PROFESSOR KRIST V. GERNAEY

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DATE/PLACE OF BIRTH August, 20 1970, Gent, Belgium

EDUCATION

2019 - 2020	DTU Leadership Lab, Management course
2015	Pasteur program, Innovation Fund Denmark (Harvard Business School)
2014 - 2015	DTU Leadership Programme, Management course
2005 - 2007	UDTU, Education in University Teaching at Technical University of Denmark
June 1997	PhD in Applied Biological Sciences, Ghent University, Belgium
October 1993 - June 1997	PhD student, Ghent University
1988 - 1993	MSc. in Chemistry and Agricultural Industries, Faculty for Agricultural and Applied Biological Sciences, Ghent University, Belgium

SCIENTIFIC CAREER AND WORK EXPERIENCE

February 2017 – December 2021	CEO of Bioscavenge ApS
Since June 2014	Head of the Process and Systems Engineering Center (PROSYS), Dept. of Chemical and Biochemical Engineering, Technical University of Denmark
Since January 2013	Professor in industrial fermentation technology, Dept. of Chemical and Biochemical Engineering, Technical University of Denmark
August 2005 - December 2013	Associate professor, Dept. of Chemical and Biochemical Engineering, Technical University of Denmark
April 2004 - December 2005	Postdoctoral fellow, Department of Industrial Electrical Engineering and Automation (IEA), Lund University, Sweden
April 2001 - March 2004	Assistant professor, Dept. of Chemical Engineering, DTU
February 2000 - March 2001	Postdoctoral fellow, École Polytechnique de Montréal (Quebec, Canada)
January 1998 - December 1999	Postdoctoral fellow, Dept. of Applied Mathematics, Biometrics and Process Control (BIOMATH, Ghent University, Belgium)
October 1997 - December 1997	Employed by Applitek NV, Deinze, Belgium

MAIN RESEARCH AREAS

Development and optimisation of fermentation, resource recovery and biological wastewater treatment processes. Application and development of computer-aided tools, models and model validation. Digitalization, Industry 4.0, Process Analytical Technology (PAT), development and test of measurement devices for fermentation processes.

THIRD PARTY FUNDED PROJECTS WITHIN THE LAST 5 YEARS

- 2019, DANIDA (Denmarks Development Cooperation), main applicant, Evaluation of Resource recovery Alternatives in South African water utilities (ERASE). 2019-2022.
- 2019, Novo Nordisk Foundation, co-applicant, Accelerated innovation in manufacturing biologics (AimBio). Grant number NNF19SA0035474, 2020-2024.
- 2019, Innovation Fund Denmark, Industrial PhD project Nerea Uri Carreño, Vandcenter Syd (main supervisor)
- 2020, Novo Nordisk Foundation, main applicant, BIOPRO World Talent Campus II PhD course. Grant number NNF20SA0062504, 2020-2023.
- 2020, Innovation Fund Denmark, Grand Solutions program, Green tanning technology to foster environmentally friendly transition and growth (GreenTan) (Bioscavenge), 2021-2025.
- 2020, Unibio, Postdoc project Leander Petersen (direct industrial funding), 2020-2022.
- 2020, Innovation Fund Denmark, Industrial PhD project Isabella Jul-Jørgensen, Novo Nordisk (main supervisor)
- 2021, EU (IMI2), co-applicant, Innovations to accelerate vaccine development and manufacture (Inno4vac). Grant agreement 101007799, 2021-2027.
- 2021, MUDP, co-applicant, N_2O abatement by catalytic treatment (NACAT), 2021-2024.
- 2022, GUDP, co-applicant, Upcycling food waste to a high quality protein for feed and high grade bioethanol (G2BWBEP), 2022-2024.
- 2022, Novo Nordisk Foundation, main applicant, Pioneer Innovator Grant, SmartSens. Grant number NNF22OC0081061, 2023.
- 2023, Innovation Fund Denmark, Industrial PhD project Francisca Braga, Skanderborg Forsyning (main supervisor)

10 IMPORTANT PUBLICATIONS IN THE LAST 5 YEARS

1. Nadal-Rey G., Kavanagh J.M., Cassels B., Cornelissen S., Fletcher D.F., Gernaey K.V., McClure D.D. (2023) Modelling of industrial-scale bioreactors using the particle lifeline approach. **Biochemical Engineering Journal**, 198, 108989. (doi: 10.1016/j.bej.2023.108989)
2. Monje V., Owsianiak M., Junicke H., Kjellberg K., Gernaey K.V., Flores-Alsina X. (2022) Economic, technical, and environmental evaluation of retrofitting scenarios in a full-scale industrial wastewater treatment system. **Water Research**, 223, 118997. (doi: 10.1016/j.watres.2022.118997)
3. Hartmann F.S.F., Udugama I.A., Seibold G.M., Sugiyama H., Gernaey K.V. (2022) Digital models in biotechnology: Towards multi-scale integration and implementation. **Biotechnology Advances**, 60, 108015. (doi: 10.1016/j.biotechadv.2022.108015)
4. Monje V., Junicke H., Batstone D.J., Kjellberg K., Gernaey K.V., Flores-Alsina X. (2022) Prediction of mass and volumetric flows in a full-scale industrial waste treatment plant. **Chemical Engineering Journal**, 445, 136774. (doi: 10.1016/j.cej.2022.136774)

5. Martínez-Monge I., Martínez C., Decker M., Udugama I.A., Marín de Mas I., Gernaey K.V., Nielsen L.K. (2022) Soft-sensors application for automated feeding control in high-throughput mammalian cell cultures. **Biotechnology and Bioengineering**, 119, 1077-1090. (doi: 10.1002/bit.28032)
6. Millán Acosta A., Cosovanu D., Cabaneros Lopez P., Thomsen S.T., Gernaey K.V., Canela-Garayoa R. (2021) Co-cultivation of a novel Fusarium striatum strain and a xylose consuming *Saccharomyces cerevisiae* yields an efficient process for simultaneous detoxification and fermentation of lignocellulosic hydrolysates. **Chemical Engineering Journal**, 426, 131575 (doi: 10.1016/j.cej.2021.131575)
7. Leonov P., Flores-Alsina X., Gernaey K.V., Sternberg C. (2021) Microbial biofilms in biorefinery – Towards a sustainable production of low-value bulk chemicals and fuels. **Biotechnology Advances**, 50, 107766. (doi: 10.1016/j.biotechadv.2021.107766)
8. Nadal-Rey G., McClure D.D., Kavanagh J.M., Cassells B., Cornelissen S., Fletcher D.F., Gernaey K.V. (2021) Development of dynamic compartment models for industrial aerobic fed-batch fermentation processes. **Chemical Engineering Journal,** 420, 130402. (doi: 10.1016/j.cej.2021.130402)
9. Cabaneros Lopez P., Udugama I.A., Thomsen S.T., Roslander C., Junicke H., Iglesias M.M., Gernaey K.V. (2021) Transforming data to information: A parallel hybrid model for real-time state estimation in lignocellulosic ethanol fermentation. **Biotechnology and Bioengineering**, 118, 579-591. (doi: 10.1002/bit.27586)
10. Nadal-Rey G., McClure D.D., Kavanagh J.M., Cornelissen S., Fletcher D.F., Gernaey K.V. (2021) Understanding gradients in industrial bioreactors. **Biotechnology Advances**, 46, 107660. (doi: 10.1016/j.biotechadv.2020.107660)

HONORS AND AWARDS

- 2019, The University of Auckland Awards for Distinguished Visitors, University of Auckland, New Zealand
- 2000, Postdoc scholarship (personal grant), Quebec Ministry of Education, 'Bourses d'excellence 2000' program
- 2000, NATO postdoctoral scholarship
- 1998-1999, Postdoctoral scholarship (personal grant), IWT, Brussels, Belgium
- 1993-1997, PhD. scholarschip (personal grant) from IWT (Flemish institute for the Promotion of
- Scientific-Technological Research in Industry), Brussels, Belgium0

MEMBERSHIPS OF SCIENTIFIC COMMITTEES, REVIEW, POSITIONS OF TRUST

2024 - …	Co-chair, ESBES 2024 Symposium, Copenhagen (DK)
2022 - …	Section Editor in Chief, Processes, Section on Biological Processes and Systems
2022 - …	Associate Editor, Frontiers in Bioengineering and Biotechnology
2022 - …	Member SBBIO4B expert panel FWO (Belgium)
2021 - …	Board member, Bioscavenge ApS
2021 - …	Member advisory board, Roskilde Amtsgymnasium
2020 - …	Chairman of the board, Helix Lab Kalundborg (Novo Nordisk Foundation)
2020 - …	Chairman European Society of Biochemical Engineering Sciences (ESBES) Section on Bioreactor Performance
2020 - 2022	Member executive advisory board, Freesense ApS

2020 - 2022	Chairman of the Research and Innovation Committee at DTU Chemical Engineering
2019	Co-chair, WATERMATEX 2019 conference, 210 participants, Copenhagen (DK)
2018	Co-chair, Population Balance Modelling Conference (PBM 2018), 70 participants, Ghent (BE)
2018 - …	Member Editorial Board Processes (MDPI)
2018	Member selection committee for 21 new professorships at Ghent University (BE)
2016 - 2021	Member Bio4 expert panel FWO (Belgium)
2015	Member Organization Committee PSE2015 / ESCAPE 25 Conference, Copenhagen (DK)
2015 - 2022	Chairman Advisory Board, EPSRC Centre for Doctoral Training in Complex Particulate Products and Processes (CP3-CDT), University of Leeds (UK)
2015	Associate Editor Bioprocess and Biosystems Engineering
2014 - 2015	Cofounder and chairman, European Federation of Chemical Engineering (EFCE) Working Party on Quality by Design (QbD)
2013 - 2017	Member Editorial Advisory Board Bioprocess and Biosystems Engineering
2012 - 2017	Co-organizer, ESBES M3C Course on Measurement, Monitoring, Modelling and Control in Biochemical Engineering / 20 participants per edition, 80 participants in total / Germany (2012), Denmark (2013), Belgium (2015), Austria (2017)
2012 - 2014	Chairman DTU PhD committee Chemistry, Biotechnology and Chemical Engineering
2008	Member expert panel, call ERA-NET Industrial Biotechnology (2008)
2005 - 2014	Member International Water Association (IWA) Task Group on Benchmarking of Control Strategies for Wastewater Treatment Plants
2005 - 2012	Member editorial board Water Science & Technology, Associate Editor
2005 - …	Member evaluation committee on 32 external PhD projects (Australia, Austria, Belgium, Canada, Finland, France, Germany, India, Japan, Romania, South Africa, Spain, Sweden, UK)