# Resume: Brian Thomas Robinson Wetton

**CONTACT INFORMATION**

**Address:** Mathematics Department, University of British Columbia, Vancouver, BC, Canada V6T 1Z2.

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**RESEARCH**

Scientific Computation, Industrial Mathematics, Electrochemical Systems. Google Scholar: 3405 citations, h-index 28, i10-index 40.

**EDUCATION**

| | | | |
|---|---|---|---|
| BSc | Honours Physics (co-op) | University of Victoria | 1980-85 |
| MSc | Mathematics | University of Victoria | 1985-86 |
| PhD | Mathematics | Courant Institute | 1988-91 |

Msc supervisor Marvin Shinbrot. PhD supervisor Thomas Y. Hou.

**AWARDS**

1992 Kurt O. Friedrichs Prize for "outstanding dissertation in mathematics" from the Courant Institute of NYU.

2000 Pacific Institute of Mathematical Sciences Industrial Outreach Prize (with Huang, Promislow, Stockie).

2008 Alan Blizzard award for Collaborative Projects that Improve Student Learning (group award for the Mech2 programme at UBC).

2010 CAIMS/MITACS Industrial Research Prize.

**WORK**

| | | |
|---|---|---|
| Research Assistant | 1986-87 | Lab for Industrial Mathematics (Kaiserslautern, Germany) |
| Defense Scientist | 1988 | Defense Research Establishment Pacific (Victoria, Canada) |
| Assistant Professor | 1991-96 | Math Department, UBC |
| Associate Professor | 1996-2004 | Math Department, UBC |
| Professor | 2004-present | Math Department, UBC |
| Director | 2013-2018 | Institute of Applied Mathematics, UBC |
| Interim Head | Jul-Dec 2020 | Math Department, UBC |

**SELECTED GRANTS AS PI**

| Agency | Type | Total Amount | Dates |
|---|---|---|---|
| NSERC | Research | $18,000 (annual) | current |
| MITACS NCE | Research | $1,659,750 (total) | 99-08 |
| Ballard | Industrial | $981,000 (total) | 99-07 |

# Resume: Brian Wetton (cont.)

<table>
<tr><td rowspan="7"><strong>Selected Supervision</strong></td><td>Steve Ruuth</td><td>PhD</td><td>1996</td><td>Faculty SFU</td></tr>
<tr><td>John Stockie</td><td>PhD</td><td>1997</td><td>Faculty SFU</td></tr>
<tr><td>Arian Novruzi</td><td>PDF</td><td>2002</td><td>Faculty Ottawa</td></tr>
<tr><td>Roger Donaldson</td><td>MSc</td><td>2003</td><td>Avigilon</td></tr>
<tr><td>Lloyd Bridge</td><td>PhD</td><td>2007</td><td>Lecturer University of the West of England</td></tr>
<tr><td>Iain Moyles</td><td>PhD</td><td>2015</td><td>Faculty York</td></tr>
<tr><td>Michael Lindstrom</td><td>PhD</td><td>2015</td><td>PIC assistant professor (PDF) UCLA</td></tr>
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**Selected Lectures**

"Error Analysis of Methods for Incompressible Flows," at the first Canada-China Math Congress in Beijing (August, 1999).

"An Overview of Fuel Cells: Science, Modelling and Mathematics," at the CFCD-III meeting at Birs in Banff (March, 2005).

"Reduced Dimensional Models of Polymer Electrolyte Membrane Fuel Cell Stacks," at the Workshop on Modelling and Simulation of PEM-Fuel Cells at the Weierstrass Institute in Berlin (September, 2006).

"Mathematical modelling of hydrogen fuel cells," plenary talk at the SIAM Materials Science Meeting in Philadelphia (May, 2010).

"Mathematical Models of Electrochemical Systems," plenary talk at the MACSI 10th Anniversary Meeting, Limerick, Ireland (December, 2016).

"Asymptotic Error Analysis," plenary talk at the Limerick SIAM Student Chapter Inaugural Meeting, Limerick (December, 2016).

**Selected Service**

Co-organizer of the Computational Fuel Cell Dynamics Workshops at the Banff International Research Station, numbers II (2003) and III (2005).

Leader of the Mathematical Modelling and Scientific Computation group of MITACS 1999-2008.

Participant in the UBC Carl Weiman Science Education Institute activities in assessing and improving science education 2007-11.

UBC Institute of Applied Mathematics Director 2013-18.

Math 152 (Linear Algebra for Engineers) coordinator 2008-10, 13-16. I expanded and maintain online notes used as a text for this course.

Britannia Community Centre Volunteer 2014 ongoing.

Organizer of the BC Data Colloquium 2017-18.

Co-organizer of the IAM/PIMS Data Science Workshop (2017) and the PIMS Data Science Workshop (2018).

Interim Head of the UBC Mathematics Department, July-December, 2020.

**Hobbies**    Cycling, Pottery, Cooking, Gin, Magic: the Gathering, Embroidery.

# Resume: Brian Wetton (cont.)

<span style="font-variant: small-caps">Selected Publications</span>

Wetton and Brooke, "One-way wave equations for seismo acoustic propagation in elastic wave guides," Journal of the Acoustical Society of America **87**, 624-632 (1990).

Ascher, Ruuth, and Wetton, "Implicit-Explicit Methods for Time-Dependent PDE's," SIAM Journal of Numerical Analysis **32**, 797-823 (1995).

Wetton, "Error Analysis for Chorin's original fully discrete projection method and regularizations in space and time", SIAM Journal of Numerical Analysis **34**, 1683-1697 (1997).

Stockie and Wetton, "Analysis of stiffness of the immersed boundary method and implications for time-stepping schemes," Journal of Computational Physics **154**, 41-64 (1999).

Promislow, Stockie and Wetton, "A sharp interface reduction for multiphase transport in a porous fuel cell electrode," Proceedings of the Royal Society of London A, **462** 789-816 (2006).

Chang, Kim, Promislow and Wetton, "Reduced Dimensional Computational Models of Polymer Electrolyte Membrane Fuel Cell Stacks," Journal of Computational Physics **223**, 797-821 (2007).

Bridge and Wetton, "A mixture formulation for numerical capturing of a twophase/ vapour interface in a porous medium," Journal of Computational Physics **225** 2043-2068 (2007).

Promislow and Wetton, "PEM Fuel Cells: A Mathematical Overview" (invited review article), SIAM Journal of Applied Mathematics **70** 369 (2009).

Lam, Wetton, and Wilkinson, "One-dimensional model for a membraneless direct methanol fuel cell with a 3D anode structure," Journal of the Electrochemical Society **158**, B29-B35 (2011).

Christlieb, Jones, Promislow, Wetton, and Willoughby, "High accuracy solutions to energy gradient flows from material science models," Journal of Computational Physics **257**, 193-215 (2014).

Dara, Lindstrom, English, Bonakdarpour, Wetton, and Wilkinson, "Conversion of saline water and dissolved carbon dioxide into value-added chemicals by electrodialysis," Journal of CO2 Utilization **19**, 177-184 (2017).

Church, Guo, Jimack, Madzvamuse, Promislow, Wetton, Wise, Yang, "High Accuracy Benchmark Problems for Allen-Cahn and Cahn-Hilliard Dynamics," Communications in Computational Physics **26**, 947-972 (2019).

Cheng, Li, Promislow, Wetton, "Asymptotic Behaviour of Time Stepping Methods for Phase Field Models," Journal of Scientific Computing **86**, Article #32 (2021).