

PAULINA QUINTANILLA

✉ p.quintanilla@imperial.ac.uk

💻 PWP

🌐 [/in/paulinaquintanilla](https://www.linkedin.com/in/paulinaquintanilla)

QUALIFICATIONS

PhD in Earth Science and Engineering

IMPERIAL COLLEGE LONDON

Nov 2022

London, United Kingdom

Thesis: *Dynamic physics-based flotation models for effective predictive control*

MSc and BEng in Chemical Engineering

UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA

Jan 2017

Valparaíso, Chile

Thesis: *Analysis of the effect of pressure and porosity on diffusion-controlled leaching*

RELEVANT EXPERIENCE

Postdoctoral Researcher in Process Systems Engineering

IMPERIAL COLLEGE LONDON

Dec 2022 - now

London, United Kingdom

Co-founder and Developer of Bubble Analyser

INDEPENDENT PROJECT

Jan 2021 – now

- Bubble Analyser is the first open-source software for bubble size measurements using image analysis. More information on our website: www.bubbleanalyser.com

Guest Lecturer in Mining Geology and Engineering

IMPERIAL COLLEGE LONDON

Dec 2022

London, United Kingdom

- Delivered theoretical and practical class in Mineral Processing and Flowsheet Design for the module "Mining Geology and Engineering".

Research Assistant in Froth Flotation

IMPERIAL COLLEGE LONDON

Nov 2022 - Dec 2022

London, United Kingdom

- Part of the Fine Future project, funded by the EU, which aims at creating new scientific knowledge to enable the development of groundbreaking technologies to exploit fine particle fractions by froth flotation.

Graduate Teaching Assistant (GTA)

IMPERIAL COLLEGE LONDON

Feb 2019 – Oct 2022

London, United Kingdom

- Courses: Data Science and Machine Learning with python, Mathematics for Geoscientists, Mining Geology and Engineering, Mineral Processing, Mining Water and Waste Management, Excel and Statistics workshop.
- Graduate Teaching Assistant coordinator.

Co-supervisor MSc student

IMPERIAL COLLEGE LONDON

Mar 2022 – Sept 2022

London, United Kingdom

- Supervision of an MSc in Applied Computational Science student. Project: "Bubble Analyser - Identification and characterisation of bubbles using Machine Learning".

Guest Lecturer in Process Control and Statistics

UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA

Mar 2018 – Aug 2018

Santiago, Chile

- Courses: "Process control seminar" and "Analysis and Design of Industrial Experiments" (applied statistics).

Co-supervisor Chemical Engineering students

UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA

Mar 2018 – Aug 2018

Santiago, Chile

- Assisted and supervised two undergraduate students in their final projects for BEng in Chemical Engineering.

Research Assistant in Process Systems Engineering

UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA

Aug 2017 – Aug 2018

Santiago, Chile

- Project: "Including stochastic information in Real-Time Optimisation for process supervision".
- Set up and instrumented the Laboratory of Optimisation in the Department of Chemical Engineering.

Undergraduate Teaching Assistant (UTA)

UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA

Mar 2011 – Jun 2016

Valparaíso, Chile

- Modules: Transport Phenomena, Reactor Design, Mass Transfer, Statistical Design and Analysis of Industrial Experiments, Heat Transfer, General Physics III (waves theory, fluid mechanics and thermodynamics), Mathematics III (multivariable calculus, ODE, Laplace transform, Fourier series).

RECENT AWARDS & RESEARCH GRANTS

IChemE Global Awards 2022 - Young Researcher finalist INSTITUTE OF CHEMICAL ENGINEERS	2022 <i>London, United Kingdom</i>
<u>MEI Young Person's Award 2021</u> MINERALS ENGINEERING INTERNATIONAL	2022 <i>London, United Kingdom</i>
1st place Best Poster Award SOCIETY OF CHEMICAL INDUSTRY	2022 <i>London, United Kingdom</i>
<u>SCI Messel Scholarship 2020</u> SOCIETY OF CHEMICAL INDUSTRY	2020 <i>London, United Kingdom</i>
<ul style="list-style-type: none">Awarded one of the three annual SCI scholarships of £5,000 over two years to support my studies.	
Mining Club Award INSTITUTE OF MATERIALS, MINERALS AND MINING	2020 <i>London, United Kingdom</i>
<ul style="list-style-type: none">Grant of £4,100 to perform experiments at Universidad Técnica Federico Santa María, Santiago, Chile.	
Imperial College Trust bursary IMPERIAL COLLEGE LONDON	2019 <i>London, United Kingdom</i>
<ul style="list-style-type: none">Grant of £350 to participate in the 18th IFAC MMM in Stellenbosch, South Africa.	
IOM³ Travel bursary INSTITUTE OF MATERIALS, MINERALS AND MINING	2019 <i>London, United Kingdom</i>
<ul style="list-style-type: none">Grant of £1,000 to participate in the 18th IFAC MMM in Stellenbosch, South Africa.	
PhD scholarship NATIONAL RESEARCH AND DEVELOPMENT AGENCY (ANID)	2018 <i>Santiago, Chile</i>
<ul style="list-style-type: none">Full scholarship for PhD research abroad (~ £160,000).	
Master's scholarshop UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA	2016 <i>Valparaíso, Chile</i>
<ul style="list-style-type: none">Full scholarship for MSc degree, including fees and living costs (~ £20,000).	
Award to the Best Chemical Engineering graduate NATIONAL ENGINEERING COLLEGE	2017 <i>Valparaíso, Chile</i>
Award to the Best Chemical Engineering graduate UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA	2017 <i>Valparaíso, Chile</i>
Honour list UNIVERSIDAD TÉCNICA FEDERICO SANTA MARÍA	2012 – 2016 <i>Valparaíso, Chile</i>
<ul style="list-style-type: none">Recognition of outstanding academic achievement for the whole BEng programme.	




RECENT OUTREACH & SCIENCE COMMUNICATION

- Speaker in [Inspiring Chemical Engineering – How to stand out](#), London (2023).
- Postdoc Committee as a Social Media and Newsletter rep, Department of Chemical Engineering, Imperial College London, from 2023
- [STEM for Britain finalist 2022](#) – Engineering category.
- Meeting coordinator in the London and South East Coast Group, Institution of Chemical Engineers (IChemE) from 2021.
- [Ambassador of SCI](#) from 2020
- SCI College of Scholars Day presentations in 2020, 2021 and 2022.
- Demonstrator in Exhibition Road Festival exhibit in 2019

RECENT ORAL PRESENTATIONS

- **Society of Chemical Industry - College of Scholars Day (invited)**, London, United Kingdom, November 2022. *Optimising mineral process systems.*
- **Towards Net Zero Seminars (invited)**, Department of Chemical Engineering, Imperial College London, London, United Kingdom, November 2022. *Optimising mineral process systems – The transition to green energy will need bubbles!*
- **Society of Chemical Industry - Annual General Meeting (invited)**, London, United Kingdom, July 2022. *Optimising mineral process systems – The transition to green energy will need bubbles!*
- **Imperial College ResearchFest! (invited)**, July 2022. *Optimising mineral process systems – The transition to green energy will need bubbles!*
- **Flotation 21'**, November 2021. *Development and validation of a dynamic flotation model for flotation predictive control incorporating froth physics.*
- **Society of Chemical Industry - College of Scholars Day (invited)**, November 2021. *Development and validation of a dynamic flotation model for flotation predictive control incorporating froth physics.*
- **Procemin - Geomet 2021**, October 2021. *Validation and implementation of a dynamic flotation model for predictive control including froth physics.*
- **Advances in the Digitalisation of the Process Industries**, IChemE, October 2021. *Development and validation of a dynamic model for flotation predictive control incorporating froth physics.*
- **International Conference in Raw Materials and Circular Economy**, Athens, Greece, September 2021. *Development and validation of a dynamic flotation model for flotation predictive control incorporating froth physics.*
- **Webinar series with Technical University Munich's (TUM) 'Chemical Process Engineering Lab'**, November 2020. *Developing flotation dynamic models for predictive control.*
- **Society of Chemical Industry - College of Scholars Day (invited)**, November 2020. *Development and validation of a dynamic flotation model for flotation predictive control incorporating froth physics.*
- **International Federation of Automatic Control Conference - Mining, Mineral and Metal Processing**, Stellenbosch, South Africa, August 2019. *Dynamic physics-based flotation models for effective predictive control: State-of-the-art.*

ADDITIONAL SKILLS & EXTRA INFORMATION

- **Languages:** English: Full professional proficiency, Spanish: Native proficiency
- **Computer skills:** Matlab (including GUI), Python (including Pyomo, Scikit-learn, Seaborn, Pandas), CasADi, GitHub/GitLab, InTouch Wonderware, Inkscape, LaTeX.
- **Nationalities:** Chilean and Spanish.
- **PhD supervisors:** Dr Pablo Brito-Parada (), Prof Stephen Neethling (), and Dr Daniel Navia ().

I am the corresponding author of all my papers, except numbers (7) and (9).

Scientific peer-reviewed journals

- (1) Quintanilla P, Navia D, Neethling S.J., Brito-Parada P.R. (2023). Economic model predictive control for a rougher froth flotation cell using orthogonal collocations, Minerals Engineering (*under review*).
- (2) Quintanilla P, Navia D, Moreno F, Neethling S.J., Brito-Parada P.R. (2023). A methodology to implement a closed-loop feedback-feedforward level control in a laboratory-scale flotation bank using peristaltic pumps, MethodsX. DOI: [/10.1016/j.mex.2023.102081](https://doi.org/10.1016/j.mex.2023.102081).
- (3) Quintanilla P, Mesa D, Reyes F. (2022). Bubble Analyser — An open-source software for bubble size measurement using image analysis, Minerals Engineering, Vol: 180, April 2022, 107497. DOI: [/10.1016/j.mineng.2022.107497](https://doi.org/10.1016/j.mineng.2022.107497).
- (4) Quintanilla P, Neethling SJ, Mesa D, Navia D and Brito-Parada PR. (2021). A dynamic flotation model for predictive control incorporating froth physics. Part II: Model calibration and validation, Minerals Engineering, Vol: 173, 107190. DOI: [/10.1016/j.mineng.2021.107190](https://doi.org/10.1016/j.mineng.2021.107190).
- (5) Quintanilla P, Neethling SJ, Navia D and Brito-Parada PR.(2021). A dynamic flotation model for predictive control incorporating froth physics. Part I: Model development, Minerals Engineering, Vol: 173, ISSN: 0892-6875, 107192. DOI: [/10.1016/j.mineng.2021.107192](https://doi.org/10.1016/j.mineng.2021.107192).
- (6) Quintanilla P, Neethling SJ and Brito-Parada PR. (2021). Modelling for froth flotation control: A review, Minerals Engineering, Vol: 162, 106718. DOI: [/10.1016/j.mineng.2020.106718](https://doi.org/10.1016/j.mineng.2020.106718).
- (7) Navia D, Puen A, Quintanilla P, Briceño L, Bergh L. (2019). On dealing with measured disturbances in the modifier adaptation method for real-time optimization, Computers & Chemical Engineering, Vol: 128, Pages: 141-163. DOI: [/10.1016/j.compchemeng.2019.06.004](https://doi.org/10.1016/j.compchemeng.2019.06.004).

Conference proceedings

- (8) Quintanilla P, Neethling S.J., Brito-Parada P.R. (2021). Development and Validation of a Dynamic Model for Flotation Predictive Control Incorporating Froth Physics, Materials Proceeding, Vol: 5, no. 1:13. DOI: [/10.3390/materproc2021005013](https://doi.org/10.3390/materproc2021005013).
- (9) Navia D, Puen A, Quintanilla P, Bergh L, Briceño L, de Prada C. (2018). A Proposal to Include the Information of Disturbances in Modifier Adaptation Methodology for Real Time Optimization, Computer Aided Chemical Engineering Vol: 43, Pages 1081-1086. DOI: [/10.1016/B978-0-444-64235-6.50189-3](https://doi.org/10.1016/B978-0-444-64235-6.50189-3).