Curriculum vitae

Diogo Rodrigues

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Personal information

Full name	Diogo Filipe Mateus Rodrigues
Citation name	Rodrigues, Diogo
Current affiliation	LSRE-LCM - Laboratory of Separation and Reaction Engineering – Laboratory of Catalysis and Materials, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal
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Date of birth	January 29, 1988

Researcher identifiers:

Google Scholar	https://scholar.google.com/citations?user=Deo1k24AAAAJ
ORCID	https://orcid.org/0000-0001-7823-2993
ResearchGate	https://www.researchgate.net/profile/Diogo_Rodrigues18
WoS ResearcherID	https://www.webofscience.com/wos/author/rid/E-2500-2018
Scopus	https://www.scopus.com/authid/detail.uri?authorId=56533272200
Ciência Vitae	https://www.cienciavitae.pt/en/C714-9884-92C3

Education

Ecole Polytechnique Fédérale de Lausanne (Switzerland) — From December 2013 until July 2018
PhD in Chemistry and Chemical Engineering
Distinction for a remarkable PhD thesis (top 8%)
Thesis advisor: Prof. Dominique Bonvin
Thesis: *Concept of Variants and Invariants for Reaction Systems, with Application to Estimation, Control and Optimization*
Link: https://doi.org/10.5075/epfl-thesis-8655

Instituto Superior Técnico/Universidade de Lisboa (Portugal) — From September 2008 until September 2012
BSc and MSc in Biological Engineering
MSc final average grade of 19 (20-point grading scale)
BSc final average grade of 18 (20-point grading scale)
Thesis: *Production of Recombinant Human Aldehyde Oxidase in E. coli and Optimization of its Application for Preparative Synthesis of Oxidized Drug Metabolites*
Link: https://fenix.tecnico.ulisboa.pt/cursos/mebiol/dissertacao/2353642411641

Instituto Superior Técnico/Universidade de Lisboa (Portugal) — From September 2005 until August 2008
BSc in Information Systems and Computer Engineering
BSc final average grade of 19 (20-point grading scale)

Professional experience

Faculdade de Engenharia, Universidade do Porto (Porto) Assistant Professor Activities: research about cyclic adsorption and reaction processes and dynamic optimization with guaranteed global optimality and robustness with respect to model mismatch, teaching activities, and supervision of undergraduate students	From May 2023 until now
Instituto Superior Técnico (Lisboa) Junior Researcher / Invited Assistant Professor Activities: research about dynamic optimization with guaranteed global optimality and robustness with respect to model mismatch, teaching activities, and supervision of undergraduate students	From September 2022 until May 2023
Instituto Superior Técnico (Lisboa) Postdoctoral Researcher Activities: research about thermochemical energy storage in concentrating solar power plants based on calcium looping	From April 2021 until August 2022
University of California, Berkeley (Berkeley) Postdoctoral Scholar Activities: research about control, dynamic optimization, and experimental design under uncertainty, supported by a fellowship from the Swiss National Science Foundation	From September 2019 until March 2021
KTH Royal Institute of Technology (Stockholm) Postdoctoral Researcher Activities: research about modeling, experiment design, control, and optimization of perfusion bioreactors for production of antibodies	From August 2018 until July 2019
EPF Lausanne (Lausanne) Doctoral Assistant Activities: research about variants and invariants for reaction systems and applications to estimation, control, and optimization, and teaching activities and supervision of undergraduate students	From December 2013 until July 2018
Novartis Pharma AG (Basel) Scientific Associate (temporary) Activities: screening of derivatives of research compounds formed by enzyme preparations, and production and purification of these derivatives on a preparative scale	From April 2013 until November 2013
Novartis Pharma AG (Basel) Trainee in Continuous Manufacturing Activities: experiments to develop and optimize the production of antibodies through animal cell culture in perfusion bioreactors	From October 2012 until March 2013
Novartis Pharma AG (Basel) Master Student Activities: experiments to optimize the activity of a recombinant human enzyme	From March 2012 until August 2012

Approved research projects

1. Marie Skłodowska-Curie Actions Postdoctoral Fellowship 101063999 (156 778 EUR) approved by the European Commission in March 2022 for 24 months at Instituto Superior Técnico (approved after the evaluation phase, but terminated before the grant agreement).
   Link: https://web.tecnico.ulisboa.pt/ist156932/101063999_DyOGOptiMoM.pdf
2. Individual Call to Scientific Employment Stimulus - 4th edition contract 2021.01762.CEECIND as junior researcher granted by Fundação para a Ciência e a Tecnologia in February 2022 for up to 6 years at Centro de Recursos Naturais e Ambiente (successfully completed).
   Link: https://former.fct.pt/apoios/contratacaodoutorados/empregocientifico/docs/CEECIND4_Resultados_Apos_AP.xlsx
3. Early Postdoc.Mobility postdoctoral fellowship P2ELP2_184521 (107 750 CHF) granted by the Swiss National Science Foundation in November 2018 for 18 months, with a one-month extension (4 500 CHF), at the University of California, Berkeley (successfully completed).
   Link: https://p3.snf.ch/project-184521

Participation in research projects

1. Team member (from May 2025 until now) for the project WAVES, grant NORTE2030-FEDER-02716600, funded by Comissão de Coordenação e Desenvolvimento Regional do Norte, Portugal (ongoing).
2. Team member (from May 2025 until now) for the project ECO-MOBES, grant NORTE2030-FEDER-02699500, funded by Comissão de Coordenação e Desenvolvimento Regional do Norte, Portugal (ongoing).
3. Team member (from April 2025 until now) for the project NUTRILIX, grant NORTE2030-FEDER-01189600, funded by Agência Nacional de Inovação S.A., Portugal (ongoing).
4. Team member (from October 2022 until April 2023) for the project GrAPHy, grant 1801P.01297, funded by the European Union (ongoing).
5. Two secondments for one month (in November 2022 and April 2023) at Texas A&M University for the Marie Skłodowska-Curie Actions Research and Innovation Staff Exchange project IProPBio, grant 778168, funded by the European Commission (successfully completed).
6. Contract as a postdoctoral researcher at 100% for 17 months (from April 2021 until August 2022) for the project SoCaLTES, grant PTDC/EAM-PEC/32342/2017, funded by Fundação para a Ciência e a Tecnologia, Portugal (successfully completed).
7. Contract as a postdoctoral researcher at 100% for 12 months (from August 2018 until July 2019) for the Competence Centre AdBIOPRO, contract 2016-05181, funded by VINNOVA, Sweden (successfully completed).

Publications in peer-reviewed scientific journals

23 publications, 16 of which as first author and 10 of which as corresponding author:

1. G.C. Amaral, A.G. Rios, A.E. Rodrigues, A.M. Ribeiro, **D. Rodrigues**, I.B.R. Nogueira, and A.F.P. Ferreira. Parameter estimation of a size-exclusion simulated moving bed for protein purification via meta-heuristic methods with estimability analysis and uncertainty evaluation. *Chem. Eng. Sci.*, 325:123447, 2026.
   Link: https://doi.org/10.1016/j.ces.2026.123447

2. D. Sousa, **D. Rodrigues**, P.M. Castro, and H.A. Matos. Equation-oriented modeling and optimization of a biorefinery based on avocado waste. *Processes*, 12(1):91, 2024.
Link: https://doi.org/10.3390/pr12010091

3. **D. Rodrigues**, C.I.C. Pinheiro, R.M. Filipe, L.F. Mendes, and H.A. Matos. Optimization of an improved calcium-looping process for thermochemical energy storage in concentrating solar power plants. *J. Energy Storage*, 72:108199, 2023.
Link: https://doi.org/10.1016/j.est.2023.108199

4. **D. Rodrigues**, M. Alvarez Rivero, C.I.C. Pinheiro, J.P. Cardoso, and L.F. Mendes. Computational model of a Calcium-looping fluidized bed calcination reactor with imposed concentrated solar irradiance. *Sol. Energy*, 258:72–87, 2023.
Link: https://doi.org/10.1016/j.solener.2023.04.018

5. **D. Rodrigues**, A. G. Marchetti, and D. Bonvin. On improving the efficiency of modifier adaptation via directional information. *Comput. Chem. Eng.*, 164:107867, 2022.
Link: https://doi.org/10.1016/j.compchemeng.2022.107867

6. **D. Rodrigues**, G. Makrygiorgos, and A. Mesbah. Tractable global solutions to chance-constrained Bayesian optimal experiment design for arbitrary prior and noise distributions. *J. Process Control*, 116:1–18, 2022.
Link: https://doi.org/10.1016/j.jprocont.2022.05.008

7. **D. Rodrigues**, K. J. Chan, and A. Mesbah. Data-driven adaptive optimal control under model uncertainty: An application to cold atmospheric plasmas. *IEEE Trans. Control Syst. Technol.*, 31(1):55–69, 2023.
Link: https://doi.org/10.1109/TCST.2022.3172597

8. **D. Rodrigues** and A. Mesbah. Efficient global solutions to single-input optimal control problems via approximation by sum-of-squares polynomials. *IEEE Trans. Autom. Contr.*, 67(9):4674–4686, 2022.
Link: https://doi.org/10.1109/tac.2022.3165481

9. M. Alvarez Rivero, **D. Rodrigues**, C. I. C. Pinheiro, J. P. Cardoso, and L. F. Mendes. Solid–gas reactors driven by concentrated solar energy with potential application to calcium looping: A comparative review. *Renew. Sustain. Energy Rev.*, 158:112048, 2022.
Link: https://doi.org/10.1016/j.rser.2021.112048

10. **D. Rodrigues** and A. Mesbah. Multivariable control based on incomplete models via feedback linearization and continuous-time derivative estimation. *Int. J. Robust Nonlinear Control*, 31(18):9193–9230, 2021.
Link: https://doi.org/10.1002/rnc.5762

11. **D. Rodrigues**, M. R. Abdalmoaty, E. W. Jacobsen, V. Chotteau, and H. Hjalmarsson. An integrated approach for modeling and identification of perfusion bioreactors via basis flux modes. *Comput. Chem. Eng.*, 149:107238, 2021.
Link: https://doi.org/10.1016/j.compchemeng.2021.107238

12. N. Ha Hoang, **D. Rodrigues**, and D. Bonvin. On the computation of extents of reaction with a limited number of measurements. *Comput. Chem. Eng.*, 146:107014, 2021.
Link: https://doi.org/10.1016/j.compchemeng.2020.107014

13. N. Ha Hoang, **D. Rodrigues**, and D. Bonvin. Revisiting the concept of extents for chemical reaction systems using an enthalpy balance. *Comput. Chem. Eng.*, 136:106652, 2020.
Link: https://doi.org/10.1016/j.compchemeng.2019.106652

14. **D. Rodrigues** and D. Bonvin. On reducing the number of decision variables for dynamic optimization. *Optim. Control Appl. Meth.*, 41(1):292–311, 2020.
    Link: https://doi.org/10.1002/oca.2543
15. **D. Rodrigues**, J. Billeter, and D. Bonvin. Maximum-likelihood estimation of kinetic parameters via the extent-based incremental approach. *Comput. Chem. Eng.*, 122:152–171, 2019.
    Link: https://doi.org/10.1016/j.compchemeng.2018.05.024
16. **D. Rodrigues** and D. Bonvin. Dynamic optimization of reaction systems via exact parsimonious input parameterization. *Ind. Eng. Chem. Res.*, 58(26):11199–11212, 2019.
    Link: https://doi.org/10.1021/acs.iecr.8b05512
17. J. Billeter, **D. Rodrigues**, S. Srinivasan, M. Amrhein, and D. Bonvin. On decoupling rate processes in chemical reaction systems – methods and applications. *Comput. Chem. Eng.*, 114:296–305, 2018.
    Link: https://doi.org/10.1016/j.compchemeng.2017.09.021
18. **D. Rodrigues**, M. Amrhein, J. Billeter, and D. Bonvin. Fast estimation of plant steady state for imperfectly known dynamic systems, with application to real-time optimization. *Ind. Eng. Chem. Res.*, 57(10):3699–3716, 2018.
    Link: https://doi.org/10.1021/acs.iecr.7b04631
19. **D. Rodrigues**, J. Billeter, and D. Bonvin. Semi-analytical solutions for tubular chemical reactors. *Chem. Eng. Sci.*, 172:239–249, 2017.
    Link: https://doi.org/10.1016/j.ces.2017.06.008
20. **D. Rodrigues**, J. Billeter, and D. Bonvin. Generalization of the concept of extents to distributed reaction systems. *Chem. Eng. Sci.*, 171:558–575, 2017.
    Link: https://doi.org/10.1016/j.ces.2017.05.051
21. D. Bonvin, C. Georgakis, C. C. Pantelides, M. Barolo, M. A. Grover, **D. Rodrigues**, R. Schneider, and D. Dochain. Linking models and experiments. *Ind. Eng. Chem. Res.*, 55(25):6891–6903, 2016.
    Link: https://doi.org/10.1021/acs.iecr.5b04801
22. **D. Rodrigues**, S. Srinivasan, J. Billeter, and D. Bonvin. Variant and invariant states for chemical reaction systems. *Comput. Chem. Eng.*, 73:23–33, 2015.
    Link: https://doi.org/10.1016/j.compchemeng.2014.10.009
23. **D. Rodrigues**, M. Kittelmann, F. Eggimann, T. Bachler, S. Abad, A. Camattari, A. Glieder, M. Winkler, and S. Lütz. Production of recombinant human aldehyde oxidase in Escherichia coli and optimization of its application for the preparative synthesis of oxidized drug metabolites. *ChemCatChem*, 6(4):1028–1042, 2014.
    Link: https://doi.org/10.1002/cctc.201301094

Publications in peer-reviewed conference proceedings

14 publications, 11 of which as first author:

1. B. C. Silva, A. M. Ribeiro, A. F. P. Ferreira, **D. Rodrigues**, and I. B. R. Nogueira. Optimal control of PSA units based on extremum seeking. *Syst. Control Trans.*, 4:1257–1262, 2025.
   Link: https://doi.org/10.69997/sct.195447
2. **D. Rodrigues**. Toward efficient global solutions to optimal control problems via second-order polynomial approximations. *IFAC-PapersOnLine*, 59(6):175–180, 2025.

Link: https://doi.org/10.1016/j.ifacol.2025.07.141

3. **D. Rodrigues** and A. Mesbah. Adaptive global solutions to single-input optimal control problems via Gaussian processes. *IFAC-PapersOnLine*, 56(2):4828–4833, 2023.
   Link: https://doi.org/10.1016/j.ifacol.2023.10.1250
4. C. Bontron, **D. Rodrigues**, C. G. Braz, and H. A. Matos. Life cycle assessment of two liquid organic hydrogen carriers. *Comput. Aided Chem. Eng.*, 52:3381–3386, 2023.
   Link: https://doi.org/10.1016/B978-0-443-15274-0.50539-4
5. M. A. Rivero, **D. Rodrigues**, C. I. C. Pinheiro, J. P. Cardoso, and L. F. Mendes. Modelling a calcium-looping fluidised bed calcination reactor with solar-driven heat flux. *Chem. Eng. Trans.*, 88:871–876, 2021.
   Link: https://doi.org/10.3303/CET2188145
6. **D. Rodrigues**, G. Makrygiorgos, and A. Mesbah. Tractable global solutions to Bayesian optimal experiment design. In *59th IEEE CDC*, pages 1614–1619, Jeju Island, Republic of Korea, 2020.
   Link: https://doi.org/10.1109/CDC42340.2020.9304226
7. **D. Rodrigues**. An integrated approach for experimental design, control, and optimization of perfusion bioreactors. *IFAC-PapersOnLine*, 53(2):16878–16883, 2020.
   Link: https://doi.org/10.1016/j.ifacol.2020.12.1218
8. **D. Rodrigues**, M. R. Abdalmoaty, and H. Hjalmarsson. Toward tractable global solutions to Bayesian point estimation problems via sparse sum-of-squares relaxations. In *ACC 2020*, pages 1501–1506, Denver, CO, USA, 2020.
   Link: https://doi.org/10.23919/ACC45564.2020.9147484
9. **D. Rodrigues**, M. R. Abdalmoaty, and H. Hjalmarsson. Toward tractable global solutions to maximum-likelihood estimation problems via sparse sum-of-squares relaxations. In *58th IEEE CDC*, pages 3184–3189, Nice, France, 2019.
   Link: https://doi.org/10.1109/CDC40024.2019.9029890
10. **D. Rodrigues** and H. Hjalmarsson. Stability and performance analysis of control based on incomplete models. *IFAC-PapersOnLine*, 52(1):874–879, 2019.
    Link: https://doi.org/10.1016/j.ifacol.2019.06.172
11. **D. Rodrigues** and D. Bonvin. Parsimonious input parameterization for dynamic optimization problems. *Comput. Aided Chem. Eng.*, 44:769–774, 2018.
    Link: https://doi.org/10.1016/B978-0-444-64241-7.50123-3
12. **D. Rodrigues**, J. Billeter, and D. Bonvin. Global identification of kinetic parameters via the extent-based incremental approach. *Comput. Aided Chem. Eng.*, 40:2119–2124, 2017.
    Link: https://doi.org/10.1016/B978-0-444-63965-3.50355-X
13. **D. Rodrigues**, J. Billeter, and D. Bonvin. Incremental model identification of distributed two-phase reaction systems. *IFAC-PapersOnLine*, 48(8):266–271, 2015.
    Link: https://doi.org/10.1016/j.ifacol.2015.08.192
14. **D. Rodrigues**, J. Billeter, and D. Bonvin. Control of reaction systems via rate estimation and feedback linearization. *Comput. Aided Chem. Eng.*, 37:137–142, 2015.
    Link: https://doi.org/10.1016/B978-0-444-63578-5.50018-9

Chapters in collective volumes

One chapter as first author:

1. **D. Rodrigues** and D. Bonvin. Concept of variants, invariants, and extents for reaction systems. In J. Reedijk, editor, *Reference Module in Chemistry, Molecular Sciences and Chemical Engineering*. Elsevier, Amsterdam, 2019.
   Link: https://doi.org/10.1016/B978-0-12-409547-2.14437-3

Contributions to internationally established conferences

Peer-reviewed conference abstracts

14 abstracts, 9 of which as first author:

1. B. C. Silva, A. M. Ribeiro, A. F. P. Ferreira, **D. Rodrigues**, and I. B. R. Nogueira. Extremum seeking control for pressure swing adsorption units. In *15 FOA*, Porto, Portugal, 2025.
   Link: https://sigarra.up.pt/feup/pt/conteudos_service.conteudos_cont?pct_id=1075582&pv_cod=22aRbaDWu9Ka
2. **D. Rodrigues** and P. Castro. Global optimization of nonconvex quadratically constrained programs via sparse sum-of-squares relaxations. In *AIChE Annual Meeting*, San Diego, CA, USA, 2024.
   Link: https://aiche.confex.com/aiche/2024/meetingapp.cgi/Paper/686442
3. B. C. Silva, A. M. Ribeiro, A. F. P. Ferreira, **D. Rodrigues**, and I. B. R. Nogueira. Extremum seeking control for pressure swing adsorption units. In *RIA 43*, Porto, Portugal, 2024.
   Link: https://sigarra.up.pt/feup/pt/conteudos_service.conteudos_cont?pct_id=1075562&pv_cod=22p6Fau9WjaA
4. **D. Rodrigues**, C. Pinheiro, and L. F. Mendes. Process optimization of calcium-looping for concentrating solar power plants. In *AIChE Annual Meeting*, Phoenix, AZ, USA, 2022.
   Link: https://aiche.confex.com/aiche/2022/meetingapp.cgi/Paper/643434
5. **D. Rodrigues**, L. F. Mendes, and C. I. C. Pinheiro. Process optimization of calcium-looping for thermochemical energy storage. In *PRES'22*, Split, Croatia, 2022.
   Link: https://registration.sdewes.org/c_includes/PRES22/export_abstracts_lst.php
6. **D. Rodrigues**, K. Chan, and A. Mesbah. Optimal control of dose delivery in atmospheric pressure plasma jets. In *AIChE Annual Meeting*, Boston, MA, USA, 2021.
   Link: https://aiche.confex.com/aiche/2021/meetingapp.cgi/Paper/621385
7. **D. Rodrigues**, G. Makrygiorgos, and A. Mesbah. Tractable global solutions to chance-constrained Bayesian optimal experiment design for arbitrary prior and noise distributions. In *AIChE Annual Meeting*, Boston, MA, USA, 2021.
   Link: https://aiche.confex.com/aiche/2021/meetingapp.cgi/Paper/621383
8. **D. Rodrigues** and A. Mesbah. Efficient global solutions to optimal control problems via polynomial optimization and sum-of-squares relaxations. In *AIChE Annual Meeting*, San Francisco, CA, USA, 2020.
   Link: https://plan.core-apps.com/aiche2020/event/74d8cf75e00c20cd8f09bd3f0e58d192
9. **D. Rodrigues**, G. Makrygiorgos, and A. Mesbah. Tractable global solutions to Bayesian optimal experiment design. In *AIChE Annual Meeting*, San Francisco, CA, USA, 2020.
   Link: https://plan.core-apps.com/aiche2020/event/7d1b67152194cb166004d468df548e1d
10. D. Bonvin, S. Srinivasan, **D. Rodrigues**, J. Billeter, and M. Amrhein. Concept and applications of extents in chemical reaction systems. In *FOCAPO-CPC*, Tucson, AZ, USA, 2017.
    Link: https://infoscience.epfl.ch/record/221374/files/Article.pdf

11. **D. Rodrigues**, J. Billeter, and D. Bonvin. Optimal control laws for batch and semi-batch reactors using the concept of extents. In *AIChE Annual Meeting*, Minneapolis, MN, USA, 2017.
    Link: https://aiche.confex.com/aiche/2017/meetingapp.cgi/Paper/494521
12. A. Oulevey, **D. Rodrigues**, J. Billeter, and D. Bonvin. Generalized incremental model identification for chemical reaction systems. In *SCS Fall Meeting 2017*, Bern, Switzerland, 2017.
    Link: https://fm17.chemistrycongresses.ch/abstracts/search-abstracts/abstractform/458?layout=preview
13. **D. Rodrigues**, M. Amrhein, J. Billeter, and D. Bonvin. Fast estimation of plant steady state, with application to static RTO. In *AIChE Annual Meeting*, San Francisco, CA, USA, 2016.
    Link: https://aiche.confex.com/aiche/2016/webprogram/Paper455266.html
14. V. Chhabra, **D. Rodrigues**, S. Srinivasan, J. Billeter, and D. Bonvin. Extent-based model identification of surface catalytic reaction systems. In *SCS Fall Meeting 2014*, Zurich, Switzerland, 2014.
    Link: https://scg.ch/component/phocadownload/category/174-scs-fall-meeting-2014?download=1077

Oral presentations

1. **D. Rodrigues**. Toward efficient global solutions to optimal control problems via second-order polynomial approximations. In *IFAC DYCOPS-14*, pages 175–180, Bratislava, Slovakia, 2025.
    Link: https://doi.org/10.1016/j.ifacol.2025.07.141
2. **D. Rodrigues** and P. Castro. Global optimization of nonconvex quadratically constrained programs via sparse sum-of-squares relaxations. In *AIChE Annual Meeting*, San Diego, CA, USA, 2024.
    Link: https://aiche.confex.com/aiche/2024/meetingapp.cgi/Paper/686442
3. C. Bontron, **D. Rodrigues**, C. G. Braz, and H. A. Matos. Life cycle assessment of two liquid organic hydrogen carriers. In *ESCAPE-33*, pages 3381–3386, Athens, Greece, 2023.
    Link: https://doi.org/10.1016/B978-0-443-15274-0.50539-4
4. **D. Rodrigues**, C. Pinheiro, and L. F. Mendes. Process optimization of calcium-looping for concentrating solar power plants. In *AIChE Annual Meeting*, Phoenix, AZ, USA, 2022.
    Link: https://aiche.confex.com/aiche/2022/meetingapp.cgi/Paper/643434
5. **D. Rodrigues**, K. Chan, and A. Mesbah. Optimal control of dose delivery in atmospheric pressure plasma jets. In *AIChE Annual Meeting*, Boston, MA, USA, 2021.
    Link: https://aiche.confex.com/aiche/2021/meetingapp.cgi/Paper/621385
6. **D. Rodrigues**, G. Makrygiorgos, and A. Mesbah. Tractable global solutions to chance-constrained Bayesian optimal experiment design for arbitrary prior and noise distributions. In *AIChE Annual Meeting*, Boston, MA, USA, 2021.
    Link: https://aiche.confex.com/aiche/2021/meetingapp.cgi/Paper/621383
7. **D. Rodrigues**, G. Makrygiorgos, and A. Mesbah. Tractable global solutions to Bayesian optimal experiment design. In *59th IEEE CDC*, pages 1614–1619, Jeju Island, Republic of Korea, 2020.
    Link: https://doi.org/10.1109/CDC42340.2020.9304226
8. **D. Rodrigues** and A. Mesbah. Efficient global solutions to optimal control problems via polynomial optimization and sum-of-squares relaxations. In *AIChE Annual Meeting*, San Francisco, CA, USA, 2020.
    Link: https://plan.core-apps.com/aiche2020/event/74d8cf75e00c20cd8f09bd3f0e58d192

9. **D. Rodrigues**, G. Makrygiorgos, and A. Mesbah. Tractable global solutions to Bayesian optimal experiment design. In *AIChE Annual Meeting*, San Francisco, CA, USA, 2020.
   Link: https://plan.core-apps.com/aiche2020/event/7d1b67152194cb166004d468df548e1d

10. **D. Rodrigues**. An integrated approach for experimental design, control, and optimization of perfusion bioreactors. In *21st IFAC World Congress*, pages 16878–16883, Berlin, Germany, 2020.
    Link: https://doi.org/10.1016/j.ifacol.2020.12.1218

11. **D. Rodrigues**, M. R. Abdalmoaty, and H. Hjalmarsson. Toward tractable global solutions to Bayesian point estimation problems via sparse sum-of-squares relaxations. In *ACC 2020*, pages 1501–1506, Denver, CO, USA, 2020.
    Link: https://doi.org/10.23919/ACC45564.2020.9147484

12. **D. Rodrigues**, M. R. Abdalmoaty, and H. Hjalmarsson. Toward tractable global solutions to maximum-likelihood estimation problems via sparse sum-of-squares relaxations. In *58th IEEE CDC*, pages 3184–3189, Nice, France, 2019.
    Link: https://doi.org/10.1109/CDC40024.2019.9029890

13. **D. Rodrigues** and H. Hjalmarsson. Stability and performance analysis of control based on incomplete models. In *IFAC DYCOPS-12*, pages 874–879, Florianópolis, Brazil, 2019.
    Link: https://doi.org/10.1016/j.ifacol.2019.06.172

14. **D. Rodrigues** and D. Bonvin. Parsimonious input parameterization for dynamic optimization problems. In *PSE 2018*, pages 769–774, San Diego, CA, USA, 2018.
    Link: https://doi.org/10.1016/B978-0-444-64241-7.50123-3

15. **D. Rodrigues**, J. Billeter, and D. Bonvin. Optimal control laws for batch and semi-batch reactors using the concept of extents. In *AIChE Annual Meeting*, Minneapolis, MN, USA, 2017.
    Link: https://aiche.confex.com/aiche/2017/meetingapp.cgi/Paper/494521

16. **D. Rodrigues**, J. Billeter, and D. Bonvin. Global identification of kinetic parameters via the extent-based incremental approach. In *ESCAPE-27*, pages 2119–2124, Barcelona, Spain, 2017.
    Link: https://doi.org/10.1016/B978-0-444-63965-3.50355-X

17. **D. Rodrigues**, M. Amrhein, J. Billeter, and D. Bonvin. Fast estimation of plant steady state, with application to static RTO. In *AIChE Annual Meeting*, San Francisco, CA, USA, 2016.
    Link: https://aiche.confex.com/aiche/2016/webprogram/Paper455266.html

18. **D. Rodrigues**, J. Billeter, and D. Bonvin. Control of reaction systems via rate estimation and feedback linearization. In *PSE 2015/ESCAPE-25*, pages 137–142, Copenhagen, Denmark, 2015.
    Link: https://doi.org/10.1016/B978-0-444-63578-5.50018-9

Poster presentations

1. A. Oulevey, **D. Rodrigues**, J. Billeter, and D. Bonvin. Generalized incremental model identification for chemical reaction systems. In *SCS Fall Meeting 2017*, Bern, Switzerland, 2017.
   Link: https://fm17.chemistrycongresses.ch/abstracts/search-abstracts/abstractform/458?layout=preview

2. V. Chhabra, **D. Rodrigues**, S. Srinivasan, J. Billeter, and D. Bonvin. Extent-based model identification of surface catalytic reaction systems. In *SCS Fall Meeting 2014*, Zurich, Switzerland, 2014.
   Link: https://scg.ch/component/phocadownload/category/174-scs-fall-meeting-2014?download=1077

Invited seminars in universities

1. **D. Rodrigues**. Efficient methods for global solutions to optimal control problems. Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal, 2023.
   Link: https://dbe.tecnico.ulisboa.pt/eventos/conferencias/dbe-lunch-seminar-3
2. **D. Rodrigues**. Efficient methods for global solutions to optimal control problems. Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal, 2022.
   Link: https://tecnico.ulisboa.pt/en/events/deqtalk-diogo-rodrigues
3. **D. Rodrigues**, M. R. Abdalmoaty, and H. Hjalmarsson. Toward tractable global solutions to estimation problems via sparse sum-of-squares relaxations. KTH Royal Institute of Technology, Stockholm, Sweden, 2019.
   Link: https://www.kth.se/is/dcs/calendar/seminars/1.943511
4. **D. Rodrigues** and H. Hjalmarsson. Incremental model identification of reaction systems. University of Cambridge, Cambridge, UK, 2018.
   Link: https://mlg.eng.cam.ac.uk/ernsi2018/ERNSI2018Program.pdf
5. **D. Rodrigues**, S. Srinivasan, N. Bhatt, J. Billeter, M. Amrhein, and D. Bonvin. Incremental model identification of reaction systems. KTH Royal Institute of Technology, Stockholm, Sweden, 2018.
   Link: https://www.kth.se/ac/calendar/seminars/1.796542
6. **D. Rodrigues**, S. Srinivasan, N. Bhatt, J. Billeter, M. Amrhein, and D. Bonvin. Incremental model identification of reaction systems. Universidade de Santiago de Compostela, Santiago de Compostela, Spain, 2017.
   Link: https://www.itmati.com/en/node/27136

Prizes and awards

1. Nominated for the EPFL Doctorate Award in 2018
2. Distinguished by EPFL for a remarkable PhD thesis (evaluated among the top 8%) in Chemistry and Chemical Engineering in 2018
3. Awarded with "Best Students of UTL/Santander Totta Award" for the best final year students of the former Technical University of Lisbon (UTL) in 2012
4. Awarded with merit scholarship by UTL for outstanding academic performance (best student in the degree) in 2007, 2008, 2010 and 2011

Participation in examination committees

• Jury member of the PhD thesis in Chemical and Biological Engineering by Beatriz Teixeira de Magalhães at Faculdade de Engenharia, Universidade do Porto, in 2024
• Jury member of the PhD thesis in Chemical Engineering by Ana Sofia Amorim at Instituto Superior Técnico, Universidade de Lisboa, in 2024

Individual scientific reviewing activities

• 1 manuscript for conference proceedings in 2026: 1 for *23rd IFAC World Congress*
• 6 manuscripts for conference proceedings in 2025: 6 for *IFAC DYCOPS-14*
• 7 manuscripts for scientific journals in 2024: 1 for *Chem. Eng. Sci.*, 1 for *J. Energy Storage*, 2 for

Optim. Control Appl. Meth., 2 for *IEEE Control Syst. Lett.*, 1 for *Ind. Eng. Chem. Eng.*
• 2 manuscripts for conference proceedings in 2024: 1 for *IFAC SYSID 2024*, 1 for *IFAC ADCHEM-12*
• 3 manuscripts for scientific journals in 2023: 1 for *IEEE Trans. Autom. Control*, 1 for *IEEE Control Syst. Lett.*, 1 for *Optim. Control Appl. Meth.*
• 6 manuscripts for conference proceedings in 2023: 3 for *62nd IEEE CDC*, 2 for *ESCAPE-33*, 1 for *22nd IFAC World Congress*
• 11 manuscripts for scientific journals in 2022: 1 for *Sensors*, 1 for *Fractal Fract.*, 1 for *Entropy*, 2 for *Axioms*, 2 for *Mathematics*, 2 for *IEEE Control Syst. Lett.*, 2 for *Optim. Control Appl. Meth.*
• 3 manuscripts for conference proceedings in 2022: 2 for *61st IEEE CDC*, 1 for *IFAC DYCOPS-13*
• 5 manuscripts for scientific journals in 2021: 1 for *Comput. Chem. Eng.*, 1 for *Bioprocess Biosyst. Eng.*, 1 for *Control Eng. Pract.*, 1 for *IEEE Control Syst. Lett.*, 1 for *Optim. Control Appl. Meth.*
• 1 manuscript for conference proceedings in 2021: 1 for *IFAC SYSID 2021*
• 8 manuscripts for conference proceedings in 2020: 1 for *ACC 2021*, 4 for *59th IEEE CDC*, 3 for *21st IFAC World Congress*
• 1 manuscript for scientific journals in 2019: 1 for *Optim. Control Appl. Meth.*
• 2 manuscripts for conference proceedings in 2019: 1 for *ACC 2020*, 1 for *58th IEEE CDC*
• 1 manuscript for scientific journals in 2018: 1 for *AIChE J.*
• 1 manuscript for conference proceedings in 2018: 1 for *IFAC DYCOPS-12*
• 1 manuscript for conference proceedings in 2017: 1 for *20th IFAC World Congress*
• 1 manuscript for conference proceedings in 2016: 1 for *ESCAPE-26*
• 1 manuscript for conference proceedings in 2015: 1 for *IFAC DYCOPS-11*
• 1 manuscript for conference proceedings in 2014: 1 for *IFAC ADCHEM-9*

Active memberships in scientific societies

• Member number 9901790216 of the American Institute of Chemical Engineers since 2016

Organization of conferences

• Member of the Organizing Committee of the 15th Fundamentals of Adsorption in 2025
• Member of the Organizing Committee of the 43rd Iberian Adsorption Meeting in 2024

Supervising and mentoring activities

2 PhD theses, 7 master theses, 1 advanced studies, 1 bachelor project, 2 internships, 1 initiation:

Guilherme da Costa Amaral (PhD thesis supervisor)	From July 2025 until now
Thesis: *Development of a real-time optimization system for enhancing enantiomers separation via simulated moving bed*	
Beatriz Cambão da Silva (PhD thesis co-supervisor)	From July 2024 until now
Thesis: *Adaptive real-time optimization of cyclic adsorption processes for autonomous scenario based reconfiguration*	
João Nunes (advanced studies supervisor)	From December 2024 until November 2025
Subject: *Otimização dinâmica de SMB usando modelos white-box*	

Bruno Silva (master thesis supervisor) Spring semester, 2024/2025
Thesis: *Market-aware optimal control of electrolyzer systems*
João Nunes (master thesis supervisor) Spring semester, 2023/2024
Thesis: *Dynamic optimization of chemical and electrochemical processes based on black-box and white-box models*
Joana Nunes (initiation supervisor) Fall semester, 2023/2024
Subject: *Code development for dynamic optimization in Python*
Pedro Morais (bachelor project co-supervisor) Spring semester, 2022/2023
Subject: *Computational code of a transient model to analyse a calcium-looping fluidised bed calcination reactor with concentrated solar-driven heat flux*
Maria Ana Gonçalo (master thesis supervisor) Fall semester, 2022/2023
Thesis: *Data-driven modeling para aplicações de hidrogénio verde na indústria cimenteira*
Camille Bontron (internship supervisor) Summer, 2022
Subject: *Comparison of two liquid organic hydrogen carriers via their life cycle assessment*
Claudio Totagiancaspro (master thesis co-supervisor) Spring semester, 2021/2022
Thesis: *Transient model of a calcium-looping fluidized bed calcination reactor driven by concentrated solar energy*
Adrien Oulevey (master thesis co-supervisor) Spring semester, 2016/2017
Thesis: *Novel model identification methods for chemical reaction systems*
Abeynaya Gnanasekaran (internship co-supervisor) Summer, 2015
Subject: *Control without kinetic models via rate estimation and feedback linearization*
Matteo Keller (master thesis co-supervisor) Spring semester, 2014/2015
Thesis: *Contrôle de la température et de la pression dans les machines à café professionnelles*
Vibhuti Chhabra (master thesis co-supervisor) Spring semester, 2013/2014
Thesis: *Modelling of surface catalytic reaction systems using the concept of extents*

Teaching activities

Process Dynamics and Control (lectures and laboratory classes)	2 Spring semesters from 2023/2024 until 2024/2025
Numerical Methods and Programming (lectures and laboratory classes)	2 Spring semesters from 2023/2024 until 2024/2025
Decision and Optimization Methods in Chemical Engineering (lectures and laboratory classes)	2 Fall semesters from 2023/2024 until 2025/2026
Engineering Project (practical classes and student supervision)	2 Fall semesters from 2023/2024 until 2025/2026
Calculus III (practical classes)	2 Fall semesters from 2023/2024 until 2025/2026
New Product Development (practical classes)	1 Spring semester 2022/2023
Integrated Project in Chemical Engineering (student supervision)	1 Spring semester 2022/2023
Chemical Engineering Project (student supervision)	1 Fall semester 2022/2023
Control Systems (hands-on laboratory sessions)	4 Fall semesters from 2014/2015 until 2017/2018
Process Control (problem sessions)	3 Spring semesters from 2014/2015 until 2016/2017

Dynamical Systems (problem sessions)	2 Spring semesters from 2015/2016 until 2016/2017

Institutional responsibilities

• Mobility Coordinator for studies in the field of Chemical Engineering at Faculdade de Engenharia, Universidade do Porto (from October 2023 until now)
• Treasurer and member of the Board of the local group of the Board of European Students of Technology in Lisbon (from June 2011 until May 2012)

Personal skills

Language skills

Portuguese	Mother tongue
English	CEFR level C2 - proficient user
	Certificate in Advanced English, Grade A - December 2010
French	CEFR level B2 - independent user
	Certificate from the EPFL Language Center - January 2016

Technical skills and competences

• Typesetting (LaTeX) and programming (C, MATLAB, Mathematica, Python, VBA) tools and languages
• Experience with Windows, Mac OS, Linux, Office, Adobe Reader, Adobe Illustrator, Aspen Plus, gPROMS, LabVIEW
• Operation of lab equipment (microscopes, filters, columns, reactors, spectrometers, etc)