

Curriculum Vitae for Dr. Sarah Mitchell

Personal Information

Name: Dr. Sarah (Louise) Mitchell
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Education

1999 – 2003 **The University of Bath, U. K.**
PhD in “Coupling Transport and Chemistry in groundwater flow: Numerics, Analysis and Applications”. I obtained an EPSRC PhD scholarship to fund this research. Supervised by Professors Alastair Spence and Bill Morton.

1995 – 1999 **The University of Bath, U. K.**
MMath in Mathematics (**first class** honours). I received the David Powell prize for Applied Mathematics (1997) and the Harold Davenport prize for Pure Mathematics (1999) during my undergraduate degree.

Employment Record

The University of Limerick, Ireland (Jan 2008 – present):

Recently took over as Head of Department and I am a Senior Lecturer in Applied Mathematics. From 2013-2016 I was the Deputy Head of Department. I am currently supervising three PhD students, all working on different areas of applied mathematics. My other duties involve undergraduate teaching (including Calculus courses, Numerical Analysis, Engineering Mathematics), final year project supervision and organization of the MACSI weekly seminar series (from 2008 until Summer 2016). In addition, recent responsibilities include chairing our quality review exercise, and co-ordinating a comprehensive self-appraisal document and formal assessment by an external panel. I am also currently chairing the Department’s Athena SWAN committee and was instrumental in obtaining a Bronze award in 2015.

The University of Cape Town, South Africa (Aug 2006 – Jan 2008):

Postdoctoral fellow in the Applied Mathematics group working with Professor Tim Myers on the mathematical and numerical modelling of thin film flows. Also jointly taught a course in Mathematical Methods.

The University of British Columbia, Vancouver, Canada (Sept 2003 – July 2006):

Postdoctoral fellow in mathematical modelling and numerical analysis. I worked with Professors Rachel Kuske and Anthony Peirce, from the Department of Mathematics, on the mathematical and numerical modelling of fluid-driven fractures in rocks. I also taught two undergraduate Applied Mathematics courses per year.

The University of Bath, U.K. (Sept 2002 – April 2003):

Six month temporary lectureship position. I taught an undergraduate course in Statistics to Mechanical Engineering Students (approximately 150 students) and gave computer labs for a first year numerical methods module.

Mentoring and Supervision

I am currently solo supervising one PhD student, Gary O’Keeffe (IRC competitively funded), and co-supervising two PhD students, Kevin Burke and Niall McInerney, with Prof. Stephen O’Brien.

I have three completed PhD students: Laura Cribbin, who I co-supervised with Prof. Andrew Fowler (completed in February 2014 from the University of Limerick), Francesc Font, who I co-supervised with Prof. Tim Myers (completed in July 2014 from the Centre de Recerca Matemàtica in Barcelona), and Gift Muchatibaya, who I co-supervised with Prof. Tim Myers (completed in January 2009 from the University of Cape Town).

I also mentored Spanish PhD student Nadia Smith, who studied at the Departamento de Matemática Aplicada at the Universidad Complutense in Madrid. She visited the University of Limerick for two weeks in 2010 and 2011 for supervision and collaboration and I visited her in Madrid in May 2012. She graduated in July 2013.

In addition, I currently supervise one Final Year Project student (Brendan Ryan). Previously, I have supervised Final Year Project students David Ronan, Richard Scannell, Anna Pomykala, Stephen Cowpar, David Hayes, Brendan Ryan and Shaunagh Downing since 2008, co-supervised Masters project student (Richard Tuohy) in 2010 and supervised Masters project students (Carmen Lee, Amani Alamri and Robert Mangan) in 2011, 2014 and 2015, respectively.

Details of career highlights**Research interests:**

My H-index is 13 (Google Scholar) and I have 33 ISI Refereed Journal Papers, 4 Non-ISI Refereed Journal Papers and 6 Conference Proceedings Papers (details are given below). My total citation count is 539 (Google Scholar), which is rapidly increasing (over 100 new citations in 2015). My research interests include numerical and mathematical modelling of moving boundary problems relevant to solidification or melting, modelling drug diffusion in glassy polymers, mathematical modelling of nanofluid-based Direct Absorption Solar Collectors and hydraulic fractures in rocks.

Deputy Head of Department:

This position involves working with the current Head of Department (Dr. Alan Hegarty) in duties such as: organizing staff teaching assignments and PhD students tutoring classes, liaising with external examiners, chairing various department meetings and smaller sub-committee meetings, co-ordinating a review of our undergraduate modules and following up on directives resulting from the department’s quality review in 2013 (discussed in more detail below). I currently chairing the department Athena SWAN committee and led the successful application to gain a bronze Athena SWAN award in December 2015. As part of this I am on the Faculty Athena SWAN committee steering committee.

Professional Diploma for Mathematics in Teaching:

I am currently teaching an evening course to out-of-field teachers to improve their Mathematics skills, run by the National Centre for Excellence in Mathematics and Science Teaching and Learning (NCE-MSTL). This is a new initiative, starting in September 2012, supported by the Minister of State for Research and Innovation Sean Sherlock, with over 1000 teachers taking part to date. Each year I give a 24 hour lecture course on Introductory Calculus, consisting of eight three-hour blocks, which is being live-streamed to eight locations across the country. The programme is still running and the second cohort recently graduated in the University of Limerick, where the (then) Minister of Education and skills, Jan O'Sullivan, attended and congratulated NCE-MSTL and the University for their achievements.

Associate Editor:

In 2011 I was invited to become an Associate Editor for the Applied Mathematics and Computation journal, published by Elsevier (5 year impact factor 1.672, ISI Journal Ranking 30/251 in Mathematics, Applied). I am responsible for over 30 manuscripts per year and take an active part in the reviewing process. This involves various duties including screening submissions, finding quality reviewers, making final decisions on each manuscript and, in some cases, undertaking reviews myself (especially in cases when reviewers are in disagreement).

Mathematics Applications Consortium for Science and Industry (MACSI):

The highly successful Mathematics Applications Consortium for Science and Industry (MACSI) is based in our Department and I am heavily involved in its management and organised activities. In 2009 I created the MACSI weekly seminar series that is run through the Department. This has become a highly popular event, with over 25 speakers per year, both from Europe and further afield, and generally attracts audiences of 30 plus people. I have also served on the committee to organize the MACSI study group with industry for 3 years from 2011- 2013.

Quality Review:

In the academic year 2012/2013 the department of Mathematics and Statistics underwent a quality review, which was carried out by the University. Despite being relatively junior, I was entrusted with chairing the "steering committee" to write a self-assessment document and prepare the Department for an on-site visit by an external panel in April 2013. Since then I have been in charge of implementing recommendations/suggestions that came from the peer review group's report, including a review of our undergraduate modules and improvements to our final year project system.

Marketing Committee:

I was a member of the Faculty marketing committee from 2008-2012 and therefore been hugely involved in organising the open days, both at Department and faculty level. I resigned from this committee in 2012 to take on the role of chair of the department steering committee to organise its quality review.

Universidad Complutense de Madrid, Spain:

I was invited to give one week graduate courses on "Basic tools in Mathematical Modelling with PDEs" (April 2010 and June 2011) in the Departamento de Matemática Aplicada. I was also an instructor at the III Modelling Week in 2009 (part of their Masters in Mathematical Engineering) where I presented a problem and supervised students.

Mentor/Internal/External Examiner:

I have also been invited to be a mentor for the UK Grad Modelling Camp, which is being held at the University of Oxford in March 2015. This is a prestigious event, attracting top PhD students from all over Europe, and I look forward to this exciting opportunity to mentor/teach at a graduate level. I was also a mentor in MACSI's Student Mathematical Modelling Workshop in June 2013 and will be a mentor again in the next Workshop in June 2015.

I was invited to be an external examiner for two PhD theses, one for Dr. Nadia Smith at the Universidad Complutense in Madrid in 2013 and one for Dr. Michelle MacDevette at the Centre de Recerca Matemàtica in Barcelona in 2014.

Newspaper Article/Award

Article entitled "Rough or smooth balls? That is the question" published in the Wits Annual Sports Review 2011, by Tim Myers and Sarah Mitchell. We also received the Albert Dou prize in 2014 for our work in this area. This is awarded biennially by the Catalan Mathematical Society for authors that "contribute to make visible the importance of mathematics in our world and to convey mathematical knowledge to a wider audience".

Non-ISI Refereed Journal Papers

1. S.L. Mitchell, S.B.G. O'Brien, "The two envelope problem: there is no conundrum", *Teaching Mathematics and its Applications*, doi:10.1093/teamat/hru019, 2014.
2. M. Vynnycky, W.T. Lee, S.L. Mitchell, G. Richardson, "Foam formation in the plastics industry", *Mathematics-in-Industry Case Studies Journal*, 5, 27-42, 2013.
3. T.G. Myers, S.L. Mitchell, "A mathematical analysis of the motion of an in-flight soccer ball", *Sports Engineering*, 16, 29-41, 2013.
4. S.L. Mitchell, T.G. Myers, "Application of Heat Balance Integral Methods to One-Dimensional Phase Change Problems", *International Journal of Differential Equations*, Vol. 2012, 187902, 22 pages. [citations = 4]

Conference Proceedings

1. M. Vynnycky, S.L. Mitchell, B.J. Florio, S.B.G. O'Brien, "Decoupling the interaction of solid and fluid mechanics in the modelling of continuous casting processes", *Progress in Industrial Mathematics at ECMI 2014*, in press, 2016.
2. T.G. Myers, S.L. Mitchell, "Mathematical Modelling of Phase Change with a Flowing Thin Film", *Progress in Industrial Mathematics at ECMI 2010*, 399-405.
3. S.L. Mitchell, "Approximate solution methods for the one-dimensional Stefan problem with Kinetic Undercooling", *7th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics*, Turkey, 2010.
4. M. Vynnycky, S.L. Mitchell, "On the solution of Stefan problems with delayed onset of phase-change", *7th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics*, Turkey, 2010. [citations = 7]

5. S.L. Mitchell, T.G. Myers, "Applying the Combined Integral Method to One-Dimensional Ablation", *International Conference on Numerical Analysis and Applied Mathematics*, Crete, 2009.
6. S.L. Mitchell, T.G. Myers, "The laminar-turbulent transition of yield stress fluids in large pipes", *Proceedings of the 3rd Mathematics in Industry Study Group*, University of Witwatersrand, 2007.

Publications

ISI Refereed Journal Papers

The citation numbers listed below are from Google Scholar, with ISI web of knowledge values in brackets.

IF = Impact Factor of the Journal (5 year value, taken from 2013).

ISI = ISI journal ranking.

My Google Scholar page can be found [here](#).

1. S.L. Mitchell, M. Vynnycky, "Verified reduction of a model for a continuous casting process", *Applied Mathematical Modelling*, 48, 476–490, 2017.
2. M. Vynnycky, S. Saleem, K.M. Devine, B.J. Florio, S.L. Mitchell, S.B.G. O'Brien, "On the formation of fold-type oscillation marks in the continuous casting of steel", *The Royal Society of Open Science*, 4(6):170062, 2017.
3. B.J. Florio, M. Vynnycky, S.L. Mitchell, S.B.G. O'Brien, "On the interactive effects of mould taper and superheat on air gaps in continuous casting", *Acta Mechanica*, 228(1), 233-254, 2017.
4. T.G. Myers, V.R. Ripoll, A. Saez de Tehada Cuenca, S.L. Mitchell, M.J. McGuinness, "Modelling the cardiovascular system for assessing the blood pressure curve", *Mathematics-in-Industry Case Studies*, 8(2), DOI 10.1186/s40929-017-0011-1, 2017.
5. G.C. Hocking, S.L. Mitchell, "A model of flow in a sugar diffuser", *IMA Journal of Applied Mathematics*, doi:10.1093/imamat/hxw020, 2016. [IF = 1.030, ISI = 174/488, Mathematics]
6. B.J. Florio, M. Vynnycky, S.L. Mitchell, S.B.G. O'Brien, "Mould-taper asymptotics and airgap formation in continuous casting", *Applied Mathematics and Computation*, 268, 1122-1139, 2016. [IF = 1.672, ISI = 30/251 - Mathematics, Applied]
7. S.L. Mitchell, M. Vynnycky, "On the accurate numerical solution of a two-phase Stefan problem with phase formation and depletion", *Journal of Computational and Applied Mathematics*, 300, 259-274, 2016. [IF = 1.245, ISI = 70/251 - Mathematics, Applied]
8. M. Vynnycky, S.L. Mitchell, "On the numerical solution of a Stefan problem with finite extinction time", *Journal of Computational and Applied Mathematics*, 276, 98-109, 2015. [IF = 1.245, citations = 2(2), ISI = 70/251 - Mathematics, Applied]
9. S.L. Mitchell, M. Vynnycky, "The oxygen diffusion problem: analysis and numerical solution", *Applied Mathematical Modelling*, 39, 2763-2776, 2015. [IF = 2.195, citations = 2(1), ISI = 15/139 - Mechanics]
10. F. Font, T.G. Myers, S.L. Mitchell, "A mathematical model for nanoparticle melting with density change", *Microfluid Nanofluid*, 18, 233-243, 2015. [IF = 3.028, citations = 7(2), ISI = 30/73 - NanoScience & Nanotechnology]
11. S.L. Mitchell, "Applying the combined integral method to two-phase Stefan problems with delayed onset of phase change", *Journal of Computational and Applied Mathematics*,

- 281, 58-73, 2015. [IF = 1.245, citations = 2(1), ISI = 70/251 - Mathematics, Applied]
12. L.B. Cribbin, H.F. Winstanley, S.L. Mitchell, A.C. Fowler, G.C. Sander, "Reaction front formation in contaminant plumes", *Journal of Contaminant Hydrology*, 171, 12-21, 2014. [IF = 2.951, ISI = 8/81 - Water Resources]
 13. S.L. Mitchell, "An accurate application of the integral method applied to the diffusion of oxygen in absorbing tissue", *Applied Mathematical Modelling*, 38, 4396-4408, 2014. [IF = 2.195, citations = 2(1), ISI = 15/139 - Mechanics]
 14. S.L. Mitchell, S.B.G. O'Brien, "Asymptotic and numerical solutions of a free boundary problem for the sorption of a finite amount of solvent into a glassy polymer", *SIAM Journal on Applied Mathematics*, 74(3), 697-723, 2014. [IF = 1.580 citations = 2(1), ISI = 41/251 - Mathematics, Applied]
 15. S.L. Mitchell, M. Vynnycky, "On the numerical solution of two-phase Stefan problems with heat-flux boundary conditions", *Journal of Computational and Applied Mathematics*, 264, 49-64, 2014. [IF = 1.245, citations = 9(5), ISI = 70/251 - Mathematics, Applied]
 16. N.A.S. Smith, S.L. Mitchell, A. Ramos, "Analysis and Simplification of a Mathematical Model for High-Pressure Food Processes", *Applied Mathematics and Computation*, 226, 20-37, 2013. [IF = 1.672, citations = 6(1), ISI = 30/251 - Mathematics, Applied]
 17. M. Vynnycky, S.L. Mitchell, "On the Accuracy of a Finite-Difference Method for Parabolic Partial Differential Equations with Discontinuous Boundary Conditions", *Numerical Heat Transfer, Part B*, 64, 275-292, 2013. [IF = 1.626, citations = 6(6), ISI = 48/139 - Mechanics]F. Font, S.L. Mitchell, T.G. Myers. "One-dimensional solidification of supercooled melts", *International Journal of Heat and Mass Transfer*, 62, 411-421, 2013. [IF = 2.868, citations = 9(4), ISI = 10/139 - Mechanics]
 18. S.L. Mitchell, S.B.G. O'Brien, "Asymptotic, numerical and approximate techniques for a free boundary problem arising in the diffusion of glassy polymers", *Applied Mathematics and Computation*, 219, 376-388, 2012. [IF = 1.672, citations = 10(7), ISI = 30/251 - Mathematics, Applied]
 19. T.G. Myers, S.L. Mitchell, F. Font, "Energy conservation in the one-phase supercooled Stefan problem", *International Communications in Heat and Mass Transfer*, 39, 1522-1525, 2012. [IF = 2.260, citations = 12(7), ISI = 16/139 - Mechanics]
 20. S.L. Mitchell, M. Vynnycky, "An accurate finite-difference method for ablation-type Stefan problems", *Journal of Computational and Applied Mathematics*, 236, 4181-4192, 2012. [IF = 1.245, citations = 23(15), ISI = 70/251- Mathematics, Applied]
 21. S.L. Mitchell, "Applying the combined integral method to one-dimensional ablation", *Applied Mathematical Modelling*, 36, 127-138, 2012. [IF = 2.195, citations = 7(5), ISI = 15/139 - Mechanics]
 22. S.L. Mitchell, M. Vynnycky, I.G. Gusev, S.S. Sazhin, "An accurate numerical solution for the transient heating of an evaporating spherical droplet", *Applied Mathematics and Computation*, 217, 9219-9233, 2011. **[IF = 1.672, citations = 32(20), ISI = 30/251 - Mathematics, Applied]**
 23. M. Vynnycky, S.L. Mitchell, N. Maeno, "Evaporative cooling and the Mpemba effect", *Heat and Mass Transfer*, 47, 863-863, 2011. [IF = 1.148, citations = 2, ISI = 81/139 - Mechanics]
 24. S.L. Mitchell, "An accurate nodal heat balance method with spatial subdivision", *Numerical Heat Transfer, Part B*, 60, 34-56, 2011. [IF = 1.626, citations = 8(7), ISI = 48/139 - Mechanics]
 25. T.G. Myers, S.L. Mitchell, "Application of the Combined Integral Method to Stefan problems", *Applied Mathematical Modelling*, 35, 4281-4294, 2011. [IF = 2.195, citations = 17(9), ISI = 15/139 - Mechanics]
 26. S.L. Mitchell, T.G. Myers, "Improving the accuracy of heat balance methods applied to thermal problems with time dependent boundary conditions", *International Journal of*

- Heat and Mass Transfer*, 53, 3540-3551, 2010. [IF = 2.868, citations = 27(15), ISI = 10/139 - Mechanics]
27. S.L. Mitchell, T.G. Myers, "Application of Standard and Refined Heat Balance Integral Methods to One-Dimensional Stefan Problems", *SIAM Review*, 52(1), 57-86, 2010. **[IF = 9.833, citations = 49(28), ISI = 1/251 - Mathematics, Applied]**
 28. M. Vynnycky, S.L. Mitchell, "Evaporative cooling and the Mpemba effect", *Heat and Mass Transfer*, 46, 881-890, 2010. [IF = 1.148, citations = 10(5), ISI = 81/139 - Mechanics]
 29. S.L. Mitchell, M. Vynnycky, "Finite-difference methods with increased accuracy and correct initialization for one-dimensional Stefan problems", *Applied Mathematics and Computation*, 215, 1609-1621, 2009. **[IF = 1.672, citations = 48(38), ISI = 30/251 - Mathematics, Applied]**
 30. T. G. Myers, S.L. Mitchell, "Application of the heat balance and refined heat balance integral methods to the Korteweg-de Vries equation", *Thermal Science*, 13(2), 112-119, 2009. [IF = 0.931, citations = 8(4), ISI = 27/55 - Thermodynamics]
 31. T.G. Myers, S.L. Mitchell, G. Muchatibaya, "Unsteady contact melting of a rectangular cross-section phase change material", *Physics of Fluids*, 20 (103101), 2008. [IF = 2.208, citations = 17(10), ISI = 13/31 - Physics, Fluids & Plasmas]
 32. S.L. Mitchell, T.G. Myers, "Heat Balance Integral Method for One-Dimensional Finite Ablation", *AIAA Journal of Thermophysics and Heat Transfer*, 22(3), 508-514, 2008. [IF = 0.882, citations = 26(21), ISI = 67/128 - Engineering, Mechanical]
 33. S.L. Mitchell, T.G. Myers, "Approximate solution methods for one-dimensional solidification from an incoming fluid", *Applied Mathematics and Computation*, 202(1), 311-326, 2008. [IF = 1.762, citations = 16(12), ISI = 30/251 - Mathematics, Applied]
 34. T.G. Myers, S.L. Mitchell, G. Muchatibaya, M.Y. Myers, "A cubic heat balance integral method for one-dimensional melting of a finite thickness layer", *International Journal of Heat and Mass Transfer*, 50, 5307-5315, 2007. [IF = 2.868, citations = 34(23), ISI = 10/139 - Mechanics]
 35. S.L. Mitchell, R. Kuske, A.P. Peirce, "An asymptotic framework for the analysis of hydraulic fractures: the impermeable case", *Journal of Applied Mechanics*, 74, 365-372, 2007. [IF = 1.2, citations = 41(12)]
 36. S.L. Mitchell, R. Kuske, A.P. Peirce, "An asymptotic framework for finite hydraulic fractures including leak-off", *SIAM Journal on Applied Mathematics*, 67, No. 2, 364-386, 2007. [IF = 1.64, citations = 27(15), ISI = 10/139 - Mechanics]
 37. S.L. Mitchell, K.W. Morton, A. Spence, "Analysis of box schemes for reactive flow problems", *SIAM Journal on Scientific Computing*, 27(4), 1202-1225, 2006. [IF = 2.23, citations = 6(4)]

Research Funding

I was successful in applying for PhD funding for my current student Gary O'Keeffe from the Irish Research Council in 2014 (amount **€94,236.40**). I have unsuccessfully applied to SFI for Investigator Project funding in 2008, 2009, 2010 and 2012, but received positive referee reports each time. I am currently applying to the Ireland Canada University Foundation for a Dobbin Travel Scholarship to visit Prof. Anthony Peirce in the University of British Columbia.

I am an associate member of MACSI who received €4.34 million from the Science Foundation Ireland Mathematics Initiative in 2006. I was also a named co-PI on MACSI's successful first bridging grant: SFI Mathematics Initiative, MACSI 1 year extension, **€320k**, from 1st July 2011 - 30th June 2012.

I was a named collaborator on Professor Tim Myers grant entitled “Moving boundary problems in the presence of a liquid film”, Ministerio de Ciencia e Innovación, grant no. MTM2011-23789 (2011-2013, €44,528, with €4,500 allocated to Sarah Mitchell). In addition, I was named on Professor Tim Myers grant entitled “Moving boundary problems in the presence of a liquid film”, Ministerio de Ciencia e Innovación, grant no. MTM2010-17162 (2010-2011, €19,481, with €2,000 allocated to Sarah Mitchell).

I was awarded “seed funding” from the University of Limerick for the period 2008-2010 (amount €5000). I used this money to fund a trip to the Hydraulic Fracturing Summit VIII in Halifax, Canada, in May 2008. I gave a presentation related to mathematical modelling of hydraulic fractures and worked with collaborator Professor Anthony Peirce. In addition, I used it for two visits to my collaborator Professor Tim Myers at the Korean Advanced Institute for Science and Technology (KAIST) in Dajeon, Korea, in May 2008, and at the Centre de Recerca Matemàtica (CRM) in Barcelona in April 2009.

Conferences/Meetings attended

Study Groups:

I have been an active participant at five MACSI study groups held at the University of Limerick (ESGI62 in 2008, ESGI70 in 2009, ESGI75 in 2010, ESGI82 in 2011, ESGI87 in 2012, ESGI93 in 2013 and ESGI110 in 2015).

I have also attended the South African study groups in 2007, 2011, 2012, 2014 and 2015.

European Consortium for Mathematics in Industry (ECMI), Santiago de Compostela, (June 2016):

Conference presentation entitled “The effect of superheat on the macrosegregation of a continuously cast binary alloy”.

SIAM UKIE 20th Annual Meeting, (January 2016): Invited speaker, title “Numerical Challenges Facing an Application of Stefan Problems: Continuous Casting of Metals”.

International Conference on Free Boundary Problems: Theory and Applications, University of Cambridge (June 2014):

Conference presentation entitled “Numerical and asymptotic solutions of vertical continuous casting with and without superheat”.

European Consortium for Mathematics in Industry (ECMI), Taormina, Italy, (June 2014):

Conference presentation entitled “Decoupling the interaction of solid and fluid mechanics in the modelling of continuous casting processes”.

European Consortium for Mathematics in Industry (ECMI), Lund, Sweden (July 2012):

Conference presentation entitled “Approximate solution techniques for a free boundary problem arising in the diffusion of glassy polymers”.

Universidad Complutense de Madrid, Spain (May 2012): Invited seminar presentation entitled “Approximate solution techniques for a free boundary problem arising in the diffusion of glassy polymers”.

Universidade da Coruña, Spain (May 2012):

Invited seminar presentation entitled “Approximate solution techniques for a free boundary problem arising in the diffusion of glassy polymers”.

University of Manchester, U.K. (October 2011):

Invited seminar presentation entitled “Approximate solution methods for one-dimensional Stefan problems”.

European Consortium for Mathematics in Industry (ECMI), Wuppertal, Germany (July 2010):

Invited conference presentation (part of a MACSI symposium) entitled “Approximate solution methods for one dimensional phase change (Stefan) problems”.

Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT), Antalya, Turkey (July 2010):

Presentations entitled “Approximate solution methods for the one-dimensional Stefan problem with Kinetic Undercooling” and “On the solution of Stefan problems with delayed onset of phase-change”.

Emerging topics in Dynamical Systems and Partial Differential Equations (DSPDEs), Barcelona, Spain (May 2010):

Invited conference presentation (part of a symposium on Stefan Problems) entitled “An accurate combined integral method for one-dimensional solidification from an incoming fluid”.

International Conference of Numerical Analysis and Applied Mathematics (ICNAAM), Crete (Sept 2009):

Invited conference presentation (part of a MACSI symposium) entitled “Applying the combined integral method to one-dimensional ablation”.

Universidad Complutense de Madrid, Spain (June 2009):

Invited Seminar presentation entitled “Improving the accuracy of heat balance integral methods applied to thermal and Stefan problems”.

Korean Advanced Institute for Science and Technology (KAIST), Dajeon, Korea (May 2009):

Invited seminar presentation entitled “Improving the accuracy of heat balance integral methods applied to thermal and Stefan problems”.

European Consortium for Mathematics in Industry (ECMI), Imperial College, London, U.K. (June 2008):

Conference presentation entitled “Approximate solution methods for one-dimensional solidification from an incoming fluid”.

The University of Bath, U.K. (June 2008):

Invited presentation entitled “Finite-difference methods with increased accuracy and correct initialization for one-dimensional Stefan problems”.

Hydraulic Fracturing Summits (IV, V and VIII in June 2004, May 2005 and May 2008):
Conference presentations relating to modelling hydraulic fractures.

SANUM Conference, Stellenbosch University, South Africa (April 2007):

Presentation entitled "A cubic heat balance integral method for one-dimensional melting of a finite thickness layer".

Society for Industrial and Applied Mathematics (SIAM) Annual Meeting, Boston (July 2006):

Invited speaker at the "Association of Women in Mathematics" workshop. Gave presentation entitled "Mathematical modeling of hydraulic fractures in rocks".

The University of Washington, Seattle USA (Nov 2005):

Invited seminar presentation related to modeling hydraulic fractures.

Young Mathematician's Conference, McMaster University, Canada (Jan 2005):

Invited speaker at this one day meeting (gave presentation relating to modeling hydraulic fractures).

Workshops

Nanomath, Barcelona, Spain (July 2012)

I participated in a three day workshop on the emerging field of Mathematics in nanotechnology. This is a new area of research that I am keen to explore, along with my collaborator Professor Tim Myers. It has huge potential in real world applications and is likely to generate research funding. We plan to put in a bid for a grant from Horizon 2020).

Karthus, Italy (June 2012)

I participated in a week-long workshop on "Mathematics and Glaciers" with seven experts in the field (including colleague Professor Andrew Fowler). This has led to further collaborations with two participants (Professor David Abrahams and Dr. Geoff Evatt from the University of Manchester) visiting us in September 2012. Two journal papers are almost complete from this work and we have Professor Andrew Fowler and I have been invited to Manchester in November 2012.