

Fabrizio Sabba, Ph.D.

Process Engineering Associate

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BLACK & VEATCH

EDUCATION AND TRAINING

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|---------------------------------|--|------------------------|
| Process Engineering Associate | Black & Veatch | New York, NY 2021 |
| Postdoctoral Research Associate | Northwestern University Civil and Environmental Engineering Advisor: <i>Dr. George Wells</i> | Evanston, IL 2020 |
| Director of R&D | NUVODA | Blacksburg, VA 2017 |
| Ph.D. | University of Notre Dame Major: Environmental Engineering Advisor: <i>Dr. Robert Nerenberg</i> | Notre Dame, IN 2016 |
| M.Sc. | University La Sapienza <i>Summa Cum Laude</i> Major: Environmental and Industrial Biotechnology Advisor: <i>Dr. Roberto Samperi</i> , Co-advisor: <i>Dr. Paige Novak</i> | Rome, Italy 2010 |
| B.Sc. | University of Bari Biotechnology for processes and products innovation Advisor: <i>Dr. Pietro Favia</i> Co-advisor: <i>Dr. Roberto Gristina</i> | Bari, Italy 2007 |

RESEARCH EXPERTISE

- Biological Nutrients Removal (BNR) and resource recovery
- Granular sludge and Membrane Biofilm Reactor (MBfR) for wastewater treatment
- Mathematical biofilm modeling
- Artificial biofilm systems
- Biofilm mechanical properties
- Metagenome assembled-genomes and molecular biology tools
- Enhanced Biological Phosphorus Removal
- Anammox based processes
- Fate of greenhouse gases in BNR processes

HONORS AND AWARDS

| | |
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| Postdoc Professional Development Award | 2018-2019 |
| Best presentation at WWTmod Conference, Annecy (France) | 2016 |
| Zahm Research Travel Grant | 2016 |
| Graduate Student Union Conference Grant | 2016 |
| Fellowship Emerging Contaminants Workshop, Marquette University | 2015 |
| Notebaert Professional Development Fund | 2015 |
| Graduate Student Union Conference Grant | 2015 |
| Indiana Water Environment Association (IWEA) Besozzi Scholarship | 2014 |
| University of Notre Dame Professional Development Fellowship | 2014 |

PROPOSALS AND GRANTS EXPERIENCE

| | |
|---|------|
| Contributed writing and revising NSF-CBET proposal (\$400,000) | 2019 |
| Contributed writing and revising EREF proposal (\$300,000) | 2018 |
| Contributed writing and revising NSF-Mechanobiology proposal (\$500,000) | 2018 |
| Reilly Center Mini-Grant (\$3,500) | 2016 |
| Bayer Pre-doctoral Research Fellowship (\$10,500) | 2015 |
| Center for Environmental Science and Technology (CEST) Graduate Student Fellowship (\$10,250) | 2014 |

PEER-REVIEWED JOURNAL PUBLICATIONS

- 24* **Sabba, F.**, McNamara, P., Redmond, E., Ruff, C., Downing, L. (2022) Lab-scale data and microbial community structure suggest shortcut nitrogen removal as the predominant nitrogen removal mechanism in post aerobic digestion (PAD), **Manuscript submitted to Water Environment Research*
- 23* Read-Daily, B., Ben Maamar, S., **Sabba, F.**, Green, S., Nerenberg, R. (2020) Kinetics and microbial ecology of nitrous oxide (N₂O) reduction by denitrifying bacteria, **Manuscript submitted to Chemosphere*
- 22 McNamara, P., **Sabba, F.**, Redmond, E., Dunlap, P., Worley-Morse, T., Marks, C., Downing, L., (2022) Post aerobic digestion (PAD) is a solids sidestream nutrient removal process that utilizes native carbon: performance and key operational parameters from two full-scale PAD reactors, *Environmental Science: Advances*
- 21 Ceconet, D., **Sabba, F.**, He, J., Capodaglio, A. (2022) A mathematical model of biocathodic denitrification: removal efficiency and energy consumption, *Environmental Science: Water Research & Technology*
- 20 Cerruti, M., Guo, B., Delatolla, R., de Jonge, N., de Vos van Steenwijk, A. H., Kadota, P., Lawson, C. E., Mao, T., Oosterkamp, M. J., **Sabba, F.**, Stokholm-Bjerregaard, M., Watson, I., Frigon, D., Weissbrodt, D. G. (2021) Plant-wide systems microbiology for the wastewater industry, *Manuscript accepted in Environmental Science: Water Research & Technology* <https://doi.org/10.1039/D1EW00231G>
- 19 Liou, H.-C., **Sabba, F.**, Wang, Z., Wells, G., Balogun, O. (2021) Layered Viscoelastic Properties of Granular Biofilms, **Manuscript accepted in Water Research*
- 18 Roots, P., Rosenthal, A., Wang, Y., **Sabba, F.**, Jia, Z., Yang, F., Zhang, H., Kozak, J., Wells, G. (2020) Pushing the limits of solids retention time for enhanced biological phosphorus removal: Process characteristics and Accumulibacter population structure, *Water Science & Technology*, 82 (8): 1614–1627
- 17 Won, Y., Stein, G., Sadman, K., **Sabba, F.**, Shull, K., Gray, A.K. (2020) Polyelectrolyte complex sacrificial membrane functionalized with chitosan derivatives for enhanced fouling control, *Langmuir*, 36 (43): 12784–12794
- 16 Ceconet, D., **Sabba, F.**, Devecseri, M., Callegari, A., Capodaglio, A.G. (2020) *In situ* groundwater treatment with BES: a critical review and future perspectives, *Environment International*, 137:105550
- 15 Gao, H., Zhao, H., Zhou, L., **Sabba, F.**, Wells, G.F. (2020) Differential kinetics of nitrogen oxides reduction leads to elevated N₂O production by a nitrite fed granular denitrifying EBPR bioreactor, *Environmental Science: Water Research & Technology*, 6 (4), 1028-1043
- 14 Roots, P., **Sabba, F.**, Rosenthal, F. A., Wang, Y., Yang, F., Kozak, A. J., Zhang, H., Wells, G. (2020) Integrated shortcut nitrogen and biological phosphorus removal from mainstream wastewater: process operation and modeling, *Environmental Science: Water Research & Technology*, 6:566-580
- 13 Liou, H.-C., **Sabba, F.**, Packman, A., Rosenthal, A., Wells, G., Balogun, O. (2019) Towards mechanical characterization of granular biofilms by optical coherence elastography measurements of circumferential elastic waves, *Soft Matter*, 15(28): 5562-5573
- 12 Wang, Y., **Sabba, F.**, Bott, C., Nerenberg, R. (2019) Using kinetics and modeling to predict denitrification fluxes in elemental sulfur (S⁰) based biofilms, *Biotechnology and Bioengineering*, 116(10):2698-2709
- 11 Roots, P.; Wang, Y., Rosenthal, A., Griffin, J., **Sabba, F.**, Petrovich, M., Yang, F., Kozak, J., Zhang, H., George Wells (2019) Comammox Nitrospira are the dominant ammonia oxidizers in a mainstream low dissolved oxygen nitrification reactor, *Water Research*, 157(15):396-405

- 10 Liou, H.-C., **Sabba, F.**, Packman, A., Wells, G., Balogun, O. (2019). Nondestructive characterization of soft materials and biofilms by measurement of guided elastic wave propagation using optical coherence elastography. **Soft Matter**, 15: 575-586
- 09 Yoon, H., Joon Song, M., Kim, D. D., **Sabba, F.**, Yoon, S. (2019) A serial biofiltration system for effective removal of low-concentration nitrous oxide in oxic gas streams: mathematical modelling of reactor performance and experimental validation, **Environmental Science & Technology**, 19;53(4):2063-2074
- 08 **Sabba, F.**, Terada, A. Wells, G., Nerenberg, R. (2018) Nitrous oxide emissions from biofilm processes for wastewater treatment, **Applied Microbiology and Biotechnology**, 102(22):9815–9829
- 07 Łagód, G., Guz, Ł., **Sabba, F.**, Sobczuk, H. (2018) Detection of wastewater treatment process disturbances in bioreactors using the e-nose technology, **Ecological Chemistry and Engineering S.**, 25(3):405-418
- 06 **Sabba, F.**, Picioreanu, C., Nerenberg, R. (2017) Mechanisms of nitrous oxide (N₂O) formation and reduction in denitrifying biofilms, **Biotechnology and Bioengineering**, 114(12):2753-2761
- 05 **Sabba, F.**, DeVries, A., Druschel, G., Bott C., Nerenberg R. (2016) Potential use of sulfite as a supplemental electron donor for water and wastewater denitrification. **Reviews in Environmental Science and Bio/Technology**, 15(4):563-572
- 04 Read-Daily, B.L., **Sabba, F.**, Pavissich, J.P., Nerenberg, R. (2016) Kinetics of nitrous oxide (N₂O) reduction by *Paracoccus pantotrophus*. **Applied Microbiology and Biotechnology Express**, 6(1):85
- 03 **Sabba, F.**, Picioreanu, C., Boltz, J.P., Nerenberg, R. (2016) Predicting nitrous oxide (N₂O) emissions from nitrifying and denitrifying biofilms: a modeling study, **Water Science & Technology**, 75(3):530-538
- 02 Szaja, A., Łagód, G., Jaromin-Gleń, K., **Sabba, F.** (2016) Bioaugmentation of a sequencing batch reactor with archaea for the treatment of reject water. **Journal of Water Chemistry and Technology**, 38(4):238-243
- 01 **Sabba, F.**, Picioreanu, C., Perez, J., Nerenberg, R. (2015) Hydroxylamine diffusion can enhance N₂O emissions in nitrifying biofilms: a modeling study. **Environmental Science & Technology**, 49(3):1486–1494

TEACHING AND CERTIFICATES

| | | |
|----------------------|--|-----------|
| Guest Lecturer | Course: <i>Biological Wastewater Treatment</i> Auburn University, AL Level: Graduate ; Class size: 10 Duty: Delivered one guest lectures | 2022 |
| STAR Certificate | Searle Teaching-As-Research (STAR), Northwestern University, IL | 2019 |
| Teaching Certificate | Searle Center for Advancing Learning & Teaching, Teaching Certificate Program, Northwestern University, IL | 2019 |
| Guest Lecturer | Course: <i>Environmental Engineering Applications 2: Water</i> Northwestern University, IL Level: Undergraduate ; Class size: 6 Duty: Delivered two guest lectures | 2018-2019 |
| Guest Lecturer | Course: <i>Industrial Biochemistry and Environmental Biochemistry Methods</i> University of Bari, Italy Level: Graduate ; Class size: 10 Duty: Delivered two guest lectures | 2017-2019 |
| Guest Lecturer | Course: <i>Environmental Chemistry and Biochemistry</i> University of Bari, Italy Level: Graduate ; Class size: 8 Duty: Delivered two guest lectures | 2016 |
| Teaching Assistant | Course: <i>Wastewater design</i> University of Notre Dame, IN Level: Undergraduate/Graduate ; Class size: 10 Duty: Held office hours, graded homework and proctored exams | 2013 |

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|--------------------|---|------|
| Lab Instructor | Course: <i>Wastewater treatment and design lab</i> University of Notre Dame, IN Level: Undergraduate ; Class size: 12 Duty: Delivered pre-laboratory lectures and guided experiments | 2012 |
| Teaching Assistant | Course: <i>Introduction to environmental engineering</i> University of Notre Dame, IN Level: Undergraduate ; Class size: 45 Duty: Held office hours, graded homework and proctored exams | 2011 |
| Teaching Assistant | Course: <i>Wastewater design</i> University of Notre Dame, IN Level: Undergraduate/Graduate ; Class size: 8 Duty: Held office hours, graded homework and proctored exams | 2011 |
| Teaching Assistant | Course: <i>Methods of civil engineering</i> University of Notre Dame, IN Level: Undergraduate ; Class size: 56 Duty: Held office hours, graded homework and proctored exams | 2010 |

MENTORING EXPERIENCE

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|-----------------|--|------|
| Research Mentor | Northwestern University (co-advised with Dr. George Wells) Master's degree graduate student Mentee: Mr. Zhen Jia (Graduate student) Project: <i>Integrated shortcut nitrogen and biological P removal</i> | 2019 |
| Research Mentor | University of Notre Dame (co-advised with Dr. Robert Nerenberg) Research Experience Undergraduate Program (R.E.U.) Mentee: Mr. Carlos Comiotto (Undergraduate student) Project: <i>Sulfite as alternative electron donor for wastewater treatment</i> | 2016 |
| Research Mentor | University of Notre Dame (co-advised with Dr. Robert Nerenberg) Research Experience Undergraduate Program (R.E.U.) Mentee: Ms. Mara Gonzalez (Undergraduate student) Project: <i>Effect of dissolved oxygen on nitrous oxide (N₂O) formation in biofilm systems for wastewater treatment</i> | 2014 |

CONFERENCE PROCEEDINGS, BOOK CHAPTER, OTHERS

- 13 Spérandio, M., Lang, L., **Sabba, F.**, Nerenberg, R., Vanrolleghem, P., Domingo-Félez, C., Smets, B. F., Duan, H., Ni, B.-J., Yuan, Z. (2022) Modelling N₂ O production and emissions, Quantification and Modelling of Fugitive Greenhouse Gas Emissions from Urban Water Systems, DOI: [10.2166/9781789060461_167](https://doi.org/10.2166/9781789060461_167)
- 12 Majerek, D., Łagód, G., Szeląg, B., **Sabba, F.** (2021) Use of Hotelling test to evaluate the impacts of treated wastewater discharge on river water quality, MATEC Web of Conferences
- 11 Nerenberg, R., Wang, Y., **Sabba, F.**, Bott, C. (2019) Using kinetics and modeling to predict denitrification fluxes in elemental sulfur-based biofilms, Proceedings of the Water Environment Federation, WEFTEC 2019, Chicago, IL (USA)
- 10 Campolongo, C., Klaus, S., Rosenthal, A., **Sabba, F.**, Baidme, M., Wells, G., Wett, B., De Clippeleir, H., Chandran, K., Bott, C. (2019) Comparison of external carbon sources for a polishing partial denitrification/anammox MBBR. Proceedings of the Water Environment Federation, WEFTEC 2019, Chicago, IL (USA), vol. 8, pp. 56-63
- 09 Liou, H.-C., **Sabba, F.**, Wells, G., Balogun, O. (2019) Mechanical characterization of biofilms by optical coherence elastography (OCE) measurements of elastic waves, IEEE IUS International Ultrasonics Symposium, Glasgow, Scotland

- 08 Łagód, G., Piotrowicz, A., Gleń, P., Drewnowski, J., **Sabba, F.** (2019) Modelling of sequencing batch reactor operating at various aeration modes, MATEC Web of Conferences 252, 05013-05018
- 07 **Sabba, F.**, Picioreanu, C., Nerenberg, R. (2018) Modeling nitrous oxide (N₂O) emissions from denitrifying filters (2018), 6th IWA/WEF Water Resource Recovery Modelling seminar (WRRmod2018), 10-14th March, Lac Beauport, Québec, Canada
- 06 **Sabba, F.**, Calhoun, J. (2017) Bench-scale comparison of a new mobile biofilm process and traditional IFAS technology, Abstracts of Papers of the American Chemical Society, 254th ACS National Meeting, Washington, DC (USA)
- 05 **Sabba, F.**, Calhoun, J. (2017) Treating refinery waste with a novel mobile biofilm process, Abstracts of Papers of the American Chemical Society, 254th ACS National Meeting, Washington, DC (USA)
- 04 **Sabba, F.**, Calhoun, J., Johnson, B.R., Daigger, G.T., Kovács, R., Takács, I., Boltz J. (2017) Applications of mobile carrier biofilm modelling for wastewater treatment processes, **Frontiers International Conference on Wastewater Treatment and Modelling**, pp 508-512 Lecture Notes in Civil Engineering, Vol 4. Springer
- 03 **Sabba F.**, Picioreanu C., Perez J., Nerenberg R. (2015) Modeling mechanisms of formation of nitrous oxide (N₂O) in nitrifying and denitrifying biofilms. Proceedings of the Water Environment Federation, WEFTEC 2015, September 26 – 30, Chicago, IL (USA) 2015 vol. (6), pp. 4898-4904
- 02 Pavissich, J.P., Read-Daily, B.L., Sandberg, K., **Sabba F.**, Nerenberg R. (2012) Nitrous oxide (N₂O) reduction by denitrifying bacteria: relating kinetics and gene expression. Proceedings of the Water Environment Federation, WEFTEC 2012, New Orleans, LA (USA)
- 01 Wang Y., Pavissich J.P., **Sabba F.**, Bott C., Nerenberg R. (2011) Elemental sulfur (S⁰) as a supplemental electron donor for wastewater denitrification. Proceedings of the Water Environment Federation, WEFTEC 2011, vol. (15), pp. 1590-1597

INVITED TALKS

- 15 **Sabba, F.** (2021) “Nondestructive mechanical characterization of biofilms via Optical Coherence Elastography (OCE)”, USA National Committee - IWA, April 7th, United States **virtual presentation*
- 14 **Sabba, F.** (2021) “The role of biofilms in sustainable waste management”, University of North Carolina Wilmington, February 22nd, **virtual presentation*
- 13 **Sabba, F.** (2020) “The role of microbial biofilms in sustainable waste management”, Georgia Tech, January 23rd, Atlanta, GA
- 12 **Sabba, F.** (2019) “Nitrous oxide (N₂O) emissions from biofilm processes and sustainable water management” Argonne National Laboratory, July 22nd, Lemont, IL
- 11 **Sabba, F.** (2019) “Unveiling mechanisms of nitrous oxide (N₂O) emissions from biofilm systems”, Northeastern University, January 23rd, Boston, MA
- 10 **Sabba, F.** (2018) “Nitrous oxide (N₂O) emissions from biofilm processes and sustainable water management”, June 18th, SUNY ESF, Syracuse, NY
- 09 **Sabba, F.** (2017) “Understanding mechanisms of nitrous oxide (N₂O) emissions in biofilm systems”, Northwestern University, July 31st, Chicago, IL
- 08 **Sabba, F.** (2017) “Predicting nitrous oxide (N₂O) emissions and denitrification fluxes in biofilm Systems”, University of Washington, July 13th, Seattle, WA
- 07 **Sabba, F.** (2017) “Biofilm carriers for wastewater treatment processes and mechanisms of nitrous oxide (N₂O) formation in biofilm systems”, University of Maryland, June 27th, College Park, MD
- 06 **Sabba, F.** (2017) “Investigating mechanisms of nitrous oxide (N₂O) formation in nitrifying and denitrifying biofilm systems”, Virginia Tech, February 24th, Blacksburg, VA
- 05 **Sabba, F.**, Nerenberg, R. (2016) “Mechanisms of nitrous oxide (N₂O) formation in biofilm systems”, October 5th, National Research Council, Rome, Italy

- 04 **Sabba, F.**, Nerenberg, R. (2016) “Biofilms and mechanisms of nitrous oxide (N₂O) formation”, October 4th, National Research Council, Bari, Italy
- 03 **Sabba, F.**, Picioreanu C., Nerenberg R. (2016) “Assessing nitrous oxide (N₂O) emissions from biofilm systems”, January 5th, Lublin University of Technology, Lublin, Poland
- 02 **Sabba, F.**, Picioreanu C., Nerenberg R. (2016) “Predicting nitrous oxide (N₂O) emissions from biofilm systems and comparison with suspended growth systems”, Polish Academy of Sciences (PAS), January 4th, Poland
- 01 **Sabba, F.**, Picioreanu C., Nerenberg R. (2015) “Nitrous Oxide (N₂O) Emissions in suspended-growth and biofilm systems: a modeling study”, Marquette University, October 17th, Milwaukee, WI

CONFERENCE PRESENTATIONS (*presenting author)

- 33 Bolognesi, S., Ceconet, D., **Sabba, F.**, Capodaglio, A. (2021) Integrated experimental and modeling evaluation of removal efficiency and energy consumption for an autotrophic denitrifying biocathode – Oral presentation at EU-ISMET2021, September 13-15th, Girona (Spain)
- 32 Wang, Z., Liou, H-C, **Sabba, F.**, Wells, G., Balogun, O. (2020) Viscoelastic Characterization of Biofilms by Optical Coherence Elastography (OCE) – Oral presentation at IWA Biofilms 2020 Virtual Conference, December 7-9th, University of Notre Dame, IN, (USA)
- 31 **Sabba, F.**, Gao, H., Wells, G. (2020) Coupling Nitrogen Removal with Phosphorus Recovery and Energy Production via Microbial N₂O Generation from Granular Biofilms – Oral presentation at IWA Biofilms 2020 Virtual Conference, December 7-9th, University of Notre Dame, IN, (USA)
- 30 **Sabba, F.***, Wang, Y., Bott, C., Nerenberg, R. (2019) Using kinetics and modeling to predict denitrification fluxes in elemental sulfur (S⁰) based biofilms - Oral presentation at WEFTEC 2019, September 23-25th, Chicago, IL (USA)
- 29 Roots, P.*, **Sabba, F.**, Rosenthal, A., Wang, Y., Yuan, Q., Yang, F., Kozak, J., Zhang, H., Wells, G. (2019) Single-sludge shortcut N and biological P removal for sustainable mainstream wastewater treatment in temperate climates. WEF Nutrient Symposium, July 23-25th, Minneapolis, MN (USA)
- 28 Roots, P.*, Yang, F., **Sabba, F.**, Rosenthal, A., Kozak, J., Zhang, H., Wells, G. (2019) Elucidating factors for the success or failure of biological phosphorus removal: a comparison between two lab-scale and one pilot/full-scale EBPR processes. WEF Nutrient Symposium, July 23-25th, Minneapolis, MN (USA)
- 27 **Sabba, F.**, Roots, P., Rosenthal, A., Wang, Y., Yuan, Q., Yang, F., Kozak, J., Zhang, H., Wells, G. (2019) Integrated shortcut nitrogen and biological phosphorus removal for sustainable mainstream wastewater treatment – Oral presentation at AEESP 2019, May 14–16th, Phoenix, AZ (USA)
- 26 **Sabba, F.***, Wells, F. G. (2019) Assessing the effectiveness of the role of student moderator on confidence and learning in environmental engineering – Poster presentation, Learning and Teaching Spring Symposium, June 12th, Northwestern University, IL (USA)
- 25 Roots, P., Rosenthal, A., Wang, Y., Griffin, J., **Sabba, F.**, Yang, F., Kozak, J., Zhang, H., and Wells, G.* (2018) Comammox Nitrospira dominate ammonia oxidation in a mainstream low dissolved oxygen nitrification reactor – Oral presentation at IWA NRR Conference, November 18-21st, Brisbane (Australia)
- 24 **Sabba, F.***, Picioreanu, C., Nerenberg, R. (2018) Modeling nitrous oxide (N₂O) emissions from denitrifying filters – Oral presentation at ecoSTP2018 Conference, June 25-27th, London (Canada)
- 23 **Sabba, F.*** (2017) “Improving process control and nitrification of refinery wastewater with kenaf mobile bio-media” – Oral Presentation at WaterJAM 2017, September 11–14th, Hampton, VA (USA)
- 22 **Sabba, F.*** (2017) “Treating refinery waste with a novel biofilm process” – Oral Presentation at ACS 2017 – Biofilm Session, August 20–24th, Washington D.C., District of Columbia (USA)
- 21 **Sabba, F.***, Calhoun, J. (2017) “New mobile biofilm process and traditional integrated fixed film activated sludge (IFAS) technology” – Poster Presentation at AEESP 2017, June 20-22nd, Ann Arbor, MI (USA)
- 20 **Sabba, F.***, Calhoun, J. Boltz, J. (2017) “Applications of mobile carrier biofilm modelling for wastewater treatment processes” – Oral Presentation at FICWTM2017, May 21-24th, Palermo, (Italy)

- 19 **Sabba, F.***, Calhoun, J. (2017) “Improved process control and increased nitrification efficiency of refinery wastewater with mobile bio-media (kenaf)” – Oral Presentation at Biofilm 2017, May 9 -12th, Dublin, (Ireland)
- 18 **Sabba, F.***, Calhoun, J. (2017) “NUVODA’s MOB process reduces biological inhibition, improves BOD, and nutrient removal at Homestead Dairy (Wirtz, VA)” – Poster Presentation at Food and Beverage Environmental Conference 2017, March 26-30th, Charleston, SC (USA)
- 17 **Sabba, F.***, Picioreanu, C., Boltz, J., Nerenberg, R. (2016) “N₂O emissions from biofilm systems during simultaneous nitrification and denitrification (SND): a modelling study” – Oral Presentation at WEFTEC 2016, September 24-28th, New Orleans, LA (USA)
- 16 **Sabba, F.***, Picioreanu, C., Nerenberg, R. (2016) “Mechanisms of nitrous oxide (N₂O) formation in heterotrophic and nitrifying biofilms: a modeling study” – Oral Presentation at MEWE 2016, September 4-7th, Copenhagen, (Denmark)
- 15 **Sabba, F.***, Picioreanu, C. Boltz, J.P., Nerenberg, R. (2016) “Nitrous oxide (N₂O) emissions from biofilm systems during simultaneous nitrification and denitrification (SND): a modelling study” – Oral Presentation at ecoSTP 2016, June 27-30th, Cambridge, (United Kingdom)
- 14 **Sabba, F.***, Nerenberg, R. (2016) “Mechanisms of N₂O emissions in biofilm systems” – Oral Presentation at 8th GSU Research Symposium, April 19th, Notre Dame, IN (USA)
- 13 **Sabba, F.***, Picioreanu, C., Boltz, J., Nerenberg, R. (2016) “Predicting N₂O emissions from biofilm systems” – Oral Presentation at 5th IWA/WEF Wastewater Treatment Modelling Seminar, April 2-6th, Annecy (France)
- 12 **Sabba, F.***, Nerenberg, R. (2015) “Minimizing nitrous oxide (N₂O) emissions from wastewater treatment” – Oral Presentation at IWEA 2015, November 20th, Indianapolis, IN (USA)
- 11 **Sabba, F.***, Nerenberg, R. (2015) “GHG emissions in BNR processes: a trade-off between oxygen and N₂O emissions” – Oral Presentation at ND Energy Seminar Series 2015, November 18th, Notre Dame, IN (USA)
- 10 **Sabba, F.***, Picioreanu, C., Perez, J., Nerenberg, R. (2015) “Hydroxylamine diffusion can enhance N₂O emissions in nitrifying biofilms: a modeling study” – Poster Presentation at Emerging Contaminants Workshop 2015, October 21st, Milwaukee, WI (USA)
- 09 **Sabba, F.***, Picioreanu, C., Perez, J., Nerenberg, R. (2015) “Predicting nitrous oxide (N₂O) emissions from biofilm systems” – Oral presentation at WEFTEC 2015, September 26-30th, Chicago, IL (USA)
- 08 **Sabba, F.***, Picioreanu, C., Perez, J., Nerenberg, R. (2015) “Predicting nitrous oxide (N₂O) emissions from biofilm systems” – Poster Presentation at AEESP Conference 2015, Yale University, June 13-17th, New Haven, CT (USA)
- 07 **Sabba, F.***, Picioreanu, C., Perez, J., Nerenberg, R. (2015) “Nitrous oxide (N₂O) emissions in suspended-growth and biofilm systems: a modeling study” – Oral Presentation at IWA-NNR 2015 Conference, May 18-21st, Gdansk (Poland)
- 06 **Sabba, F.***, Nerenberg, R. (2014) “Sulfite (SO₃²⁻/HSO₃⁻) as electron donor for denitrification” - Poster Presentation at Borchardt Conference 2014, February 25-26th, Ann Arbor, MI (USA)
- 05 **Sabba, F.***, Picioreanu, C., Perez, J., Nerenberg, R. (2014) “Hydroxylamine diffusion can enhance N₂O emissions in nitrifying biofilms: a modeling Study” – Poster Presentation at Emerging Contaminants Workshop 2014, October 21-22nd, Milwaukee, WI (USA)
- 04 Nerenberg R.*, **Sabba, F.**, Picioreanu C., Read-Daily B. (2014) “Predicting nitrous oxide (N₂O) emissions from suspended-growth and biofilm systems.” IWA Specialist Conference - Global Challenges: Sustainable Wastewater Treatment and Resource Recovery, 26-30th October 2014, Kathmandu (Nepal)
- 03 **Sabba, F.***, Nerenberg R. (2013) “Sulfite (SO₃²⁻/HSO₃⁻) as electron donor for denitrification” - Poster Presentation at AEESP Conference 2013, July 14-16th, Golden, CO (USA)
- 02 Pavissich, J.P., Read-Daily, B.L., Sandberg, K., **Sabba F.**, Nerenberg R.* (2012) “Nitrous oxide (N₂O) reduction by denitrifying bacteria: relating kinetics and gene expression.” Proceedings of the Water Environment Federation, WEFTEC 2012, September 29th - October 3rd New Orleans, LA (USA)

- 01 Wang Y.*, Pavissich J.P., **Sabba F.**, Bott C., Nerenberg R. (2011) “Elemental sulfur (S⁰) as a supplemental electron donor for wastewater denitrification.” Proceedings of the Water Environment Federation, WEFTEC 2011, pp. 1590-1597(8), October 15-19th, Los Angeles, CA (USA)

PROFESSIONAL SERVICE AND AFFILIATIONS

| | | |
|--------------------------|---|-------------|
| ASN 08/A2 | Italian National Scientific Habilitation 08/A2 | 2021 |
| Review Editor | <i>Frontiers in Microbiology, Frontiers in Bioengineering and Biotechnology and Frontiers in Environmental Science</i> | 2020 |
| Editor | <i>Water Science & Technology (WS&T)</i> | 2019 |
| Committee Member | Center for the Integration of Research, Teaching, and Learning (CIRTL) Northwestern Steering Committee | 2019 |
| Ad-hoc Proposal Reviewer | Proposal reviewer for Pennsylvania Sea Grant (PSG), by invitation from Pennsylvania Sea Grant College Program | 2019 |
| Ad-hoc Proposal Reviewer | Proposal reviewer for PRELUDIUM, by invitation from National Science Center, Poland | 2015 |
| AEESP-SSC Vice-Chair | Secretary of Student Service Committee (SSC) in the Association of Environmental Engineers and Science Professors (AEESP) | Since 2019 |
| AEESP-SSC Secretary | Secretary of Student Service Committee (SSC) in the Association of Environmental Engineers and Science Professors (AEESP) | 2013-2018 |
| Member | International Water Association (IWA) | Since 2016 |
| Member | American Water Resources Association (AWRA) | 2015-2017 |
| Member | Air and Waste Management Association (A&WMA) | 2015-2017 |
| Member | Water Environmental Federation (WEF) – Serving as a member of the Student Young Professional Committee (SYPC) | 2014-2018 |
| Member | American Water Works Association (AWWA) | 2013-2018 |
| Member | American Academy of Environmental Engineers and Scientists (AAEES) | 2013-2018 |
| Member | Indiana Water Environment Association (IWEA) | 2013 - 2016 |
| Journal Reviewer | <i>Environmental Science & Technology, Water Research, Journal of Hazardous Materials, Environmental Research, Science of the Total Environment, Water Science & Technology, International Journal of Environmental Science and Technology, ACS Sustainable Chemistry & Engineering, Water, Environmental Science: Water Research & Technology, Nature Scientific Reports</i> | Since 2011 |

CONFERENCE ORGANIZATION, WORKSHOPS AND PANELS

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|----------------------|---|------|
| Scientific Committee | EcoSTP2021 Conference, Milano (Italy) | 2021 |
| Organizing Committee | IWA Biofilms 2020 Virtual Conference, University of Notre Dame, IN, USA | 2020 |
| Scientific Committee | Water Resource Recovery Modeling Conference (WRR2020), Arosa, Switzerland | 2020 |
| Scientific Committee | International Conference of Computational Methods in Engineering Science (CMES), Poland | 2019 |

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| Conference co-moderator | Co-moderator at WEFTEC Conference, September 23 rd -25 th , Chicago, IL | 2019 |
| Workshop | Invited speaker for oral presentation at WEFTEC Workshop in “Greenhouse Gases Emissions Accounting”, September 21 st , Chicago, IL | 2019 |
| Workshop | Biofilms Hands-On Workshop, University of Notre Dame, IN, USA | 2019 |
| Workshop | Invited speaker for oral presentation at ecoSTP2018 Workshop in “Advances in System Microbiology to Inform Modeling and Operation of Nutrient Recovery and Removal Processes” | 2018 |
| Workshop | NSF – Biofilm Mechanical Properties Workshop, University of Notre Dame, IN, USA | 2018 |
| Scientific committee | EcoSTP2018 Conference, London (Ontario), Canada | 2017 |
| Event organizer | Member of the AEESP Student Service Committee (SSC) that organizes workshops at AEESP Conferences for students pursuing positions in academia | Since 2013 |
| Event organizer | “Greenhouse Gases Awareness Day”, April 14 th , Notre Dame, IN | 2016 |
| K-12 Judge | K-12 judge at the 2014 and 2015 Northern Indiana Regional Science and Engineering Fair | 2014 - 2016 |
| International Ambassador | International Ambassador (I.A.) for University of Notre Dame | 2013 - 2016 |
| Workshop | Emerging Contaminants Workshop, October 21-22 th , Milwaukee, WI | 2014 |
| Workshop | MOTHUR microbial ecology analysis program Workshop, August 26-28 th , Detroit, MI | 2013 |
| Conference co-moderator | Co-moderator at Microbial Ecology and Water Engineering Conference (MEWE), July 7-10 th , Ann Arbor, MI | 2013 |