

Personal details

First name: Alfieri
Last name: Pollice
Place/date of birth: Bari (Italy)/July 20th, 1964
Nationality: Italian
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Current position

from **1998** permanent position as “environmental research scientist” with the National Research Council of Italy, Water Research Institute (IRSA-CNR), Department of Bari.

Scientific interests: Environmental engineering, water-related environmental technologies, novel processes for water and wastewater treatment and reuse, including correlated issues (sludge management, biomass characterization, bioprocess optimization and sustainability, control of odours, etc.).

Specific research subjects:

- Novel biochemical tools for biomass characterization in environmental samples (metaproteomics) (from 2007).
- Membrane bioreactors in combination with advanced chemical oxidation processes for industrial wastewater treatment (from 2006).
- Membrane bioreactors for municipal wastewater treatment (process optimization and biomass investigations) (from 2002).
- Membrane filtration processes for agricultural reuse of treated municipal wastewater (from 1999).
- Odour removal at wastewater treatment plants through bubbling in aerobic reactors (“AS Diffusion” process) (2002-2008).
- Evaluation of oxygen transfer in water through fine bubble membrane diffusers (2002-2003).
- Non-conventional processes for nitrogen removal from highly concentrated wastewater (partial nitrification under controlled conditions) (1999-2000).
- Anaerobic treatment of industrial wastewater and development of a biosensor for the “early warning” of potential causes of process inhibition (1998-1999).

Education

- 1994** Dottorato di Ricerca (Ph.D.) in Sanitary-Environmental Engineering, Politecnico di Milano (Italy), Dept. of Hydraulic and Environmental Engineering, Environmental section (September 1991 - January 1994).
[*Thesis on biological phosphorus and nitrogen removal from wastewater*].
- 1991** Master in Business Administration, STOA' Business School of Napoli (Italy), established by IRI (Italy) with the Sloan School of Management of the Massachusetts Institute of Technology (USA) (January 1990 - April 1991).
[*Thesis on internal cross-communication in large firms (Human Resource Management)*].
- 1988** Five years degree in Hydraulic Engineering (Sanitary specialization), Università di Bari (Italy).
Final grade: 110/110 cum laude.
[*Thesis on hydraulic features of large diameter pipelines*].

Academic background

- 1998 / 09** Advisor to master and Ph.D. students for Università di Bari (Dept. of Environmental Sciences and Dept. of Medical Biochemistry), Politecnico di Bari (Dept. of Water Engineering) Università della Basilicata (Dept. of Environmental Engineering), Politecnico di Milano (Dept. of Environmental Engineering).
- 1998 / 09** Invited lecturer in seminars and specialized courses on biological wastewater treatments, membrane filtration processes, water treatment plant design and management, odour control techniques, etc. on behalf of CNR IRSA.
- 2003** NATO “senior” fellowship for two months as a visiting academic at Cranfield University (UK), School of Water Sciences (June - August 2003).
[*Membrane applications to biological wastewater treatments, membrane bioreactors*].

- 2003** Invited participant to the Rockefeller Foundation's Team Residency on "Exploration of the potential of membrane technology for sustainable decentralized sanitation" (April 22-26, Bellagio, Italy).
- 1996 / 97** Research contracts with Politecnico di Milano, Dept. of Hydraulic and Environmental Engineering, Environmental section (May - September 1996; January - March 1997). [*Slurry-phase soil bioremediation*].
- 1995 / 97** Lecturer in seminars and specialized courses on biological wastewater treatments, solid waste characterization, and soil bioremediation at Politecnico di Milano, Dept. of Hydraulic and Environmental Engineering, Environmental section.
- 1995** Post-doctoral position at Politecnico di Milano, Dept. of Hydraulic and Environmental Engineering, Environmental section (March 1995 - March 1997). [*Biological remediation of contaminated soils*].
- 1994** Post-doctoral fellowship from Politecnico di Bari (Italy) for one year at the State University of New York at Stony Brook, Marine Sciences Research Center, Waste Management Institute (January 1994 - January 1995). [*Removal, treatment and disposal of contaminated harbour sediments*].

Participation in EU founded projects

- 2009 / 11** Collaborative Project "Besse – Brokering environmentally sustainable sanitation for Europe" (UE contract FP7 226744).
- 2006 / 09** STREP "Innowatech – Innovative and integrated technologies for the treatment of industrial wastewater" (UE contract FP6 036882).
- 2006 / 09** Integrated Project "Aquastress – Mitigation of water stress through new approaches integrating management, technical economic and institutional instruments" (UE contract FP6 511231). Served as WP leader of Workpackage 3.1 "Alternative Water Resources".
- 2006 / 09** Marie Curie Host Fellowships for Early Stage Researchers (EST) "MBR-Train – Process optimization and fouling control in membrane bioreactors for wastewater and drinking water treatment" (UE contract FP6 021050). Serves as supervisor for IRSA subproject MBR 13 "Process optimization and biomass characterisation".
- 2005 / 08** STREP "Reclaim Water – Water Reclamation Technologies for Safe Artificial Groundwater Recharge" (UE contract FP6 018309).

Publications

Co-author of more than 110 papers published in peer reviewed journals or presented to scientific conferences, book chapters and technical reports on different subjects within the environmental sciences and technologies.

Languages

Italian - mother tongue;
English - fluent;
French - good.

Further information:

Strongly oriented to team work and towards the exploration of new directions in environmental research.

Interdisciplinary interests and sincere curiosity towards the opportunities of integration among bordering disciplines, such as environmental science and engineering, life sciences, biochemistry, etc. (an example is the on-going cooperation on behalf of CNR IRSA with the Dept. of Medical Biochemistry at the Università di Bari (Italy), and the Max Plank Institute for Dynamics of Complex Technical Systems of Magdeburg (Germany), for research activities on "environmental metaproteomics").

In contact with the main international research institutions in the field of environmental and water science and engineering.

Reviewer for the following scientific journals:

- Water Research (Elsevier),
- Science of the Total Environment (Elsevier),
- Chemosphere (Elsevier),

- Analytica Chimica Acta (Elsevier),
- Journal of Membrane Science (Elsevier),
- Bioresource Technology (Elsevier),
- Desalination (Elsevier),
- Desalination and Water Treatment (Elsevier)
- Water Environment Research (Water Environment Federation).

LIST OF SELECTED PUBLICATIONS

Papers published in peer reviewed journals.

1. Mascolo G., Balest L., Cassano D., Laera G., Lopez A., Pollice A., Salerno C. (2010) – Biodegradability of pharmaceutical industrial wastewater and formation of recalcitrant organic compounds during aerobic biological treatment. *Bioresource Technology* (accepted).
2. Lopez A., Pollice A., Laera G., Lonigro A., Rubino P. (2009) - Membrane filtration of municipal wastewater effluents for implementing agricultural reuse in Southern Italy. *Water Science & Technology* (submitted).
3. Kuhn R., Benndorf D., Rapp E., Reichl U., Palese L.L., Pollice A. (2009) - Metaproteomics – a new tool to characterize and monitor activated sludge processes in membrane bioreactors. *Environmental Science & Technology* (submitted).
4. Laera G., Pollice A., Saturno D., Giordano C., Sandulli R. (2009) - Influence of sludge retention time on biomass characteristics and cleaning requirements in a membrane bioreactor for municipal wastewater treatment. *Desalination*, **236**, 1-3, 104-110.
5. Saturno D., Salerno C., Laera G., Pollice A., Pinto A., Sandulli R. (2008) - I bioreattori a membrana nella depurazione delle acque: l'innovazione per la tutela dell'ambiente. *Biologi Italiani*, **7**, 31-39 (in italian).
6. Pollice A., Laera G., Saturno D., Giordano C. (2008) - Effects of sludge retention time on the performance of a membrane bioreactor treating municipal sewage. *Journal of Membrane Science* **317**, 65-70.
7. Pollice A., Laera G., Saturno D., Giordano C., Sandulli R. (2008) - Optimal sludge retention time for a bench scale MBR treating municipal sewage. *Water Science & Technology*, **57**, 3, 319-322.
8. Giordano C., Pollice A., Laera G., Saturno D., Mininni G. (2007) - Influence of solid retention time on the rheology of MBR sludge. *Water Science & Technology*, **56**, 8, 151-159.
9. Laera G., Giordano C., Pollice A., Saturno D., Mininni G. (2007) - Membrane bioreactor sludge rheology at different solid retention times. *Water Research*, **41**, 18, 4197-4203.
10. Lonigro A., Rubino P., Brandonisio O., Spinelli R., Pollice A., Laera G. (2007) – Vegetable crops irrigation with tertiary filtered municipal wastewater. *Plant Biosystems*, **141**, 2, 275-281.
11. Pollice A., Laera G., Giordano C., Saturno D., Mininni G., Masi S. (2007) - Biomass dewaterability, filterability and settleability in a membrane bioreactor operated with different sludge ages. *Water Practice & Technology*, **2**, 1, doi10.2166/wpt.2007.0010, (<http://www.iwaponline.com/wpt/002/01/default.htm>).
12. Pollice A., Giordano C., Laera G., Saturno D., Mininni G. (2007) - Physical characteristics of the sludge in a complete retention membrane bioreactor. *Water Research*, **41**, 8, 1832-1840.
13. . Lonigro A., Pollice A., Spinelli R., Berrilli F., Di Cave D., D'Orazi C., Cavallo P., Brandonisio O. (2006) - Evaluation of Giardia cysts and Cryptosporidium oocysts in membrane-filtered municipal wastewater used for irrigation. *Applied and Environmental Microbiology*, **72**, 12, 7916-7918.
14. Blonda M., Di Pinto A.C., Laera G., Palumbo R., Pollice A. (2005) – Effects on the biomass of activated sludge diffusion for odour removal. *Environmental Technology*, **27**, 8, 875-883.
15. Pollice A., Saturno D., Giordano C., Laera G. (2006) - Long term effects of complete sludge retention in a membrane bioreactor for municipal wastewater treatment. *Desalination*, **199**, 1-3, 325-327.
16. Pollice A., Giordano C., Laera G., Saturno D., Mininni G. (2006) – Rheology of sludge in a complete retention membrane bioreactor. *Environmental Technology*, **27**, 7, 723-732.

17. Spinelli R., Lonigro A., Pollice A., Berrilli F., Di Cave D., D'Orazi C., Cavallo P., Brandonisio O. (2006) - Evaluation of Giardia cysts and Cryptosporidium oocysts in membrane-filtered municipal wastewater used for irrigation at a pilot plant. *Parassitologia (Official Journal of the Italian Society of Parasitology)*, **48**, 1-2, 327.
18. Lopez A., Pollice A., Lonigro A., Masi S., Palese A.M., Cirelli G.L., Toscano A., Passino R. (2006) - Agricultural wastewater reuse in southern Italy. *Desalination*, **187**, 1, 323-334.
19. Laera G., Pollice A., Saturno D., Giordano C., Lopez A. (2005) – Zero net growth in a membrane bioreactor with complete sludge retention. *Water Research*, **39**, 20, 5241-5249.
20. Pollice A., Laera G. (2005) - Effects of complete sludge retention on biomass build-up in a membrane bioreactor. *Water Science & Technology*, **52**, 10-11, 369-375.
21. Pollice A., Brookes A., Jefferson B., Judd S. (2005) - Sub-critical flux fouling in membrane bioreactors - a review of recent literature. *Desalination*, **174**, 3, 221-230.
22. DiGiano F., Andreottola G., Adham S., Buckley C., Cornel P., Daigger G.T., Fane A.G., Galil N., Jacangelo G.J., Pollice A., Rittmann B.E., Rozzi A., Stephenson T., Ujang Z. (2004) - Safe water for everyone: membrane bioreactor technology. *Science in Africa (on-line magazine)*, June 2004. <http://www.scienceinAfrica.co.za/2004/june/membrane.htm>.
23. DiGiano F., Andreottola G., Adham S., Buckley C., Cornel P., Daigger G.T., Fane A.G., Galil N., Jacangelo G.J., Pollice A., Rittmann B.E., Rozzi A., Stephenson T., Ujang Z. (2004) - Safe water for everyone. Experts suggest that membrane bioreactors may be a key to global water sustainability. *Water Environment & Technology*, **16**, 6, June 2004.
24. Pollice A., Laera G., Blonda M. (2004) - Biomass growth and activity in a membrane bioreactor with complete sludge retention. *Water Research*, **38**, 7, 1799-1808.
25. Pollice A., Lopez A., Laera G., Rubino P., Lonigro A. (2004) - Tertiary filtered municipal wastewater as alternative water source in agriculture: a field investigation in southern Italy. *Science of the Total Environment*, **324**, 1-3, 201-210.
26. Pollice A., Tandoi V., Lestingi C. (2002) – Influence of aeration and sludge retention time on ammonium oxidation to nitrite and nitrate. *Water Research*, **36**, 10, 2541-2546.
27. Pollice A., Rozzi A., Tomei M.C., Di Pinto A.C., Laera G. (2001) - Inhibiting effects of chloroform on anaerobic microbial consortia as monitored by the Rantox biosensor. *Water Research*, **35**, 5, 1179-1190.
28. Berbenni P., Pollice A., Canziani R., Stabile L., Nobili. F. (2000) - Removal of iron and manganese from hydrocarbon-contaminated groundwaters. *Bioresource Technology*, **74**, 2, 109-114.
29. Pollice A., Rozzi A., Tomei M.C., Di Pinto A.C., Limoni N. (2000) - Monitoring the inhibitory effect of NaCl on anaerobic wastewater treatment processes by the Rantox biosensor. *Environmental Technology*, **21**, 5, May 2000.
30. Andreottola G., Bonomo L., Pollice A. (1997) - Comparison of batch completely mixed and column tests for the evaluation of phenol mobility in natural soils. *Environmental Technology*, **18**, 11, November 1997.
31. Canziani R., Pollice A., Ragazzi M. (1996) - Design considerations on primary sludge hydrolysis under psychrophilic conditions. *Environmental Technology*, **17**, 7, July 1996.
32. Pollice A., Chin P.A., Breslin V.T. (1996) - Evaluation of available technologies for dredging and disposal of contaminated harbour sediments. *European Water Pollution Control*, **6**, 2, 34-44.
33. Canziani R., Pollice A., Ragazzi M. (1995) - Feasibility of using primary sludge mesophilic hydrolysis for biological removal of nitrogen and phosphorus from wastewater. *Bioresource Technology*, **54**, 3, 255-260.
34. Pollice A., Canziani R. (1994) - Validation of a new model for biological nutrient removal. *European Water Pollution Control*, **4**, 6, November 1994.

Selected conference papers, book chapters, etc. (after year 2000)

1. Lopez A., Pollice A., Laera G., Lonigro A., Rubino P. (2009) - Membrane filtration of municipal wastewater effluents for implementing agricultural reuse in Southern Italy. 7th IWA World Congress on Water Reclamation and Reuse REUSE09, Brisbane (Australia), 21-25 September 2009.
2. Mascolo G., Abbaticchio P., Cassano D., Laera G., Lopez A., Pollice A., Salerno C. (2009) - Integrated AOP-MBR system for pharmaceutical wastewater treatment. 2nd European Conference

on Environmental Applications of Advanced Oxidation Processes EAAOP2, Nicosia (Cyprus), 9-11 September 2009.

3. Kuhn R., Pollice A. (2009) - Metaproteomic approach towards functional biomass characterization. Monitoring Event for Marie Curie EST Contracts, European Commission, DG Research, Bonn 29-30 January 2009 (poster).
4. Kuhn R., Benndorf D., Rapp E., Devreese B., Pollice A., Laera G., Palese L.L. (2008) – Metaproteomic approach as innovative tool investigating biofouling in membrane bioreactors. ProteomLux 2008, Intern. Conf. on Proteomics in Plants, Microorganisms and Environment, Luxembourg 22-25 October 2008.
5. Kuhn R., Pollice A., Benndorf D., Devreese B., Laera G., Palese L.L., Papa S. (2008) – Metaproteomic approach to detect biofouling indicators in MBRs. 10th Meeting of the Network of Young Membrains, Berlin (Germany) 18-19 September 2008.
6. Laera G., Giordano C., Saturno D., Masi S., Pollice A., Lopez A. (2008) - Physical characteristics of membrane bioreactor sludge under different solid retention times. IWA World Water Congress and Exhibition, Vienna (Austria) 7-12 September 2008 (poster).
7. Laera G., Pollice A., Saturno D., Salerno C., Sandulli R. (2008) - Influence of operational conditions on sludge features in a membrane bioreactor treating municipal wastewater. SIDISA.08 - Intern. Symposium on Sanitary and Environmental Engineering, Firenze (Italy) 24-27 June 2008.
8. Saturno D., Palumbo R., Laera G., Salerno C., Pollice A. (2008) - Comparison of microbial activity in a submerged membrane bioreactor at different sludge retention times. SIDISA.08 - Intern. Symposium on Sanitary and Environmental Engineering, Firenze (Italy) 24-27 June 2008.
9. La Mantia R., Saturno D., Laera G., Masciopinto C., Pollice A. (2008) - Suitability of MBR and CAS effluents for groundwater recharge in fractured aquifers: laboratory studies. SIDISA.08 - Intern. Symposium on Sanitary and Environmental Engineering, Firenze (Italy) 24-27 June 2008.
10. Gernjak W., Malato S., Pulgarín C., Mascolo G., Pollice A., Vogelsang C., Plosz B., Lopez A. (2008) Combining Advanced Oxidation Processes and biological wastewater treatment. ENVIETECH2008, Vienna (Austria), 30 January-1st February 2008 (poster).
11. Laera G., Pollice A., Saturno D., Giordano C., Sandulli R. (2007) - Influence of sludge retention time on biomass characteristics and cleaning requirements in a membrane bioreactor for municipal wastewater treatment. IMSTEC 07 – The 6th International Membrane Science and Technology Conference, Sydney (Australia) 5-9 November 2007.
12. Mininni G., Di Iaconi C., Mascolo G., Pollice A. (2007) - New perspectives for up-grading wastewater treatment plants to meet the standards of Water Framework Directive and Directives on wastes. 10th IWA Specialised Conference on Design, Operation and Economics of Large Wastewater Treatment Plants, Vienna (Austria) 9-13 September 2007 (poster).
13. Kuhn R., Pollice A., Laera G., Palese L.L., Lippolis R., Papa S. (2007) - Standard assays and metaproteomes as new approaches for functional characterization of membrane bioreactor biomass. 2nd IWA National Young Water Professional Conference, Berlin (Germany) 4-6 June 2007.
14. Balest L., Laera G., Lopez A., Mascolo G., Pollice A. (2007) - Pharmaceutical wastewater treatment by an integrated AOP-MBR system: preliminary tests. Intern. Conf. on Technologies for Industrial Wastewater Treatment and Reuse in the Mediterranean Region TIWATMED 2007, Jerba (Tunisia), 24-26 May 2007 (poster).
15. Pollice A., Laera G., Saturno D., Giordano C., Sandulli R. (2007) - Optimal sludge retention time for a bench scale MBR treating municipal sewage. IWA 4th International Membranes Conference – Membranes for Water and Wastewater Treatment, Harrogate (UK), 15-17 May 2007.
16. Lopez A., Pollice A., Laera G., Lonigro A., Rubino P., Passino R. (2007) - Reuse of membrane filtered municipal wastewater for irrigating vegetable crops. WASAMED - International Conference on Water Saving in Mediterranean Agriculture & Future Research Needs, Valenzano, Bari (Italy), 14-17 February 2007.
17. Giordano C., Pollice A., Laera G., Saturno D., Mininni G. (2007) – Effects of solid retention time on the rheology of membrane bioreactor sludge. IWA Specialist Conference “Facing Sludge Diversities: Challenges, Risks, and Opportunities”, Antalya (Turkey), 28-30 March 2007.
18. Pollice A., Passino R. (2006) – Preserving anaerobic wastewater treatment processes through biogas monitoring biosensors. In: E.C. Hearn (Ed.) “Focus on biotechnology research”, Nova Science Publishers, Inc., Hauppauge, NY (ISBN - 1-59454-863-3).

19. Di Cave D., Berrilli F., D'Orazi C., Brandonisio O., Lonigro A., Spinelli R., Pollice A. (2006) – Giardia and Cryptosporidium removal from wastewater by a new microfiltration system. XI ICOPA “11th International Congress of Parasitology”, Glasgow (Scotland), 6-11 August 2006 (poster-abstract).
20. Pollice A., Laera G., Giordano C., Saturno D., Mininni G. (2006) - Membrane bioreactor biomass characterization: dewaterability, filterability and settleability at different sludge ages. IWA Specialized Conference "Sustainable Sludge Management: state of the art, challenges and perspectives", ECWATECH-2006, Moscow (Russia), 29-31 May 2006.
21. Brandonisio O., Lonigro A., Spinelli R., Pollice A. (2005) – Removal of parasitic protozoa from treated wastewater used for irrigation by a new membrane filtration system. 3rd Symposium of the Italian-Russian Institute of Education and Ecological Researches “Quality and Management of Water Resources”, St. Petersburg (Russia), 16 - 18 June 2005.
22. Giordano C., Pollice A., Laera G., Saturno D., Mininni G. (2005) – Physical characterization of the sludge of a complete retention MBR. IWA – WISA International Conference “Management of Residues Emanating from Water and Wastewater Treatment” Johannesburg (South Africa), 9 - 12 August 2005.
23. Palumbo R., Giorgio E., Blonda M., Pollice A., Laera G. (2005) – Microbiological and biochemical effects of activated sludge diffusion for sulphide biooxidation in wastewater treatment plants. Congress on Biotechniques for Air Pollution Control, La Coruna (Spain), 5 – 7 October 2005.
24. Lopez A., Pollice A., Lonigro A., Masi S., Palese A.M., Cirelli G.L., Toscano A., Passino R. (2005) - Agricultural wastewater reuse within the AQUATEC project. Intern. Conf. “Integrated Concepts in Water Recycling” (ICWR 2005), Wollongong (Australia), 14-17 February 2005 (accepted).
25. Pollice A., Laera G. (2004) - Effects of complete sludge retention on biomass build-up in a membrane bioreactor. IWA 4th World Water Congress, Marrakech (Morocco), 19-24 September 2004.
26. Pollice A., Laera G. (2004) – Start-up and short term experiments on a membrane bioreactor with complete sludge retention. SIDISA 2004 – Intern. Symp. on Sanitary and Environmental Engineering, Taormina (Italy) 23-26 June 2004.
27. Blonda M., Laera G., Notarangelo G., Palumbo R., Pollice A. (2004) - Activated sludge diffusion for odour removal: effects on the biomass. SIDISA 2004 – Intern. Symp. on Sanitary and Environmental Engineering, Taormina (Italy) 23-26 June 2004.
28. Pollice A., Laera G., Spagni A., Ferraris M. (2003) - Il riuso irriguo di permeati di reattori a membrana. Intern. Conf. “Applications and perspectives of MBRs in wastewater treatment and reuse”, Cremona (Italy), 28-29 April 2003.
29. Pollice A., Rozzi A., Tomei M.C., Di Pinto A.C., Laera G., Limoni N. (2002) - The “RANTOX” biosensor for monitoring influent toxicity at anaerobic wastewater treatment plants. COST 624 WG4 meeting on “Biosensors in WWTPs” Milano (Italy), 10-11 June 2002.
30. Rozzi A., Pollice A., Tomei M.C., Di Pinto A.C., Laera G. (2000) - The Rantox biosensor for prevention of anaerobic wastewater treatment plants intoxication. SIDISA 2000 – Intern. Symp. on Sanitary and Environmental Engineering, Trento (Italy) 18-23 September 2000.