by banana peels micro-powders: Equilibrium modeling by non-linear models”, vol. 26, issue 3, pp.455-464 to Giorgio Vilardi, Luca Di Palma and Nicola Verdone.

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value
2015	Hexavalent chromium reduction in	Sapienza University Funded	I-30’000 euros

	contaminated soil by nanoscale zero-valent iron	Project	
2016	Treatment of Cr(VI)-polluted soil by means of zerovalent iron nanoparticles in aqueous carboxymethylcellulose dispersion	Sapienza University Funded Project	PI-1000 euros
2016-2019	ERANETMED_WATER-13-051 CRITERIA	European Commission	I-66’000 euros
2017	Heavy metals removal from wastewater by iron-based nanoparticles stabilized by biopolymers	Sapienza University Funded Project	I-53’750 euros
2017	Experimental assessment of the feasibility of dechlorination and oxidation processes of pollutants in contaminated groundwater aimed at implementing the remediation project in the Selex MBDA site in Fusaro	Research Contract with Ramboll Environ Italy	I-18’000 euros
2018	Computational fluid dynamics study of rotating reactive liquid in spinning disk reactor and stirred tank reactor: influence of hydrodynamic fields on nanoparticles production	Sapienza University Funded Project	I-10’000 euros
2018	Exergetic analysis of hydrogen production by water splitting on manganese ferrite-sodium carbonate mixture	Sapienza University Funded Project	I-15’000 euros
2019-2022	Innovative Training Center to support a 3rd cycle Advanced Education Course to face Environmental Emergency in Azerbaijan (ITACA)	European Commission	I (Work Package Coordinator) - 1’000’000 euros
2020	Carbon Capture Storage and Utilization: recovery of carbon dioxide from power plant flue gas and re-utilization in the same cycle. Simulation and experimental activities using porous adsorbents for CO2 sequestration	Sapienza University Funded Project	I-14’000 euros
2020	Separation, fractionation and isolation of biologically active	European Commission	I- 4’259’297,00

	natural substances from corn oil and other side streams (ExCornSeed)		euros
2020-2021	Power-to-Gas: dynamic analysis of catalytic methanation reactors and control strategy development	ENEA	I (Operative Responsible)-80’000 euros
2021	Fluid dynamic analysis of the field established in an agitated vessel for the production of a pharmaceutical compound	AbbVie	I-11’000 euros
2022-2024	GreenMech Lab-Waste to Chemical Process Digital Twins	NextChem	I (Operative Responsible)-285’000 euros

Part VII – Research Activities

Keywords	Brief Description
Process intensification & simulation Waste to Energy and to Syngas Waste to Hydrogen and to Chemicals Zero-Liquid Discharge PtX and CCU Exergy and Economic analysis	Dr. Giorgio Vilardi research fields: -Conversion of conventional process cycles to low-environmental impact ones, through the reuse of solid, liquid and gaseous waste streams generated by the same process or coupling different productive cycles. This research field is based on the evaluation of alternative developed process cycles by thermodynamic, economic and environmental analysis tools, by favoring the valorization of waste streams, by capturing and reusing CO_2 and by reducing thermodynamic irreversibility of specific process units (Simulation, Design and Modelling); -Process intensification by means of innovative equipment. Development of hybrid process unit (see also the Italian patent n°102019000022335) for the production of nanocatalysts and micro/nanoparticles, both inorganic and organic (Experimental and CFD); -Waste thermal/chemical valorization processes, energy, syngas and fine chemicals production through gasification, oxy-combustion, incineration and pyrolysis processes (Simulation, Design & Control); -Advanced Oxidation Processes and treatments (chemical reduction and adsorption processes) of liquid and solid waste streams (Experimental and Modelling); -Gaseous streams upgrading and wastegas treatment processes (Simulation and Modelling).

Part VIII – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers	54: 49	SCOPUS	2015/2016	-

[international]	articles, 1 Editorial and 4 reviews			
Papers-Proceedings [international and national]	12: 3 (Scopus) and 9 (Google Scholar)	SCOPUS/Google Scholar	2015/2016	-
Book chapters [scientific]	3	Google Scholar	2016/2017	-
Books [teaching]	1	e-learning	2018/2019	-
Industrial Patents	4	Espacenet/Google Patent	2017/2018	-

Total Impact factor	201.32
Total Citations	1514
Average Citations per Product*	28.04
Hirsch (H) index	29
Normalized H index**	4.83
Average Impact factor per Product*	5.16

*****The proceedings were not considered

******H index divided by the academic seniority (6 years).

Part IX– Selected Publications (14 articles)

Position reported as: CA (Corresponding author), FA (First author), LA (Last Author)

		I.F.	*Position*
1	Vilardi, G., Verdone, N. Exergy analysis of municipal solid waste incineration processes: The use of O2-enriched air and the oxy-combustion process (2022) Energy, 239, art. no. 122147, . Cited 3 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85115771379&doi=10.1016%2fj.energy.2021.122147&partnerID=40&md5=7e5608bf7fc153c212967bb5fe25a19d DOCUMENT TYPE: Article SOURCE: Scopus	*7.147*	*CA, FA*
2	Rispoli, A.L., Iaquaniello, G., Salladini, A., Verdone, N., Pepe, M.R., Borgogna, A., Vilardi, G. Simultaneous decarbonisation of steel and Oil&Gas industry by MSW gasification: Economic and environmental analysis (2021) Energy Conversion and Management, 245, art. no. 114577, . Cited 5 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85107298914&doi=10.1016%2fj.enconman.2021.114577&partnerID=40&md5=4	*9.709*	*CA, LA*

	b00b746df08e0ea5039898f9806160b DOCUMENT TYPE: Article SOURCE: Scopus		
3	Rispoli, A.L., Verdone, N., Vilardi, G. Green fuel production by coupling plastic waste oxy-combustion and PtG technologies: Economic, energy, exergy and CO2-cycle analysis (2021) Fuel Processing Technology, 221, art. no. 106922, . Cited 10 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85107294900&doi=10.1016%2fj.fuproc.2021.106922&partnerID=40&md5=5b47d335fe8b172793a91528e94244a9 DOCUMENT TYPE: Article SOURCE: Scopus	*7.033*	*CA, LA*
4	Vilardi, G., Verdone, N., Bubbico, R. Combined production of metallic-iron nanoparticles: exergy and energy analysis of two alternative processes using Hydrazine and NaBH4 as reducing agents (2021) Journal of the Taiwan Institute of Chemical Engineers, 118, pp. 97-111. Cited 24 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85097048349&doi=10.1016%2fj.jtice.2020.11.020&partnerID=40&md5=1a4bdb7ba4b6aaf8a15d47ac67d4769e DOCUMENT TYPE: Article SOURCE: Scopus	*5.876*	*CA, FA*
5	Vilardi, G., Bassano, C., Deiana, P., Verdone, N. Exergy and energy analysis of biogas upgrading by pressure swing adsorption: Dynamic analysis of the process (2020) Energy Conversion and Management, 226, art. no. 113482, . Cited 13 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85092085336&doi=10.1016%2fj.enconman.2020.113482&partnerID=40&md5=463ce261db1f14404b4ab73b83cda5ed DOCUMENT TYPE: Article SOURCE: Scopus	*9.709*	*CA, FA*
6	Vilardi, G., Bassano, C., Deiana, P., Verdone, N. Exergy and energy analysis of three biogas upgrading processes (2020) Energy Conversion and Management, 224, art. no. 113323, . Cited 29 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85089849406&doi=10.1016%2fj.enconman.2020.113323&partnerID=40&md5=aae2faef0199535e68a9b4c3b7666516 DOCUMENT TYPE: Article SOURCE: Scopus	*9.709*	*CA, FA*
7	Vilardi, G., Verdone, N. Production of metallic iron nanoparticles in a baffled stirred tank reactor: Optimization via computational fluid dynamics simulation (2020) Particuology, 52, pp. 83-96. Cited 28 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85078194786&doi=10.1016%2fj.partic.2019.12.005&partnerID=40&md5=07bace8efcae5a885b80dd5f804eb976 DOCUMENT TYPE: Article SOURCE: Scopus	*3.067*	*CA, FA*
8	Vilardi, G., Bavasso, I., Scarsella, M., Verdone, N., Di Palma, L. Fenton oxidation of primary municipal wastewater treatment plant sludge: Process modelling and reactor scale-up (2020) Process Safety and Environmental Protection, 140, pp. 46-59. Cited 10 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-	*6.158*	*CA, FA*

	85084435406&doi=10.1016%2fj.psep.2020.05.002&partnerID=40&md5=79fdfefe71ec6b528c51a4dcf209a719 DOCUMENT TYPE: Article SOURCE: Scopus		
9	Vilardi, G. P-aminophenol catalysed production on supported nano-magnetite particles in fixed-bed reactor: Kinetic modelling and scale-up (2020) Chemosphere, 250, art. no. 126237, . Cited 12 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85079610499&doi=10.1016%2fj.chemosphere.2020.126237&partnerID=40&md5=4ee4c8e9828a0f6b85d5f1d8e2f4b763 DOCUMENT TYPE: Article SOURCE: Scopus	*7.086*	*Single author*
10	Vilardi, G., De Caprariis, B., Stoller, M., Di Palma, L., Verdone, N. Intensified water denitrification by means of a spinning disk reactor and stirred tank in series: Kinetic modelling and computational fluid dynamics (2020) Journal of Water Process Engineering, 34, art. no. 101147, . Cited 20 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85077915598&doi=10.1016%2fj.jwpe.2020.101147&partnerID=40&md5=02d17e6d1a7fb0e9d0fe8609f19a9e0b DOCUMENT TYPE: Article SOURCE: Scopus	*5.485*	*CA, FA*
11	Vilardi, G., Stoller, M., Di Palma, L., Boodhoo, K., Verdone, N. Metallic iron nanoparticles intensified production by spinning disk reactor: Optimization and fluid dynamics modelling (2019) Chemical Engineering and Processing - Process Intensification, 146, art. no. 107683. Cited 29 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85074087287&doi=10.1016%2fj.cep.2019.107683&partnerID=40&md5=817f3959db1fc5b0a410c2ec6c96921a DOCUMENT TYPE: Article SOURCE: Scopus	*3.731*	*CA, FA*
12	Vilardi, G., Di Palma, L., Verdone, N. A physical-based interpretation of mechanism and kinetics of Cr(VI) reduction in aqueous solution by zero-valent iron nanoparticles (2019) Chemosphere, 220, pp. 590-599. Cited 40 times. DOI: 10.1016/j.chemosphere.2018.12.175 ISSN: 00456535 CODEN: CMSHA DOCUMENT TYPE: Article SOURCE: Scopus	*5.778*	*CA, FA*
13	Vilardi, G., Rodriguez-Rodriguez, J., Miguel Ochando-Pulido, J., Di Palma, L., Verdone, N. Fixed-bed reactor scale-up and modelling for Cr(VI) removal using nano iron-based coated biomass as packing material (2019) Chemical Engineering Journal, 361, pp. 990-998. Cited 40 times. DOI: 10.1016/j.cej.2018.12.166 ISSN: 13858947 CODEN: CMEJA DOCUMENT TYPE: Article SOURCE: Scopus	*10.652*	*CA, FA*
14	Vilardi, G., Ochando-Pulido, J.M., Stoller, M., Verdone, N., Di Palma, L. Fenton oxidation and chromium recovery from tannery wastewater by means of iron-based coated biomass as heterogeneous catalyst in fixed-bed columns (2018) Chemical Engineering Journal, 351, pp. 1-11. Cited 44 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048724848&doi=10.1016%2fj.cej.2018.06.095&partnerID=40&md5=339b013491161da09cfda5f04bed2c61 DOCUMENT TYPE: Article SOURCE: Scopus	*8.355*	*CA, FA*

Part X– Publications, book chapters, booklet and proceedings

Publications

Position reported as: CA (Corresponding author), FA (First author), LA (Last Author)

		I.F.	*Position*
1	Vilardi, G., Verdone, N. Exergy analysis of municipal solid waste incineration processes: The use of O2-enriched air and the oxy-combustion process (2022) Energy, 239, art. no. 122147, . Cited 3 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85115771379&doi=10.1016%2fj.energy.2021.122147&partnerID=40&md5=7e5608bf7fc153c212967bb5fe25a19d DOCUMENT TYPE: Article SOURCE: Scopus	*7.147*	*CA, FA*
2	Rispoli, A.L., Rispoli, G., Verdone, N., Salladini, A., Agostini, E., Boccacci, M., Parisi, M.P., Mazzarotta, B., Vilardi, G. The electrification of conventional industrial processes: The use of mechanical vapor compression in an EtOH–water distillation tower (2021) Energies, 14 (21), art. no. 7267, . https://www.scopus.com/inward/record.uri?eid=2-s2.0-85118793088&doi=10.3390%2fen14217267&partnerID=40&md5=fe61c8e0c4ed77fc71cb8720d3a7dcc8 DOCUMENT TYPE: Article SOURCE: Scopus	*3.004*	*CA, LA*
3	Murmura, M.A., Vilardi, G. Energy and exergy analysis of the zinc/zinc oxide thermochemical cycle for hydrogen production and fuel cell power generation (2021) Energy Conversion and Management, 247, art. no. 114761, . Cited 2 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85115429166&doi=10.1016%2fj.enconman.2021.114761&partnerID=40&md5=3d074121f18f57ab86b15f8bd0f6cb78 DOCUMENT TYPE: Article SOURCE: Scopus	*9.709*	*CA, LA*
4	Rispoli, A.L., Iaquaniello, G., Salladini, A., Verdone, N., Pepe, M.R., Borgogna, A., Vilardi, G. Simultaneous decarbonisation of steel and Oil&Gas industry by MSW gasification: Economic and environmental analysis (2021) Energy Conversion and Management, 245, art. no. 114577, . Cited 5 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85107298914&doi=10.1016%2fj.enconman.2021.114577&partnerID=40&md5=4b00b746df08e0ea5039898f9806160b DOCUMENT TYPE: Article SOURCE: Scopus	*9.709*	*CA, LA*
5	Rispoli, A.L., Verdone, N., Vilardi, G. Green fuel production by coupling plastic waste oxy-combustion and PtG technologies: Economic, energy, exergy and CO2-cycle analysis (2021) Fuel Processing Technology, 221, art. no. 106922, . Cited 10 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85107294900&doi=10.1016%2fj.fuproc.2021.106922&partnerID=40&md5=5b47d335fe8b172793a91528e94244a9 DOCUMENT TYPE: Article SOURCE: Scopus	*7.033*	*CA, LA*
6	Vilardi, G., Stoller, M.	*5.076*	*CA, FA*

	Editorial for the special issue on "process intensification techniques for the production of nanoparticles" (2021) Nanomaterials, 11 (6), art. no. 1534, . https://www.scopus.com/inward/record.uri?eid=2-s2.0-85107510862&doi=10.3390%2fnano11061534&partnerID=40&md5=da41b170ab632fa1208e705b5b27fd35 DOCUMENT TYPE: Editorial SOURCE: Scopus		
7	Mpouras, T., Polydera, A., Dermatas, D., Verdone, N., Vilardi, G. Multi wall carbon nanotubes application for treatment of Cr(VI)-contaminated groundwater; Modeling of batch & column experiments (2021) Chemosphere, 269, art. no. 128749, . Cited 37 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85096998823&doi=10.1016%2fj.chemosphere.2020.128749&partnerID=40&md5=42740f1dc035380fd21739c30be8d1b9 DOCUMENT TYPE: Article SOURCE: Scopus	*7.086*	*LA*
8	Paternoster, M., Rizzo, G., Sinisi, R., Vilardi, G., Di Palma, L., Mongelli, G. Natural Hexavalent Chromium in the Pollino Massif Groundwater (Southern Apennines, Italy): Occurrence, Geochemistry and Preliminary Remediation Tests by Means of Innovative Adsorbent Nanomaterials (2021) Bulletin of Environmental Contamination and Toxicology, 106 (3), pp. 421-427. Cited 4 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85086578472&doi=10.1007%2fs00128-020-02898-7&partnerID=40&md5=dbec7ea43cb3e05191e2b0b5bd32f4cb DOCUMENT TYPE: Article SOURCE: Scopus	*2.151*	
9	Chinh, V.D., Bavasso, I., Di Palma, L., Felici, A.C., Scarsella, M., Vilardi, G., Bracciale, M.P., Van, N.T. Enhancing the photocatalytic activity of TiO2 and TiO2–SiO2 by coupling with graphene–gold nanocomposites (2021) Journal of Materials Science: Materials in Electronics, 32 (4), pp. 5082-5093. Cited 6 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85099759803&doi=10.1007%2fs10854-021-05242-9&partnerID=40&md5=1098a81471a0b432f43833a3768db195 DOCUMENT TYPE: Article SOURCE: Scopus	*2.478*	
10	Vilardi, G., Verdone, N., Bubbico, R. Combined production of metallic-iron nanoparticles: exergy and energy analysis of two alternative processes using Hydrazine and NaBH4 as reducing agents (2021) Journal of the Taiwan Institute of Chemical Engineers, 118, pp. 97-111. Cited 24 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85097048349&doi=10.1016%2fj.jtice.2020.11.020&partnerID=40&md5=1a4bdb7ba4b6aaf8a15d47ac67d4769e DOCUMENT TYPE: Article SOURCE: Scopus	*5.876*	*CA, FA*
11	Brasili, E., Bavasso, I., Petruccelli, V., Vilardi, G., Valletta, A., Bosco, C.D., Gentili, A., Pasqua, G., Di Palma, L. Remediation of hexavalent chromium contaminated water through zero-valent iron nanoparticles and effects on tomato plant growth performance (2020) Scientific Reports, 10 (1), art. no. 1920, . Cited 45 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85079065148&doi=10.1038%2fs41598-020-58639-7&partnerID=40&md5=047dd5ce98046269a877f9c5afebe594	*4.38*	

	DOCUMENT TYPE: Article SOURCE: Scopus		
12	Vilardi, G., Bassano, C., Deiana, P., Verdone, N. Exergy and energy analysis of biogas upgrading by pressure swing adsorption: Dynamic analysis of the process (2020) Energy Conversion and Management, 226, art. no. 113482, . Cited 13 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85092085336&doi=10.1016%2fj.enconman.2020.113482&partnerID=40&md5=463ce261db1f14404b4ab73b83cda5ed DOCUMENT TYPE: Article SOURCE: Scopus	*9.709*	*CA, FA*
13	Vilardi, G., Bassano, C., Deiana, P., Verdone, N. Exergy and energy analysis of three biogas upgrading processes (2020) Energy Conversion and Management, 224, art. no. 113323, . Cited 29 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85089849406&doi=10.1016%2fj.enconman.2020.113323&partnerID=40&md5=aae2faef0199535e68a9b4c3b7666516 DOCUMENT TYPE: Article SOURCE: Scopus	*9.709*	*CA, FA*
14	Vilardi, G., Verdone, N. Production of metallic iron nanoparticles in a baffled stirred tank reactor: Optimization via computational fluid dynamics simulation (2020) Particuology, 52, pp. 83-96. Cited 28 times. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85078194786&doi=10.1016%2fj.partic.2019.12.005&partnerID=40&md5=07bace8efcae5a885b80dd5f804eb976 DOCUMENT TYPE: Article SOURCE: Scopus	*3.067*	*CA, FA*
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8. 2018. Vilardi, G. NZVI-induced chemical denitrification modelling using the shrinking core model: Contemporary nZVI consumption by nitrates and dissolved oxygen 23rd

International Congress of Chemical and Process Engineering, CHISA 2018 and 21st Conference on Process Integration, Modelling and Optimisation for Energy Saving and Pollution Reduction, PRES 2018, 2, pp. 879-880.

9. 2019. Influence of bacteria inoculum and organic concentration on the biodegradation of soil conditioning agents in aqueous solutions, Tunnels and Underground Cities: Engineering and Innovation meet Archaeology, Architecture and Art- Proceedings of the WTC 2019 ITA-AITES World Tunnel Congress, pp. 551-556. Vilardi, G., Bavasso, I., Sebastiani, D., Miliziano, S., Di Palma, L., Pirone, M., Carriero, F., Sorge, R.

10. 2019. Sebastiani, D., Miliziano, S., Vilardi, G., Bavasso, I., Di Palma, L., Di Giulio, A. Chemical interaction between fine-grained soil and foaming agents in tunnelling with TBM-EPB 17th European Conference on Soil Mechanics and Geotechnical Engineering, ECSMGE 2019 - Proceedings, 2019-September,

11. 2019. Geogenic Cr(VI) in groundwater of the Pollino Massif (southern Apennines): occurrence and remediation. In 16th International Conference on Environmental Science and Technology CEST2019, At: 4-7 September 2019, Rhodes, Greece Project: CrITERIA: Cr(VI) Impacted water bodies in the Mediterranean: Transposing management options for Efficient water Resources use through an Interdisciplinary Approach. Paternoster, M., Rizzo, G. R., Mongelli, G., Sinisi, R., Vilardi, G., Di Palma, L.

12. 2020. Exergy analysis of waste incineration plant: flue gas recirculation and process optimization. In Proceedings Energies for the First World Energies Forum Rome 14 September-5 October, 2020. G. Vilardi and N. Verdone.

Book chapters

1) Di Palma L., Petrucci E., Verdone N., Vilardi G., 2017. Iron nanomaterials for water and soil treatment, Chapter 9 *Iron nanoparticles for Cr(VI) removal from contaminated soil*, Pan Stanford Press, Book Chapter.
2) Ochando-Pulido J. M., Stoller M., Di Palma L., Vilardi G., 2019. Advances in Nanophotocatalysis, Chapter 21 *Nanophotocatalyst intensified production by means of a Spinning Disk Reactor*, Springer, Book Chapter.
3) Stoller M., Di Palma L., Vilardi G., 2021. Nanostructured Materials for Environmental Applications, Chapter 10, *Soil Remediation by Zero-Valent Iron Nanoparticles for Organic Pollutant Elimination*, Springer, Book Chapter.

Booklet

Author of booklet for Chemical Engineering Master Students about fluid machinery in process industry (Italian Language) Macchine a Fluido per l'Industria di Processo (https://elearning.uniroma1.it/pluginfile.php/868832/mod_resource/content/1/Vilardi%20Macchine%20a%20Fluido%20per%20lIndustria%20di%20Processo.pdf).

Part XI– Patents

1) Italian Patent (Sapienza) n° 102018000004256 "Protected metallic oxidizable particle production process".
1a) Extension of Italian Patent n° 102018000004256 (WO2019193490).

2) Italian Patent (Sapienza) n° 102019000022335 “Hybrid Reactor for the production of submicronic and nano-sized particles packed in inorganic/organic solid crystallized matrix”.
3) Spanish/Italian Patent (50% Sapienza/50% UGR) n° P201931030 “PROCEDIMIENTO DE PREPARACIÓN DE NANOPARTÍCULAS METÁLICAS CON ALTA CAPACIDAD REDUCTORA”.
3a) Extension of Spanish/Italian Patent n° P201931030 (ES2827623A1).
4) Italian Patent (Sapienza) n° 102020000007141 “Micro and nano-zeolites production procedure by means of a spinning disk reactor”.
4a) Extension of Italian Patent n° 102020000007141 (WO2021198899A1).

Part XII– Editorial Board Affiliation and Activity

1. Member of Editorial Board (Energy and Environment Section) of Energies MDPI (impact factor=3.004, Scopus and WoS indexed, Q1 in Control and Optimization).
2. Member of Editorial Board (Thermal Management Section) of Energies MDPI (impact factor=3.004, Scopus and WoS indexed, Q1 in Control and Optimization).
3. Member of Editorial Board (Nanofabrication and Nanomanufacturing Section) of Nanomaterials MDPI (impact factor=5.076, Scopus and WoS indexed, Q1 in General Chemical Engineering).
4. Member of Editorial Board (Green Chemistry Section) of Molecules MDPI (impact factor=4.411, Scopus and WoS indexed, Q2 in Chemistry, Multidisciplinary).
5. Member of Editorial Board of Fluid Dynamics & Materials Processing (Scopus and WoS indexed).
6. Member of Editorial Board of AIMS Environmental Science (Scopus and WoS indexed).

Special issue

1. Editor of the Special Issue Application of Green Catalysts in Industrial and Environmental Processes in Molecules.
2. Editor of the Special Issue Exclusive Review Papers in Green Chemistry in Molecules.
3. Editor of the Special Issue Power to Gas (P2G) and Carbon Capture and Utilization (CCU) Technologies Combination in Energies.
4. Editor of the Special Issue Process Intensification Techniques for the Production of Nanoparticles in Nanomaterials.
5. Editor of the Special Issue Application of Heterogeneous Catalysts for Fenton-like Processes Development and Heavy Metals Recovery in Wastewater Treatment in Catalysts.
6. Editor of the Special Issue Recovery of Solid Waste in Industrial and Environmental Processes in Energies.
7. Editor of the Topical Collection Review Papers in Energy and Environment in Energies.
8. Editor of the Special Issue Intensified and Innovative Bio/Chemical/Physical Processes for the Degradation of Organic Pollutants in Wastewaters in Applied Sciences.
9. Lead Editor of the Special Issue Application and Characterization of Nanomaterials for Industrial and Environmental Processes in Journal of Nanotechnology.

The editorial and reviewer activity can be visualized on Publons platform (https://publons.com/researcher/1545252/giorgio-vilardi/).

Part XIII– Conferences and Workshops

2014

1. Mamiani Scientific High School, Rome

Oral presentation about Civil and Industrial Engineering degrees, the different technical abilities which students could learn and the opportunity to open their horizons.

2015

2. Teatro Petrolini, Viterbo

Unique speaker in the disclosure day organized by the Italian Association of Chemical Engineers ‘’Water: use and issues’’; the lesson dealt with Hydrologic cycle and the chemical-physical processes to remove arsenic (As) from wastewater and drinking water.

3. 12thInternational Conference on Chemical and Process Engineering (ICHEAP), Milan

Speaker.

4. Workshop at Astaldi Company headquarter, Rome

Speaker.

2016

5. 1st INTERNATIONAL CONFERENCE ON NANOTECHNOLOGY BASED INNOVATIVE APPLICATIONS FOR THE ENVIRONMENT (NINE), Rome

Speaker.

6. 13thInternational Conference on Protection and Restoration of the Environment, Greece

Speaker.

7. Congress GRICU 2016 ‘’Gli orizzonti 2020 dell’Ingegneria Chimica’’ Anacapri (NA).

Speaker.

8. NanoInnovation, Rome

Participant.

9. Ecomondo, Rimini

Speaker.

2017

10. Tecnologie chimiche e biologiche per la protezione ambientale “LA SAPIENZA”, Rome

Speaker.

11. Circular Economy - Nuovi approcci, nuove opportunità “LA SAPIENZA”, Rome

Speaker.

12. CEST (15th International Conference on Environmental Science And Technology), Rodhos, Greece

Speaker.

13. 13th ICHEAP, Milan

Speaker.

14. 2nd NINE, Rome

Speaker and Chairman.

15. NanoInnovation, “LA SAPIENZA”, Rome

Participant.

2018

16. Zwick Academia Day, "LA SAPIENZA", Rome
Speaker.
17. Congress GRICU Pisa
Participant.
18. 23rd CHISA e 21st PRES, Praga, Czech Republic
Speaker.
19. NanoInnovation, "LA SAPIENZA", Rome
Participant.

2019

20. Workshop "D.P.R.120/2017 Gestione delle Terre e Rocce da Scavo", CNR, Rome
Speaker.
21. 3nd NINE, Naples
Speaker.
22. CEST (16th International Conference on Environmental Science And Technology), Rodi, Greece
Speaker.
23. ECCE (12th European Congress of Chemical Engineering), Florence
Speaker and International Student Committee Coordinator.

2020

24. The First World Energies Forum (Online Conference), Rome.
Peer-reviewed proceeding.

2021

25. Catalysis and Chemical Engineering Conference 2021 (Online Conference in California, USA).
Invited Speaker.

Part XIV– Master Thesis Supervisor from 2020

1. Start-up, shutdown and variable load analysis of methanol production heterogeneous reactors from CO2 hydrogenation (S. Bucci).
2. Exergoeconomic analysis of Formic Acid process from captured CO2 hydrogenation coupled with oxy-combustion/incineration of non-recyclable plastic waste (J. Bruni).
3. Dynamic analysis of Ni-Ru catalysed Sabatier process by Aspen Dynamics and 2D dynamic reactor model development in gPROMS environment (C. Corsi).
4. Kinetic analysis and bioreactor design for the hydrolysis of sucrose in Cargill production plant (Cargill collaboration) (A. Festa).
5. Exergoeconomic analysis of Direct Carbon Fuel Cell for the energy recovery from mixed waste for the green production of H2: a dynamic study (A. C. Galli).
6. Biogas upgrading to syngas and green hydrogen from biomass by multiple-reforming and biomass anaerobic digestion-dark fermentation (G. Polce).
7. Economic analysis of two different process layouts for a new slurry line in the BASF site of Rome (BASF collaboration) (F. Carinci).

8. Simulation and economic analysis of the alkaline washing process of a syngas from MSW gasification (S. Mataloni).
9. Valorization of Organic Fraction of Municipal solid Waste by bio-oil production through hydrothermal liquefaction process: process design and environ-exergoeconomic analysis (V. Segneri).
10. Simultaneous production of bio-fuel and piridine from municipal solid waste and food waste: simulation and environ-exergoeconomic analysis (C. Tizzano).
11. Dynamic modelling of a PEM electrolyzer and tecno-economic comparison of hydrogen production from methane reforming and water electrolysis (APS collaboration) (D. Paladino).
12. Simulation and upgrading to green route of a tunable continuous plant for the production of two pharmaceutical compounds (L. Morfuni).
13. Technical-Economic analysis of the steel production sector decarbonisation by hydrogen use (A. Trinca).
14. Exergo-economic analysis of super-critical CO2 re-utilization for the coupled production of acetylsalicylic acid and ethanol from fermentation by-products extracted bio-phenols (A. De Lucia).
15. Syngas cleaning and upgrading process analysis and optimization for the production of bio-hydrogen and carbon monoxide as reducing gases in Taranto industrial site (A. Conte).
16. Computational Fluid Mixing of bentonite drilling fluid production in stirred tanks: experimental and modelling in Ansys Fluent environment (C. Franceschini).
17. Upgrading of two production line of pharma products in Sanofi site (Sanofi collaboration) (G. Ceccarelli).
18. Dynamic modelling of exothermic heterogeneous reactors for the upgrading of biogas to C2 by Oxidative Coupling reaction (F. Danese).
19. Thermal integration and upgrading of bio-oil hydrotreating unit (KT collaboration) (F. Mattozzi).
20. Development and techno-economic analysis of industrial processes for the recovery of red mud (M. Stefanoni).
21. Thermal integration and service fluids recovery in Cargill site: cooling tower control and management (Cargill collaboration) (M. Graviano).

Part XV– Master Thesis Co-Supervisor from 2016

1. Bimetallic nanoparticles for nitrate removal in aqueous solution (M. Terzino).
2. Kinetic modelling of Cr(VI) reduction process by nZVI in aqueous solution in CSTR (A. Ferri).
3. Kinetic modelling of Cr(VI) reduction process in polluted soil by nZVI slurry in CSTR (M. Pompei).
4. Agro-industrial waste sorbent for the recovery of heavy metals in aqueous solution (A. M. Mancini).
5. Up-grade of wastewater treatment plant of bio-polymers production plant by novel oxidation unit (A. Meloni).
6. Photochemical processes for the oxidation of surfactants in wastewaters (G. De Quattro).
7. ISCO processes development and kinetic modelling (F. Fusco).
8. Intensified production of nZVI by Spinning Disk Reactor technology: scale-up and modelling (E. Moroni).

9. Integrated plant for lead recovery by suspended nZVI. Reactor scale-up and modelling (A. Dolfelli).
10. Surfactants removal by heterogeneous Fenton process development with nZVI. Oxidation reactor design and scale-up (A. Nucera).
11. Intensified denitrification process by Spinning Disk Reactor Technology (A. Festa).
12. Ni recovery from wastewaters by waste biomass. Kinetic modelling and PFR design (L. Palleschi).
13. Chemical oxidation of surfactants in polluted soil in slurry reactors. Reactor design and scale-up (L. Ferri).
14. Risk analysis of two cargo ships impact transporting NH4NO3 and LPG: model development and experimental tests for a possible site remediation (M. Terzino).
15. nZnO intensified production by Spinning Disk Reactor and seeding crystallization of organic salts on nanoparticles. Fluid dynamics modelling crystallizer design (I. A. Korsaye).
16. Nano-magnetite intensified production by Spinning Disk Reactor. Mixing process modelling (A. Tozzi).
17. Industrial sludge pre-treatment and disinfection by Cu-catalyzed Fenton-like process in jacketed CSTR. Reactor and heat exchange system modelling and scale-up (B. Adriani).
18. Special heat exchanger unit and control system design for Salts & Solution site of BASF-Italy (V. Murana).
19. Design and exergonomical comparison of two plants of hydrides and metal steam reforming nano-catalysts production plants (R. Di Camillo).
20. Exergy analysis of municipal waste incineration plant with flue gas recirculation (M. Tasciotti).
21. Dynamic analysis of catalytic PFR for methanation process-P2G technology (G. Bianchi).
22. Exergetic analysis of four biogas upgrade processes and plants (M. Pioni).
23. Multiple effect evaporation plant upgrade with thermal-mechanical compression of the vapours for Cargill S.r.l. (A. Antonelli).
24. Bentonite mud application in hydraulic tunnel construction: rheological characteristics optimization and environmental impact analysis (E. Di Francesco).
25. Pressure drop modelling and simulation for biphasic flow in refinery pipelines (C. Ranieri).
26. Palladium-based catalyst synthesis development for BASF: process design and reactor modelling (M. Rivelli).
27. Optimization of sugar-based complex molecules separation by chromatography column for Cargill S.r.l. (M. Cramerotti).
28. Analysis of start-up, idle and shut-down of adiabatic and isothermal Sabatier reactors by dynamic simulations (L. Radoviciu).
29. Exergy analysis, equipment sizing and safety analysis of two iron nanoparticles production plants (F. J. Ruida Maìllo)-Erasmus.
30. Bentonite mud mixing optimization and liquid/solid separation simulation in PRO/II environment (M. Fellone).
31. Decarbonisation of Steel Production process in ILVA by the use of syngas from MSW and PSW gasification (A. L. Rispoli).
32. Energy and Exergy analysis of a waste-to-energy oxy-combustion plant coupled with H2 production by PEM electrolyzer and CO2 capture and utilization for the production of SNG (M. Tomassini).

33. Dynamic simulation of SOEC Electrolyzer and Safety analysis of an incineration-power plant coupled with green hydrogen production (S. Baldasseroni).
34. Decarbonisation of Cement Production process by the use of green hydrogen and bio-oxycombustion processes (V. Mancini).
35. Thermodynamic and kinetic analysis of runaway reactions in Li-ion storage battery: safety and dynamic analysis (D. Di Pasquali).
36. Safety analysis of a surfactant production process in P&G site (P&G collaboration) (S. Galassi).
37. Wastewater recovery in Lanxess production site (Lanxess collaboration) (D. Vaglica).

Part XVI– Professional activity and Start-Up

1) Support in some industrial and civil sites for the centrifugal pumps and compressors control, maintenance and design activities (from 2013 to 2015 with IM.P.R.E.D.I.R. S.r.l. then as consultant).
2) Support to various civil and chemical engineering companies for: optimization and evaluation of calcium hydroxide soil treatment mixing process (Procopio S.r.l., Cogecon s.r.l. and Carchella s.p.a.) and spinning disk reactor equipment design and control (Labor S.r.l.). From 2018 he started to support GEEG S.r. l. as manager of the chemical/environmental activities.

Start-Up
Founder business partner of Start-Up GEEG S.r.l. of Sapienza University of Rome (2018) https://www.geeg.it/.

I authorize the use of these data conforming to privacy regulation n° 196/03 and to GDPR 2016/679.

Date **Signature**

20/01/2022