Dr Guillermo Rein
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1. Overview

I am Senior Lecturer (UK equivalent to Associate Professor) in Mechanical Engineering at The University of Edinburgh.

My research focus is on combustion and reactive solids, combining modelling and experimental approaches. I aim to provide technological solutions to multidisciplinary problems on infrastructure, energy and the environment. My vision is to continue bridging the gap between combustion research and the core disciplines of Mechanical Engineering, Civil Engineering, Earth Sciences, and Geo-Engineering. Some examples follow.

On the fundamental side of my research, I have modelled from first principles the heterogeneous kinetics and heat and mass transfer in a **reactive porous media** to explain NASA's microgravity combustion experiments in polymer foams. More recently I have explained the reason behind the failure of the classical **solid ignition theory** at high heat fluxes. I proofed numerically and experimentally that the previously unreported key mechanism is in-depth radiation absorption in a pyrolysing translucent medium.

On the applied side of my research, my work is directly impacting the way industry designs modern infrastructure. I have pioneered the design concept of **travelling fires** which offers a paradigm shift in the structural engineering of modern buildings. This is already being applied to design a new iconic high rise building in the city of London. I am a key contributor to the creation of the technology allowing for the first time to **forecast fire dynamics** by assimilating sensor data and solving an inverse problem. This is leading to implementation of infrastructure protection in smart buildings. I have led the development of the novel computational technique of **multi-scale modelling** for fluid dynamics in long tunnels, which is as accurate as conventional CFD modelling, but two orders of magnitude faster.

I have also developed topics within the current context of the energy crisis and climate change. I coined the concept of **accidental burning of fossil fuels** referring to the wide spread of smouldering mega-fires of natural coal and peat deposits burning for decades in six continents. I am contributing to understand and reduce these important contributors to atmospheric carbon emissions that destroy valuable energy and environmental resources. The latest emphasis of my research is on **carbon sequestration**. I research the phenomena of material self-heating to allow the design of infrastructure for very-long-term (millennia) storage of solid-phase carbon produced from charred biomass (biochar).

I have been prolific at publishing my work with 42 journal papers (including contributions in *Combustion and Flame, Environmental Science and Technology, Nature Geoscience and Proceedings of the National Academy of Science*) and successful at winning competitive funding to support my research (>£1.7m). My work has been recognised internationally with a number of research awards (e.g. Lloyd's Science of Risk Prize (2011 and 2010), Hinshelwood Prize, Distinguished Paper Combustion Symposium, Lord Ezra Award) and has been featured in international media (e.g. BBC, New York Times, DotEarth, The Independent).

2. Education

2003-2005 ... Ph.D. in Mechanical Engineering, University of California at Berkeley (USA): *Computational Model of Forward and Opposed Smoldering Combustion with Improved Chemical Kinetics*. Sponsored by NASA Space Flight Program. http://repositories.cdlib.org/cpl/fs/ReinPhD05 & http://www.scribd.com/doc/49927162

2001-2003 ... M.Sc. in Mechanical Engineering, University of California at Berkeley (USA)

1992-1999 ... M.Eng. in Mechanical Engineering (6-year degree), ICAI Universidad Pontificia Comillas, Madrid (Spain).

1998-1999 ... Visiting student, Department of Mechanical Engineering, The University of Texas at Austin (USA).

3. Professional Career

2011-present .. Senior Lecturer (UK equivalent to Associate Professor) in Mechanical Engineering, Institute of Infrastructure and Environment, School of Engineering, The University of Edinburgh.

2010–2011 ... Royal Academy of Engineering/Leverhulme Trust Senior Research Fellow.

2006-2011 ... Lecturer (UK equivalent to Assistant Professor) in Mechanical Engineering, Institute of Infrastructure and Environment, School of Engineering, The University of Edinburgh.

2005–2006 ... Research Fellow, Institute of Infrastructure and Environment, School of Engineering, The University of Edinburgh. Funded by Scottish Enterprise, Proof of Concept for STAR combustion technology.

2001–2005 ... Graduate Research and Teaching Assistant, Department of Mechanical Engineering, University of California at Berkeley (USA).

1999-2001 ... Research Assistant, Institute for Research in Technology (IIT), Universidad Pontificia Comillas, Madrid (Spain).

4. Research

See detailed table of grants at the end of this document.

4.1 Prizes and Awards

2011..... Lloyd's Science of Risk Prize in Technology for the paper *The Influence of Travelling Fires on a Concrete Frame* (in journal Engineering Structures).

2010..... Best Poster Award at Spring 2010 Meeting, British Section of The Combustion Institute for *Experimental Review of the Homogeneous Temperature Assumption in Post-Flashover Compartment Fires*

2010..... Lloyd's Science of Risk Prize in Technology for the paper *A Novel Multiscale Methodology for Simulating Tunnel Ventilation Flows during Fires* (in journal Fire Technology).

2009..... Hinshelwood Prize for meritorious work in combustion by a younger scientist, British Section of The Combustion Institute.

2009..... Distinguished Paper Award on Fire Research at the 32nd International Symposium on Combustion, The Combustion Institute, for the paper *Carbon Emissions from Smouldering Peat in Shallow and Strong Fronts*.

2009..... 15th Lord Ezra Award for outstanding achievement in the study of combustion engineering, Combustion Engineering Association for developing the STAR smouldering technology for remediation of contaminated soils.

2008..... Best Poster Award Audience Choice at the 9th Symposium of the International Association of Fire Safety Science for *Fire Fighting Coal Mine Fires: Characterization and extinguishing methods using small-scale Experiments.*

2007..... Bodycote Warrington Fire Research Prize for the best paper, The Institution of Fire Engineers for the paper *Characterisation of Dalmarnock Fire Test One*.

2007..... FM Global Award for the best paper at the 5th International Seminar on Fire and Explosion Hazards, for the paper *Round-Robin Study of a priori Modelling Predictions of The Dalmarnock Fire Test One.*

4.2 Publications Overview

My publication record includes contributions to 7 books/chapters, 42 journal papers and more than 150 conference communications. See detailed list of publications at the end of this document.

4.3 Sample of five most significant research papers

- **Forecasting Fire Dynamics Using Inverse Computational Fluid Dynamics and Tangent Linearisation**, in *Advances in Engineering Software*, 2011. http://dx.doi.org/10.1016/j.advengsoft.2011.12.005
  This is work of Rein's very first PhD student. The paper develops and studies the methodology allowing for the first time to forecast fire dynamics and to implement fire protection in smart buildings. It uses computational fluid dynamics, sensors and data assimilation. This problem had been deemed previously as "impossible" by experts.
- **Multiscale Modelling of the Transient Flows from Fire and Ventilation in Long Tunnels**, in *Computers and Fluids* 2011. http://dx.doi.org/10.1016/j.compfluid.2011.06.021
  The work of Rein's second PhD student**.** The paper develops and applies a novel multiscale computational technique to solve the transient fluid dynamics in tunnel fires that is as accurate as conventional CFD modelling, but two orders of magnitude faster. Work from this PhD thesis received the 2010 *Lloyd's Science of Risk Prize* in the Technology category.
- **The Influence of Travelling Fires on a Concrete Frame**, in *Engineering Structures* 2011**.** http://dx.doi.org/10.1016/j.engstruct.2011.01.034
  This paper applies to a large concrete infrastructure the pioneering design concept of *travelling fires* developed by Rein*.* It shows that conventional design fires are neither conservative nor realistic, and offers a paradigm shift in structural fire protection of buildings. This paper received the 2011 *Lloyd's Science of Risk Prize* in the Technology category.
- **Baseline intrinsic flammability of Earth's ecosystems estimated from paleoatmospheric oxygen over the past 350 million years**, in *Proceedings of the National Academy of Sciences* 2011. http://dx.doi.org/10.1073/pnas.1011974107
  This multidisciplinary paper brings together geoscience and fire science, to conduct joint experimental and modelling work on the dynamics of smouldering fires and the effect of past Earth's atmospheric oxygen content on wildfires.
- **Carbon Emissions from Smouldering Peat in Shallow and Strong Fronts**, in *Proceedings of the Combustion Institute* 2009. http://dx.doi.org/10.1016/j.proci.2008.07.008
  Paper reporting for the first time measurements of carbon monoxide and carbon dioxide emissions from peat fires under a wide range of realistic burning conditions. It was the recipient of the *Distinguished Paper Award on Fire Research* in the 32nd International Symposium on Combustion.

4.4 Patents

2006 International Patent Cooperation Treaty Application, Method and Apparatus for Remediating Contaminated Land, JI Gerhard, JL Torero, P Pironi, C Switzer and G Rein, 2006, Ref. PCT/GB2006/004591 and WO/2007/066125 (Priority Date 10/12/2005). http://www.wipo.int/pctdb/en/wo.jsp?wo=2007066125

4.5 Graduate Student Supervision

PhD degree

May 2010 ..... **Wolfram Jahn**, Inverse modelling to forecast enclosure fire dynamics, University of Edinburgh. Funded by EU Alβan Scholarship. I was 1st supervisor.
http://hdl.handle.net/1842/3418

May 2010 ..... **Francesco Colella**, Multiscale modelling of tunnel ventilation flows and fires, Politecnico di Torino. I was co-supervisor and had major contributions.
http://hdl.handle.net/1842/3528

May 2011 ..... **Rory Hadden**, Smouldering and self-sustaining reactions in solids, University of Edinburgh. Funded by EPSRC and IFiC. I was 1st supervisor.
http://hdl.handle.net/1842/5587

Jul 2011 ..... **Jamie Stern-Gottfried**, Travelling fires in building design, University of Edinburgh. Funded by Arup. I was 1st supervisor.
http://hdl.handle.net/1842/5244

June 2012 .... **Freddy X. Jervis**, Experimental burning of cellulose-based solids,
(expected) University of Edinburgh. Funded by BRE Trust. I am 1st supervisor.

June 2012 .. **Nicolas Bal**, Uncertainty and complexity in pyrolysis modelling,
(expected) ... University of Edinburgh. Funded by BRE Trust. I am 1st supervisor.

MSc degree

Aug 2010 ..... J. C. Hofman, University of Edinburgh. I was 1st supervisor.

Apr 2010 ..... S. L. Macphee, University of Western Ontario. I was co-supervisor and had major contributions.

Aug 2009 ..... A. M. Jonsdottir, University of Edinburgh. I was 1st supervisor.

Jun 2008 ..... M. Iqba, Heriot-Watt University. I was co-supervisor and had major contributions.

Jun 2007 ..... X. Zhang, Universite Pierre et Marie Curie. I was co-supervisor and had major contributions.

5. Teaching

I am a motivated lecturer, enthusiastic about the education of the next generation of engineers. Student evaluations of my lectures have always been remarkably positive. I am also committed to teaching through research, and have led four undergraduate students to publish journal papers, and twelve undergraduates to present at international conferences. Of the 12 MEng and BEng undergraduates that I have supervised, Mr Roxburgh was shortlisted for the 2008 *SET Awards for Best UK Mechanical Engineer*, and four others received The Institution of Mechanical Engineers Project Award (2007, 2009, 2010 and 2011).

5.1 Teaching Experience

2011-present . University of Edinburgh, Mechanical Engineering. Teaching of undergraduate courses: 4th year Fire Dynamics (to all Engineering degrees), 2nd year Thermodynamics, and 1st year Energy Systems.

2007-2010 ... University of Edinburgh, Mechanical Engineering. Teaching of undergraduate courses: 2nd year Mechanical Engineering Design and Matlab, 1st year Engineering Statics, Measurement Labs, Strip and Rebuilt Labs and Sustainability workshops.

2010 ..... Visiting Professor, Universitat Politècnica de Catalunya (Spain), Department of Chemical Engineering. Teaching of graduate course on combustion and fire dynamics.

2002-2005 ... University of California at Berkeley, Department of Mechanical Engineering, Teaching Assistant of the undergraduate course Combustion Processes (ME140) and Combustion labs. Invited lecturer on numerical methods in heat transfer (ME109).

I have taught several short Professional Development courses to industry: "Self-heating fires in Coal Mining" at Pontificia Universidad Catolica de Chile; "Fire Dynamics & Fire Safety Engineering Design" (2006-2011) and "Fire Science & Fire Investigation" (2008 to 2010) at the Office of Lifelong Learning, University of Edinburgh.

5.2 Teaching Management

I have significant experience in the management of teaching and students. At the University of Edinburgh, I was member of the Postgraduate School Committee in 2009-10, Year Organizer for 1st year courses in Mechanical Engineering 2006-2012, and Director of Studies (official student advisor) to more than 100 undergraduate students 2007-2012. I have supervised more than 20 MEng and 10 BEng undergraduate projects in Mechanical Engineering and in Civil Engineering.

5.3 Teaching Awards

2012..... Nominated for Best Lecturer and Best Course, Edinburgh University Students' Association Teaching Awards. Rank 8th out of ~100 academics in list of nominations in the School of Engineering.

2011..... Nominated for Best Director of Studies, Edinburgh University Students' Association Teaching Awards

2010..... Nominated for Best Lecturer, Edinburgh University Students' Association Teaching Awards

2009..... Nominated for Best Lecturer and Best Course, Edinburgh University Students' Association Teaching Awards (inaugural)

2004..... Outstanding Graduate Student Instructor Award from the University of California at Berkeley.

6. Consultancy for industry

Expert in combustion and fire technology since 2001 involved in more than thirty consultancies to industry in UK, USA, Italy, Belgium and Korea (eg, Arup, The Carbon Company, LG, Jacobs Engineering, Barlow Lyde & Gilbert, Kennedys, IFiC, BilCo Engineering). I have worked in a dozen forensic fire cases (eg, 2005 Magna Park warehouse, 2006 Brussels Airport hangar, 2006 Lympne Primary School).

7. External Professional Service

Committee Memberships

British Section of the Combustion Institute, since 2008. Re-elected in 2011

Combustion Group, Institute of Physics, since 2009.

International Association for Fire Safety Science, since 2011

European Network COST TU0604 "Integrated Fire Engineering and Response". Chairman of Fire Dynamics Working Group, since 2011. Previously (2010-2011), Vice-chairman.

Engineering Press Gang (Founder and first convener), School of Engineering, University of Edinburgh since 2012

Editorial Board Memberships

Associate Editor of *Fire Technology* (journal of NFPA by Spinger), since 2010. Previously (2009-2010) Editorial Board member.

Editorial Board member of *Fire Science Reviews* (journal by Spinger), since 2011

Guest Editor of *Coal and Peat Fires: A Global Perspective*, Volume 4, Elsevier Geoscience, 2011.

Guest Editor of the special issue on *9/11 World Trade Center Disaster* of Fire Technology journal 2012.

Guest Editor of the special issue on *Wildland fires* of Fire Technology journal Vol 47 (2), April 2011.

Editor-in-Chief of *Newsletter of The International Association for Fire Safety Science*, since 2011. Previously (2009-2011) Associate Editor.

Editor-in-Chief of *Newsletter of the British Section of the Combustion Institute*, since 2012

Contributing Editor of *Wildfire Magazine* (official publication of the International Association of Wildland Fire), since 2010.

Curator of website of the British Section of the Combustion Institute, since 2009 (http://www.combustion.org.uk)

Most important Conference Scientific and Organizing Committees

Scientific Committee: YIC2012 ECCOMAS - Young Investigators Conference of the European Community on Computational Methods in Applied Sciences, April 2012, University of Aveiro. http://yic2012.web.ua.pt

Scientific Committee: VI International Conference on Forest Fire Research, Nov 2010, Coimbra. http://www.adai.pt/icffr/2010

Co-chairman and Organizer: meeting of the Combustion Group at the Institute of Physics, "Emerging Combustion Technologies", Sep 2010, Herriot-Watt University. http://www.iop.org/events/scientific/conferences/y/10/combustion

General Chairman and Organizer: Spring meeting of Combustion Institute British Section, "Combustion Phenomena in Fire Science", April 2010, University of Edinburgh. http://www.eng.ed.ac.uk/fire/combustion2010

Co-chairman and Organizer of Workshop "Mathematical Problems in Fire Safety Engineering" funded by Edinburgh Research Partnership and International Centre for Mathematical Sciences, Oct 2008, Edinburgh. http://www.icms.org.uk/workshops/fire

Scientific Committee: Advanced Research Workshop in Fire Computer Modelling, Oct 2007, Santander. http://grupos.unican.es/gidai/web/jtoct07/PROGRAMME.pdf

Organizing Committee: 5th International Seminar on Fire and Explosion Hazards, May 2007, Edinburgh. http://www.see.ed.ac.uk/feh5

8. External Ph.D. Examiner

2012 ..... A Witkoski, University of Central Lancashire (UK)
2011 ..... P. Bartoli, Università di Corsica Pasquale Paoli (France)
2011 ..... C. Stoof, Wageningen University (Netherlands)
2011 ..... P. Caine, University of Leeds (UK)
2010 ..... P. Pereira, Universitat de Barcelona (Spain)
2010 ..... Y. Perez Ramirez, Universitat Politecnica de Catalunya (Spain)
2010 ..... S. Wasan, Ghent University (Belgium)
2009 ..... C. Gomez-Montes, Universidad Politecnica de Cartagena (Spain)
2009 ..... P. Espinosa Santos, Universidad de Cantabria (Spain)
2008 ..... M. Martins, (*rapporteur)* Universite de Toulouse (France)
2008 ..... M. Lazaro Urrutia, Universidad de Cantabria (Spain)

2007.....A. Ronza, Universitat Politecnica de Catalunya (Spain)

9. Plenary and Invited Lectures

2012 .....Plenary Keynote: Numerical forecasting of fire dynamics: tomorrow's infrastructure protection - **Young Investigators Conference of the European Community on Computational Methods in Applied Sciences** (ECCOMAS), Aveiro.
http://www.scribd.com/doc/91845104

2012 .....Solicited Presentation: From organic matter to pyrogenic char to ash: the role of smouldering combustion in wildfires - **Annual Meeting of European Geoscience Union**, Vienna.
http://www.scribd.com/doc/91086911

2012.....Invited Lecture: Introduction to Fire Dynamics for Structural Engineers - **Training School for Young Researchers** COST TU0904 (April), Malta
http://www.scribd.com/doc/89665615

2012.....Invited Speaker: A Primer on Research for Undergraduates- Inaugural meeting of the Edinburgh University **Young Science Researchers Association** (24th Jan), Edinburgh.

2011.....Invited Speaker (x3): Modelling fires in Tunnel fires; Travelling fires for Structural Design; and Current Limitations of Fire Modelling – **10th International Seminar on Fire Protection DICTUC**, Pontificia Universidad Católica de Chile, Santiago de Chile.

2011.....Invited Speaker: Pyrolysis Inverse Modelling - Workshop on Pyrolysis Parameter Estimation, **10th Symposium of the International Association of Fire Safety Science**, Maryland.

2011.....Invited Speaker: Experimental needs in Fire Modelling - Workshop on Computer Modelling, **10th Symposium of the International Association of Fire Safety Science**, Maryland.

2011 .....Inaugural Lecture: Multiscale Modelling of Tunnel Fires - Fire Engineering Conference, **Universitat Politècnica de València**, Valencia.
http://www.scribd.com/doc/56978288

2011.....Invited Lecture: Inverse Modelling to Forecast Enclosure Fire Dynamics - Combustion Modelling for Challenging Application, Spring Technical Meeting, **Institute of Physics**, Combustion Group, Southampton.

2011.....Invited Lecture: Travelling Fires in Building Structural Design - **6th International Congress on Performance-Based Design for Fire**, Madrid.
http://www.scribd.com/doc/49609283

2010.....Plenary Lecture: Smouldering fires in the Earth System - **Colloque International Stop Feu**, Oran, Algeria.

2010.....Key Lecture: Smouldering fires in the Earth System - **15th International Humic Substances Society Meeting**, Tenerife, Spain.

2009.....Invited Lecture: Computational Modelling of Enclosure Fire Dynamics - **5th International Congress on Performance-Based Design for Fire**, Madrid.

2008.....Invited Speaker: Travelling-fire concept in Building Design - Workshop on Fire and Structures, **9th Symposium of the International Association of Fire Safety Science**, Karlsruhe.

2008.....Invited Lecture: Fires in the Mining Industry - International Seminar on Fire Protection, **Engineering Services SAC**, Lima.

2007.....Invited Speaker: Investigation of the 2006 Hangar Fire at Brussels Airport - Meeting on Litigation Case Strategies, **AXA Corporate Solutions**, Paris.

2007.....Invited Lecture: Forecasting fire dynamics - Rasbash Lecture, **The Institution of Fire Engineers**, Watford (UK).

10. Seminars

2012..... Smouldering mega-fires in the Earth system – **University of Exeter** (UK), Department of Geography.

2011..... Smouldering mega-fires in the Earth system – **KAUST** (Saudi Arabia), Department of Mechanical Engineering.

2011..... Tomorrow's infrastructure protection: Forecasting fire dynamics – **Nanyang Technological University** (Singapore), Thermal and Fluids Engineering Division

2011..... Tomorrow's infrastructure protection: Forecasting fire dynamics - **University of Maryland**, College Park (USA), Department of Fire Protection Engineering.

2011..... Geoengineering and Accidental Burning of Fossil Fuels - **University of California at Berkeley** (USA), Department of Mechanical Engineering.
http://www.youtube.com/watch?v=aR0avnBTyTo

2011..... Geoengineering and Accidental Burning of Fossil Fuels - **University of Strathclyde** (UK), Department of Civil Engineering.

2011..... Geoengineering and Accidental Burning of Fossil Fuels - **University of West Virginia** (USA), Department of Mechanical Engineering.

2011..... Geoengineering and Very Long-Term Sequestration of Solid Carbon - **University of California at Berkeley** (USA), Department of Mechanical Engineering.

2011..... Geoengineering and Accidental Burning of Fossil Fuels - **University of Texas at Austin** (USA), Department of Mechanical Engineering.

2011..... Strengths and Risks of Computer Fire Modelling – **BRE Global**, London

2010..... Smouldering fires in the Earth System - **Institut de Mecanique de Marseille**, Universite de la Provence (France).

2010..... Geoengineering and Very Long-Term Sequestration of Solid Carbon - **UK Biochar Research Centre**, University of Edinburgh.

2010..... Multiscale modelling of fire phenomena - **Arup**, London.

2010..... Forecasting fire dynamics - **Universitat Politecnica de Catalunya** (Spain), CIMNE International Centre for Numerical Methods in Engineering.

2010..... Smouldering fires in the Earth System – **KAUST** (Saudi Arabia), Department of Mechanical Engineering.

2010..... Forecasting fire dynamics - **Imperial College London**, Department of Mechanical Engineering.

2010..... Smouldering fires in the Earth System - **University of Oxford**, Oxford Centre for Tropical Forests.

2010..... Reactive soli materials and fire dynamics - **Worcester Polytechnic Institute** (USA), Department of Fire Protection Engineering.

2009..... Smouldering fires in the Earth System - **University College Dublin**, School of Biology and Environmental Science.

2009..... Smouldering fires in the Earth System - **University of Manchester**, School of Mathematics.

2009..... Smouldering fires in Las Tablas de Daimiel - **Universidad Pontificia de Comillas**, (Spain) ICAI School of Engineering.

2009..... Smouldering fires in the Earth System - University of Edinburgh, Global Change Seminar, **School of Geosciences**.

2008..... Smouldering fires in the Earth System - **University of Leicester**, Department of Geography.

2008..... Forecasting fire dynamics - **University of California at Berkeley** (USA) Department of Mechanical Engineering.

2008..... Smouldering phenomena in Science and Technology – **Heriot-Watt University**, Institute of Petroleum Engineering.

2008..... Smouldering phenomena in Science and Technology - **National Institute of Standards and Technology** (USA), Building and Fire Research Laboratory.

2008..... Fire Modelling of The Dalmarnock Tests - **University of Maryland**, College Park (USA), Department of Fire Protection Engineering..

2008..... Fire Modelling of The Dalmarnock Tests - **Worcester Polytechnic Institute** (USA).

2007..... Fire Modelling of The Dalmarnock Tests - **Universitat Politecnica de Catalunya**, (Spain), CIMNE International Centre for Numerical Methods in Engineering.

2007..... Fire Modelling of The Dalmarnock Tests - **Politecnico di Torino** (Italy).

2007..... Design Fires for Modern Buildings - **Arup** Fire, London.

2007..... Fire Modelling of The Dalmarnock Tests - **VTT** Technical Research Centre (Finland), Fire Safety Technology.

1999..... Smouldering Combustion in Absence of gravity - **University of Texas at Austin** (USA), Department of Mechanical Engineering.

11. Professional Societies

2001-present .. Combustion Institute

2005-present .. International Association of Fire Safety Science

2008-present .. International Association of Wildland Fire

2008-present .. European Geosciences Union

2008-present .. International Biochar Initiative

2009-present .. Institute of Physics

2011-present .. International Peat Society

2006-2011 ... The Institution of Fire Engineers

2006-2010 ... Society of Fire Protection Engineering

2009-2011.... Combustion Engineering Association

2010-2011 ... American Association for the Advancement of Science

12. Reviewer of Journals

Fire Safety Journal (x24); Proceedings of the Combustion Institute (x18); Fire Safety Science (x15); Fire and Materials (x11); Combustion and Flame (x10); Fire Technology (x10); Combustion Science and Technology (x5); Fuel (x4); International Journal of Wildland Fire (x3); International Journal of Thermal Sciences (x3); Journal of Wind Engineering and Industrial Aerodynamics (x2); Journal of Combustion (x2); Applied Thermal Engineering (x2); Atmospheric Chemistry and Physics (x1); Journal of Hazardous Materials (x1);Energy & Fuels (x1); Building and Environment (x1); Polymer Degradation and Stability (x1); Combustion Theory and Modelling (x1); Journal of Fire Protection Engineering (x1); American Institute of Chemical Engineers Journal (x1); Chemical Engineering Science (x1); Chemical Engineering Journal (x1);Nuclear Engineering and Design (x1); ASTM Journal of Testing and Evaluation (x1); Construction and Building Materials (x1); Asia-Oceania Symposium on Fires Science and Technology (x1); Journal of Fire Sciences (x1); The Open Thermodynamics Journal (x1); Progress in Computational Fluid Dynamics (x1).

13. Featured in Media

Print Media: *The New York Times* (2010), *Science et Vie* (2011), *El Pais* (2010 and 2007), *El Mundo* (2007x2), *The Independent* (2010), *The Scotsman* (2011, 2010x2), T*he Herald* (2010), *Associate Press* (2010), *Metro* (2010), *Nature Geoscience* (2010), *Lanza* (2010), *Agencia EFE* (2009x3), *Lloyd's List (2007), Edinburgh University Science Magazine* (2009).

Radio: BBC *Wales* (2011), LBC *97.3* London (x2), BBC *Scotland* (2010), *Radio Forth 2* Scotland (2010), *Radio Exterior de España* (2010) and *Cadena* SER *Cuidad Real* (2010).

TV: *Scottish TV* (2010).

Online Media: *DotEarth NYT.com* (2010), *Xinhuanet* (2010), *Press Associates* (2010), *Physorg.com* (2010), *sciencedaily.com* (2010), *OnEarth.org* (2010), *Geoscientist Online* (2010), *Astrobiology Magazine* (2010) and *ResearchSEA* (2010) and *La Vanguardia* (2009).

14. Detailed Research Grants

Project Title	Awarding Body	Investigators	Start	Finish	Amount
Real fires for the design of Modern High Rise Buildings	EPSRC	Torero, Bisby, Rein, Usmani, Gillie, Welch	Nov 2011	Dec 2014	£1,023,000
Characterising the dynamics and environmental impact of sub-surface peat fires by controlled experiments (with University College Dublin)	UCD Earth and Natural Sciences PhD Programme, PRTLI	Yearsley, J Rein, G Belcher, C	Sep 2011	Aug 2015	£115,000
Greenhouse Gas Emissions from a Non-Conventional Source: Subsurface Peat Fires	Royal Academy of Engineering / Leverhulme Trust, Senior Research Fellowship	Rein, G	Sep 2010	Aug 2011	£52,000
Fire Interactions with Life on Earth (collaborators from School of Geosciences)	Marie Curie Actions FP7, Intra-European Fellowships	Belcher, C Williams, M Rein, G	Sep 2010	Aug 2012	£150,000
International program for scientific cooperation on Wildfires (with University of Corsica and Tomsk State University)	CNRS (France) and Russian Foundation for Basic Research.	Simeoni, A Grishin, AM Rein, G	Jan 2010	Dec 2012	£51,000
Uncertainty and complexity in the modelling of pyrolysis of solids (industrial grant)	BRE Trust, Doctoral Studentship	Rein, G Torero, J	Jan 2009	Dec 2011	£66,000
Travelling Fires for the Structural Design of Buildings (industrial grant)	Arup, Doctoral Studentship	Rein, G. Torero, J	Jan 2008	Dec 2010	£75,000
Experimental Flammability Analysis of Complex Solids (industrial grant)	BRE Trust, Doctoral Studentship	Rein, G Torero, J	Sept 2007	Aug 2010	£67,000
Ignition, Spread and Suppression of Reactive Solids	EPSRC, CASE for New Academics	Rein, G	Aug 2007	July 2010	£63,000
Ignition, Spread and Suppression of Reactive Solids (industrial support to CASE award)	International Fire Investigators and Consultants	Rein, G	Aug 2007	July 2010	£26,000
Forecasting Fire Dynamics to lead the Emergency Response	European Union Program Alßan for Latin American Scholars, Doctoral Studentship	Torero, J Rein, G	Sep 2006	Aug 2009	£60,000
Peat Moisture & Fire Monitoring Programme (industrial grant)	Met Office	Legg, C Rein, G	Aug 2006	July 2008	£32,000
Organization of Workshop "Mathematical Problems in Fire Safety Engineering" at International Centre for Mathematical Sciences (collaborator from Heriot-Watt University)	Edinburgh Research Partnership	Rein, G Lacey, A	Oct 2008	Oct 2008	£5,000
				Total	£1,785,000

15. Publications

15.1 Contributions to Books

6. One-dimensional and multi-scale modelling of tunnel ventilation and fires, by F Colella, G Rein, R Borchiellini, V Verda, in: **The Handbook of Tunnel Fire Safety**, 2nd ed, ICE Publishing, 2011. ISBN 978-0-7277-4153-0.
5. Smouldering Combustion Phenomena and Coal Fires, by G Rein, in: **Coal and Peat Fires: A Global Perspective**, Volume 1, Chapter 17, pp. 307-315, GB Stracher, A Prakash and EV Sokol (editors), Elsevier Geoscience, 2011. ISBN 978-0-444-52858-2.
   http://www.elsevierdirect.com/coalpeatfires
4. Burning and Suppression of Smouldering Coal Fires, by R Hadden and G Rein, in: **Coal and Peat Fires: A Global Perspective**, Volume 1, Chapter 18, pp. 317-326, GB Stracher, A Prakash and EV Sokol (editors), Elsevier Geoscience, 2011. ISBN 978-0-444-52858-2.
   http://www.elsevierdirect.com/coalpeatfires
3. Physical Parameters Affecting Fire Growth, by JL Torero and G Rein, Chapter 3 in: **Fire Retardancy of Polymeric Materials**, 2nd Ed, Editors CA Wilkie and AB Morgan, CRC Press, Taylor & Francis, 2009. ISBN 978-1-4200-8399-6.
   http://www.crcpress.com/product/isbn/9781420083996
1. **Modelado y Simulación Computacional de Incendios en la Edificación**, by D Alvear, JA Capote, O Abreu, M Lazaro, G Rein and JL Torero. Editorial Diaz de Santos, 320 pages, Madrid, 2007. ISBN 978-84-7978-832-2.
   http://www.diazdesantos.es/SAB/sab.html?pr=3&source=SAB&dato=SP0410003967

15.2 Books Edited

1. **Fire Phenomena and the Earth System: An Interdisciplinary Guide to Fire Science**, Editors: C Belcher and G Rein, Black-Wiley, 2011.
2. **The Dalmarnock Fire Tests: Experiments and Modelling**, Editors: G Rein, C Abecassis-Empis and R Carvel, 221 pages, University of Edinburgh, 2007. ISBN 978-0955749704.
   http://hdl.handle.net/1842/2037

15.3 Journal Papers

Citation counts for each paper were obtained combining Scopus and Google Scholar, and exclude self-citations.

42. R Hadden, G Rein, JL Torero, Radiant Ignition of Polyurethane Foam: the Effect of Sample Size, **Fire Technology** (in press), 2012.
    http://dx.doi.org/10.1007/s10694-012-0257-x
41. W Jahn, G Rein, JL Torero, Forecasting fire dynamics using inverse Computational Fluid Dynamics and Tangent Linearisation, **Advances in Engineering Software** 47 (2012) 114–126, 2011. doi:10.1016/j.advengsoft.2011.12.005 (2010 journal impact factor:1.00).
    http://dx.doi.org/10.1016/j.advengsoft.2011.12.005
40. S MacPhee, G Rein, J Gerhard, A Novel method for simulating smouldering propagation and its application to STAR (Self-sustaining Treatment for Active Remediation), **Environmental Modelling & Software** 31 (2012) pp 84-98 (2010 journal impact factor:2.87).
    http://dx.doi.org/10.1016/j.envsoft.2011.11.004
39. AI Filkov, AY Kuzin, O Sharypov, V Leroy-Cancellieri, D Cancellieri E Leoni, A Simeoni, G Rein, A comparative study to evaluate the drying kinetics of Boreal peats from micro to macro scales, **Energy & Fuels** (in press), 2011. doi:10.1021/ef201221y (2010 journal impact factor:2.44).
    http://dx.doi.org/10.1021/ef201221y
38. D Cancellieri, V Leroy-Cancellieri, E Leoni, A Simeoni, A.Y Kuzin, AI Filkov, G Rein, Kinetic Investigation on the Smouldering Combustion of Boreal Peat, **Fuel** 93, pp. 479–485, 2011. doi:10.1016/j.fuel.2011.09.052 (2010 journal impact factor 3.6).
    http://dx.doi.org/10.1016/j.fuel.2011.09.052

37. F Colella, G Rein, V Verda, R Borchiellini, Multiscale Modelling of the Transient Flows from Fire and Ventilation in Long Tunnels, **Computers and Fluids** 51 (1), pp. 16-29, 2011. doi:10.1016/j.compfluid.2011.06.021 (2009 journal impact factor 1.27).
http://dx.doi.org/10.1016/j.compfluid.2011.06.021

36. P Pironi, C Switzer, J Gerhard, G Rein, JL Torero, Self-sustaining Smoldering Combustion for NAPL Remediation: Laboratory Evaluation of Process Sensitivity to Key Parameters, **Environmental Science & Technology** 45 (7), pp. 2980-2986, 2011. doi:10.1021/es102969z (2009 journal impact factor 4.36).
http://pubs.acs.org/doi/abs/10.1021/es102969z

35. A Law, M Gillie, J Stern-Gottfried, G Rein, The Influence of Travelling Fires on a Concrete Frame, **Engineering Structures** 33, pp. 1635–1642, 2011. doi:10.1016/j.engstruct.2011.01.034 (2009 journal impact factor 1.26) (***Winner of 2011 Lloyd's Science of Risk Prize in Technology***).
http://hdl.handle.net/1842/4907

34. C Belcher, J Yearsley, R Hadden, J McElwain, G Rein, Baseline intrinsic flammability of Earth's ecosystems estimated from paleoatmospheric oxygen over the past 350 million years, **Proceedings of the National Academy of Sciences** 107 (52), pp. 22448-22453, 2010. doi:10.1073/pnas.1011974107 (2 non-self citations) (2009 journal impact factor 9.43).
http://dx.doi.org/10.1073/pnas.1011974107

33. R Hadden, G Rein, Small-scale experiments of self-sustaining decomposition of NPK fertilizer and application to events aboard the Ostedijk in 2007, **Journal of Hazardous Materials** 186, pp 731–737, 2011. doi:10.1016/j.jhazmat.2010.11.047 (2009 journal impact factor 4.14).
http://dx.doi.org/10.1016/j.jhazmat.2010.11.047

32. N Ball, G Rein, Numerical Investigation of the Ignition Delay Time of a Translucent Solid at High Radiant Heat Fluxes, **Combustion and Flame** 158, pp. 1109-1116, 2011. doi:10.1016/j.combustflame.2010.10.014 (1 non-self citation) (2009 journal impact factor 2.92).
http://dx.doi.org/10.1016/j.combustflame.2010.10.014

31. W Jahn, G Rein, JL Torero, Forecasting Fire Growth using an Inverse Zone Modelling Approach, **Fire Safety Journal** 46, pp. 81–88, 2011. doi:10.1016/j.firesaf.2010.10.001. (2009 journal impact factor 1.26) (shortlisted for 2010 Lloyd's Science of Risk Prize).
http://dx.doi.org/10.1016/j.firesaf.2010.10.001

30. T Rogaume, L Bustamante Valencia, E Guillaume, F Richard, J Luche, G Rein, JL Torero, Development of the thermal decomposition mechanism of polyether polyurethane foam using both condensed and gas phase release data, **Combustion Science and Technology** 183 (7), pp. 627-644, 2011. doi:10.1080/00102202.2010.535574 (2009 journal impact factor 1.14).
http://dx.doi.org/10.1080/00102202.2010.535574

29. W Jahn, G Rein, JL Torero, A Posteriori Modelling of the Growth Phase of Dalmarnock Fire Test One, **Building and Environment** 46 (5), pp. 1065-1073, 2011. doi:10.1016/j.buildenv.2010.11.001 (2009 journal impact factor 1.80).
http://dx.doi.org/10.1016/j.buildenv.2010.11.001

28. R Carvel, T Steinhaus, G Rein, JL Torero, Determination of the flammability properties of polymeric materials: a novel method, **Polymer Degradation and Stability** 96, pp. 314-319, 2011. doi:10.1016/j.polymdegradstab.2010.08.010 (2009 journal impact factor 2.15).
http://dx.doi.org/10.1016/j.polymdegradstab.2010.08.010

27. C Belcher, L Mander, G Rein, FX Jervis, M Haworth, S Hesselbo, IJ Glasspool, JC McElwain, Increased fire activity at the Triassic/Jurassic boundary in Greenland due to climate driven floral change, **Nature Geoscience** 3, pp. 426-429, June 2010. doi:10.1038/NGEO871 (2 non-self citations) (2009 journal impact factor 8.12) (***Cover article***).
http://dx.doi.org/10.1038/NGEO871

26. J Stern-Gottfried, G Rein, L Bisby, JL Torero, Experimental Review of the Homogeneous Temperature Assumption in Post-Flashover Compartment Fires, **Fire Safety Journal** 45, pp. 249–261, 2010. doi:10.1016/j.firesaf.2010.03.007 (1 non-self citations) (2009 journal impact factor 1.26).
http://hdl.handle.net/1842/3866

25. F Colella, G Rein, R Borchiellini, JL Torero, A Novel Multiscale Methodology for Simulating Tunnel Ventilation Flows during Fires, **Fire Technology** 47 (1), pp. 221-253, 2011. doi:10.1007/s10694-010-0144-2 (2009 journal impact factor 0.37) (***Winner of 2010 Lloyd's Science of Risk Prize in Technology***).
http://dx.doi.org/10.1007/s10694-010-0144-2

24. F Colella, G Rein, P Reska, R Carvel, JL Torero, Analysis of the Ventilation Systems in the Dartford Tunnels Using a Multiscale Modelling Approach, **Tunnelling and Underground Space Technology** 25, pp. 423–432, 2010. doi:10.1016/j.tust.2010.02.007 (2009 journal impact factor 0.86).
http://hdl.handle.net/1842/3872

23. L Bustamante Valencia, T Rogaume, E Guillaume, G Rein, JL Torero, Analysis of Principal Gas Products During Combustion of Polyether Polyurethane Foam at Different Irradiance Levels, **Fire Safety Journal** 44, pp. 933–940, 2009. doi:10.1016/j.firesaf.2009.05.003 (3 non-self citation) (2009 journal impact factor 1.26).
http://hdl.handle.net/1842/3530

22. F Colella, G Rein, R Borchiellini, R Carvel, JL Torero, V Verda, Calculation and Design of Tunnel Ventilation Systems using a Two-scale Modelling Approach, **Building and Environment** 44, pp. 2357-2367, 2009. doi:10.1016/j.buildenv.2009.03.020 (4 non-self citations) (2009 journal impact factor 1.80).
http://hdl.handle.net/1842/3006

21. C Switzer, P Pironi, G Rein, JL Torero, JI Gerhard, Self-Sustaining Smoldering Combustion: A Novel Remediation Process for Non-Aqueous-Phase Liquids in Porous Media, **Environmental Science and Technology** 43, pp. 5871-5877, 2009. doi: 10.1021/es803483s (2 non-self citation) (2009 journal impact factor 4.36).
http://dx.doi.org/10.1021/es803483s

20. G Rein, Smouldering Combustion Phenomena in Science and Technology, **International Review of Chemical Engineering** 1 (1), pp. 3-18, 2009 (11 non-self citations) (***Invited review paper***).
http://hdl.handle.net/1842/2678

19. G Rein, JL Torero, W Jahn, J Stern-Gottfried, NL Ryder, S Desanghere, M Lazaro, F Mowrer, A Coles, D Joyeux, D Alvear, JA Capote, A Jowsey, C Abecassis-Empis, P Reszka, Round-Robin Study of a priori Modelling Predictions of The Dalmarnock Fire Test One, **Fire Safety Journal** 44 (4), pp. 590-602, 2009. doi: 10.1016/j.firesaf.2008.12.008 (9 non-self citations) (2009 journal impact factor 1.26) (FM Global Award for Best Paper).
http://hdl.handle.net/1842/2704

18. C Gutiérrez-Montes, E Sanmiguel-Rojas, A Viedma, G Rein, Experimental Data and Numerical Modelling of 1.3 and 2.3 MW Fires in a 20 m Cubic Atrium, **Building and Environment** 44, pp. 1827–1839, 2009. doi:10.1016/j.buildenv.2008.12.010 (4 non-self citations) (2009 journal impact factor 1.80).
http://hdl.handle.net/1842/2761

17. A Cowlard, W Jahn, CA Empis, G Rein, JL Torero, Sensor Assisted Fire Fighting, **Fire Technology** 46 (3), 2010. doi:10.1007/s10694-008-0069-1 (1 non-self citation) (2009 journal impact factor 0.37).
http://dx.doi.org/10.1007/s10694-008-0069-1

16. G Rein, S Cohen, A Simeoni, Carbon Emissions from Smouldering Peat in Shallow and Strong Fronts, **Proceedings of the Combustion Institute** 32 (2), pp. 2489-2496, 2009. doi:10.1016/j.proci.2008.07.008 (9 non-self citation) (2009 journal impact factor 3.51) (Distinguished Paper Award on Fire Research).
http://hdl.handle.net/1842/2613

15. P Pironi, C Switzer, G Rein, JI Gerhard, JL Torero, A Fuentes, Small-Scale Forward Smouldering Experiments for Remediation of Coal Tar in Inert Media, **Proceedings of the Combustion Institute** 32 (2), pp. 1957-1964, 2009. doi:10.1016/j.proci.2008.06.184 (2 non-self citation) (2009 journal impact factor 3.51).
http://hdl.handle.net/1842/2614

14. G Rein, N Cleaver, C Ashton, P Pironi, JL Torero, The Severity of Smouldering Peat Fires and Damage to the Forest Soil, **Catena** 74 (3), pp. 304-309, 2008. doi:10.1016/j.catena.2008.05.008 (13 non-self citations) (2009 journal impact factor 1.93).
http://hdl.handle.net/1842/2480

13. O Putzeys, AC Fernandez-Pello, G Rein, DL Urban, The Piloted Transition to Flaming in Smoldering Fire Retarded and Non-Fire Retarded Polyurethane Foam, **Fire and Materials** 32, pp. 485-499, 2008. doi:10.1002/fam.981 (3 non-self citations) (2009 journal impact factor 1.20).
http://hdl.handle.net/1842/2622

12. C Abecassis-Empis, P Reszka, T Steinhaus, A Cowlard, H Biteau, S Welch, G Rein, L Torero, Characterisation of Dalmarnock Fire Test One, **Experimental Thermal and Fluid Science** 32 (7), pp. 1334-1343, 2008. doi:10.1016/j.expthermflusci.2007.11.006 (4 non-self citations) (2009 journal impact factor 1.23) (Bodycote Warrington Fire Research Prize).
http://hdl.handle.net/1842/2513

11. G Rein, AC Fernandez-Pello, DL Urban, Computational Model of Forward and Opposed Smoldering Combustion in Microgravity, **Proceedings of the Combustion Institute** 31 (2), pp. 2677-2684, 2007. doi:10.1016/j.proci.2006.08.047 (7 non-self citations) (2009 journal impact factor 3.51).
http://hdl.handle.net/1842/897

10. O Putzeys, A Bar-Ilan, G Rein, AC Fernandez-Pello, DL Urban, The Role of Secondary Char Oxidation in the Transition from Smoldering to Flaming, **Proceedings of the Combustion Institute** 31 (2), pp. 2669-2676, 2007. doi:10.1016/j.proci.2006.08.006 (1 non-self citation) (2009 journal impact factor 3.51).
http://hdl.handle.net/1842/1518

9. G Rein, C Lautenberger, AC Fernandez-Pello, JL Torero, DL. Urban, Application of Genetic Algorithms and Thermogravimetry to Determine the Kinetics of Polyurethane Foam in Smoldering Combustion, **Combustion and Flame** 146 (1-2), pp 95-108, 2006. doi:10.1016/j.combustflame.2006.04.013 (14 non-self citations) (2009 journal impact factor 2.92).
http://hdl.handle.net/1842/894

8. C Lautenberger, G Rein, AC Fernandez-Pello, The application of a genetic algorithm to estimate material properties for fire modeling from bench-scale fire test data, **Fire Safety Journal** 41 (3), pp. 204-214, 2006. doi:10.1016/j.firesaf.2005.12.004 (13 non-self citations) (2009 journal impact factor 1.26).
http://hdl.handle.net/1842/1778

7. G Rein, A Bar-Ilan, AC Fernandez-Pello, N Alvares, A Comparison of Three Models for the Simulation of Accidental Fires, **Journal of Fire Protection Engineering** 16 (3), pp. 183-209, 2006 (6 non-self citations) (2009 journal impact factor 0.30).
http://repositories.cdlib.org/postprints/758

6. G Rein, A Bar-Ilan, AC Fernandez-Pello, JL Ellzey, JL Torero, DL Urban, Modeling of One-Dimensional Smoldering of Polyurethane in Microgravity Conditions, **Proceedings of the Combustion Institute** 30 (2) pp. 2327-2334, 2005. doi:10.1016/j.proci.2004.08.150 (3 non-self citations) (2009 journal impact factor 3.51).
http://escholarship.org/uc/item/3104664p

5. A Bar-Ilan, O Putzeys, G Rein, AC Fernandez-Pello, DL Urban, Transition from Forward Smoldering to Flaming in Small Polyurethane Foam Samples, **Proceedings of the Combustion Institute** 30 (2) pp. 2295-2302, 2005. doi:10.1016/j.proci.2004.08.233 (2 non-self citations) (2009 journal impact factor 3.51).
http://repositories.cdlib.org/postprints/422

4. A Bar-Ilan, G Rein, DC Walther, AC Fernandez-Pello, JL Torero, DL Urban, The Effect of Buoyancy on Opposed Smoldering, **Combustion Science and Technology** 176, pp. 2027-2055, 2004. doi:10.1080/00102200490514822 (2 non-self citations) (2009 journal impact factor 1.14).
http://repositories.cdlib.org/postprints/350

3. A Bar-Ilan, G Rein, AC Fernandez-Pello, JL Torero, DL Urban, Forced Forward Smoldering Experiments in Microgravity, **Experimental Thermal and Fluid Science** 28 (7), pp. 743-751,

2004. doi:10.1016/j.expthermflusci.2003.12.012 (7 non-self citations) (2009 journal impact factor 1.23).
http://repositories.cdlib.org/postprints/341

2. G Rein, JL Torero, JL Ellzey, Simulación de Combustión Latente en Flujo Directo, **Revista Internacional de Métodos Numéricos para Cálculo y Diseño en Ingeniería** 18 (4), pp. 459-474, 2002, (2 non-self citations) (2009 journal impact factor 0.31).
http://hdl.handle.net/2099/3372

1. S Leach, G Rein, JL Ellzey, O Ezekoye, JL Torero, Kinetic and Fuel Property Effects on Forward Smoldering Combustion, **Combustion and Flame** 120 (3), pp. 346-358, 2000. doi:10.1016/S0010-2180(99)00089-9 (25 non-self citations) (2009 journal impact factor 2.92).
http://dx.doi.org/10.1016/S0010-2180(99)00089-9

15.4 Conference Papers

78. N Bal, G Rein, Uncertainty and calibration in polymer pyrolysis modelling (invited paper) in: Recent Advances in Flame Retardancy of Polymeric Materials, Vol. 23, C Wilkie (ed.), BCC, May 2012.
77. G Vigne, C Gutierrez-Montes and G Rein, Uncertainty of Smoke Filling Calculations in a Large Atrium through Comparison to Experimental Results, 9th International Conference on Performance-Based Codes and Fire Safety Design Methods, 20-22 June 2012, Hong Kong.
76. A Law, J Stern-Gottfriend, M Gillie, G Rein, Structural Engineering and Fire Dynamics: Advances at the Interface and Buchanan's challenge, Fire Safety Science 10: 1563-1576, (Proceedings of the 10th International Symposium on Fire Safety Science). doi:10.3801/IAFSS.FSS.10-1563
http://dx.doi.org/10.3801/IAFSS.FSS.10-1563
75. W Jahn, G Rein, JL Torero, Forecasting Fire Growth using an Inverse CFD Modelling Approach in a Real-Scale Fire Test, Fire Safety Science, 2011, volume 10, pp 1349-1358, (Proceedings of the 10th International Symposium on Fire Safety Science). doi:10.3801/IAFSS.FSS.10-1349
http://dx.doi.org/10.3801/IAFSS.FSS.10-1349
74. F Colella, G Rein, V Verda, R Borchiellini, JL Torero, Time-dependent Multiscale Simulations of Fire Emergencies in Longitudinally Ventilated Tunnels, Fire Safety Science 10: 359-372, (Proceedings of the 10th International Symposium on Fire Safety Science). doi:10.3801/IAFSS.FSS.10-359
http://dx.doi.org/10.3801/ IAFSS.FSS.10-359
73. P Girods, N Bal, H Biteau G Rein and JL Torero, Comparison of Pyrolysis Behaviour Results between the Cone Calorimeter and the Fire Propagation Apparatus Heat Sources, Fire Safety Science 10: 889-901, , (Proceedings of the 10th International Symposium on Fire Safety Science). doi:10.3801/IAFSS.FSS.10-889
http://dx.doi.org/10.3801/IAFSS.FSS.10-889
72. N Bal, G Rein, On the influence of model complexity in polymer ignition predictions (invited paper) in: Recent Advances in Flame Retardancy of Polymeric Materials, Vol. 22, M. Lewin (ed.), BCC, May 2011.
71. G Rein and J Stern-Gottfried, Travelling Fires in Large Comparments: Realistic fire dynamics for structural design, Proceedings of the International Conference Applications of Structural Fire Engineering, Prague, Czech Republic, pp. 337-342, Prague, 29 April 2011.
http://fire.fsv.cvut.cz/ASFE/Proceedings/Session-5_Numerical-Modelling.pdf
70. G Rein , W Jahn, JL Torero, Modelling of the Growth Phase of Dalmarnock Fire Test One, Proceedings of the 12th International Fire and Materials Conference, pp 45-55, San Francisco, Feb 2011.
http://hdl.handle.net/1842/4777
69. G Rein, Guest Editorial: Wildfires, Fire Science and Fire Safety Engineering, Fire Technology 47 (2), 2011. doi:10.1007/s10694-010-0196-3.
http://dx.doi.org/10.1007/s10694-010-0196-3
68. A Jonsdottir, G Rein, J Stern-Gottfried, Comparison of Steel Temperatures using Travelling Fires and Traditional Methods: the Case Study of the Informatics Forum Building, Proceedings of the 12th International Interflam Conference, Nottingham, July 2010.

http://www.see.ed.ac.uk/~grein/rein_papers/Jonsdottir_SteelTravelingFires_Inteflam2010.pdf

67. N Bal, G Rein, Numerical Investigation of the Ignition Delay Time in black PMMA at High Heat Fluxes, Proceedings of the 12th International Interflam Conference, pp. 685-696, Nottingham, July 2010.
66. J Stern-Gottfried, G Rein, L Bisby, JL Torero, Experimental Review of the Homogeneous Temperature Assumption in Post-Flashover Compartment Fires, Proceedings of the 12th International Interflam Conference, Nottingham, July 2010.
65. A Law, M Gillie, J Stern-Gottfried, G Rein, The Influence of Travelling Fires on the Response of a Concrete Frame, 6th International Conference Structures in Fire (SiF), Chicago, June 2010.
64. J Stern-Gottfried, A Law, G Rein, M Gillie, JL Torero, A Performance Based Methodology Using Travelling Fires for Structural Analysis, 8th International Conference on Performance-Based Codes and Fire Safety Design Methods, Lund University, Sweden, June 2010.
63. N Bal, G Rein, Sensitivity and Uncertainty Analysis of Ignition Modelling, (invited paper) in: Recent Advances in Flame Retardancy of Polymeric Materials, Vol. 21, M. Lewin (ed.), BCC, May 2010.
62. R Hadden, A Alkatib, G Rein, JL Torero, Radiant Ignition of Smouldering Combustion in Polyurethane Foam: The Effect of Sample Size, Proceedings of the 6th International Seminar on Fire and Explosion Hazards, Leeds, Apr. 2010.
61. F Jervis, G Rein, J Torero, A Simeoni, The Role Of Moisture In The Burning Of Live And Dead Pine Needles, Proceedings of the 6th International Seminar on Fire and Explosion Hazards, Leeds, Apr. 2010.
    http://www.see.ed.ac.uk/~grein/rein_papers/Jervis_PineNeedlesBurning_6FEH_2010.pdf
60. N Bal, G Rein, Numerical Investigation of the Ignition Delay Time in black PMMA at High Heat Fluxes, Proceedings of the 6th International Seminar on Fire and Explosion Hazards, Leeds, Apr. 2010.
59. F Colella, G Rein, V Verda, R Borchiellini, R Carvel, T Steinhaus, JL Torero, Design of tunnel ventilations systems for fire emergencies using multiscale modelling, 4th International symposium on Tunnel Safety and Security, Frankfurt, March 2010.
58. F Colella, G Rein, R Carvel, JL Torero, Tunnel Ventilation Effectiveness in Fire Scenarios, FS-World, Spring 2010, Special Edition on Tunnel Safety, pp. 36-40
57. T Browder, C Switzer, P Pironi, G Rein, JI Gerhard, JL Torero, Remediation of Oil Drilling Waste using Smoldering Combustion, Spring meeting of the Western States Section of The Combustion Institute, March 2010, Boulder, CO.
56. J Gerhard ,P Pironi, M Salman, J Torero, C Switzer, G Rein, G Grant, D Major, Self-Sustaining Treatment for Active Remediation (STAR): Introduction of a New Technique for the In Situ Destruction of Coal Tar in Soils, Manufactured Gas Plant 2010 Symposium, Electric Power Research Institute, San Antonio, Jan 2010.
55. AM Grishin, AS Yakimov, G Rein, A Simeoni, On physical and mathematical modeling of the initiation and propagation of peat fires, Journal of Engineering Physics and Thermophysics 82 (6), pp. 1235-1243, 2009.
54. A Stec, TR Hull, JL Torero, R Carvel, G Rein, S Bourbigot, F Samym, G Camino, A Fina, S Nazare, M Delichatsios, Effects of Fire Retardants and Nanofillers on the Fire Toxicity, pp. 342–366, in: Fire and Polymers V. Editors CA Wilkie, AB Morgan and GL Nelson, American Chemical Society Symposium Series 1013, 2009. doi: 10.1021/bk-2009-1013.ch021
53. C Gutiérrez-Montes, G Rein, E Sanmiguel-Rojas and A Viedma, Smoke and Fire Dynamics in Atria and Large Enclosures: An Overview, in: Fire Safety, Editors I Søgaard and H Krogh, Series Safety and Risk in Society, Nova Publishing, 2009, ISBN 978-1-60741-490-2.
52. A Jonsdottir, G Rein, Out of Range (Travelling Fires), Fire Risk Management, Dec 2009, pp. 14-17.
    http://hdl.handle.net/1842/3204
51. J Stern-Gottfried, G Rein, JL Torero, Travel Guide (Travelling Fires), Fire Risk Management, Nov 2009, pp. 12-16.
    http://hdl.handle.net/1842/3184
50. R Hadden, G Rein, Ignition and Suppression of Smouldering Coal Fires in Small-scale Experiments, Fall meeting of the Western States Section of The Combustion Institute, Oct 2009, Irvine.
49. J Stern-Gottfried, G Rein, JL Torero, An Experimental Review of the Homogeneous Temperature Assumption in Post-Flashover Compartment Fires, Proceedings of the Advanced Research

Workshop on Fire Protection and Life Safety in Buildings and Transportation Systems, pp. 273-293, Santander, Oct 2009, ISBN 978-84-8102-559-0.

48. R Crosfield, A Cavallo, F Colella, R Carvel, JL Torero, G Rein, Travelling Distance of Droplets from Water Mist Suppression Systems in Tunnels with Longitudinal Ventilation, Proceedings of the Advanced Research Workshop on Fire Protection and Life Safety in Buildings and Transportation Systems, pp.139-153, Santander, Oct 2009. ISBN 978-84-8102-559-0. http://www.see.ed.ac.uk/~grein/rein_papers/DropletLanding_Santander09.pdf
47. C Gutiérrez-Montes, E Sanmiguel-Rojas, A Viedma, G Rein, Low and medium power full-scale atrium fire tests and numerical validation of FDS, Proceedings of the Advanced Research Workshop on Fire Protection and Life Safety in Buildings and Transportation Systems, pp. 113-138, Santander, Oct 2009, ISBN 978-84-8102-559-0.
46. R Crosfield, A Cavallo, F Colella, R Carvel, JL Torero, G Rein, Approximate Travelling Distances of Water Mist Droplets in Tunnels, 9th International Water Mist Conference, London, Sept 2009. http://www.see.ed.ac.uk/~grein/rein_papers/DropletLanding_Santander09.pdf
45. M Gómez-Mares, W Jahn, M Muñoz, G Rein, J Casal, Simulación por CFD de incendios de dardos de fuego (Simulation of jet fires using CFD), Congreso de Métodos Numéricos en Ingeniería, Barcelona, Jun. 2009.
44. W Jahn, G Rein, JL Torero, Data assimilation in enclosure fire dynamics – towards adjoint modelling, Evolutionary and Deterministic Methods for Design, Optimization and Control, CIMNE Barcelona, Proceedings of EUROGEN 2009, Cracow, Jun. 2009
43. R Hadden, G Rein, Small scale extinguishing experiments of coal subsurface fires, 6th Mediterranean Combustion Symposium, Ajaccio, Jun. 2009
42. J Stern-Gottfried, G Rein, B Lane, JL Torero, A novel methodology for determining the design fires for structural fire analysis, 6th Mediterranean Combustion Symposium, Ajaccio, Jun. 2009.
41. L Bustamante Valencia, T Rogaume, E Guillaume, G Rein, JL Torero, Yield of toxic species in cone calorimeter tests for Polyether Polyurethane foam, 6th Mediterranean Combustion Symposium, Ajaccio, Jun 2009.
40. G Rein, N Bal, Solid ignition at high heat fluxes, (invited paper) in: Recent Advances in Flame Retardancy of Polymeric Materials, Vol. 20, M. Lewin (ed.), BCC, Jun 2009.
39. F Colella, G Rein, R Carvel, P Reszka, T Steinhaus, JL Torero, Analysis of the ventilation systems in the Dartford Tunnels using a multi-scale modelling approach, Proceedings of the 2nd International Tunnel Safety Forum for Road and Train, Lyon, Apr 2009.
38. F Colella, R Borchiellini, G Rein, V Verda, Modelling complex tunnel ventilation systems and fires using multi-scale techniques, Proceedings of the 2nd International Tunnel Safety Forum for Road and Train, Lyon, Apr 2009.
37. R Carvel, G Rein, JL Torero, Ventilation and suppression systems in road tunnels: Some issues regarding their appropriate use in a fire emergency, Proceedings of the 2nd International Tunnel Safety Forum for Road and Train, Lyon, Apr 2009
36. J Stern-Gottfried, G Rein, B Lane, JL Torero, An innovative approach to design fires for structural analysis of non-conventional buildings, Proceedings of the International Conference Applications of Structural Fire Engineering, pp. 34-40, Prague, Feb 2009
35. A Simeoni, J Garcia, G Rein, Description of subsurface fires and some experimental considerations on their dynamics, Fisika 2(2), pp. 172-178, 2009.
34. C Abecassis-Empis, A Cowlard, M Valenzuela, W Jahn, D Lange, G Rein, JL Torero, Forensic Analysis of Fire Induced Structural Failure, Proceedings of the 4th International Congress on Forensic Engineering, pp. 363-371, 2009, Institution of Civil Engineers, London.
33. W Jahn, G Rein, JL Torero, The Effect of Model Parameters on the Simulation of Fire Dynamics, Proceedings of the 9th International Symposium on Fire Safety Science (Fire Safety Science 9), pp. 1341-1352, 2008. doi:10.3801/IAFSS.FSS.9-1341 (2 non-self citations). http://hdl.handle.net/1842/2696
32. R Hadden, FX Jervis, G Rein, Investigation of the Fertilizer Fire aboard the Ostedijk, Proceedings of the 9th International Symposium on Fire Safety Science (Fire Safety Science 9), pp. 1091-1101, 2008. doi:10.3801/IAFSS.FSS.9-1091. http://hdl.handle.net/1842/2518
31. F Colella, R Borchiellini, R Carvel, G Rein, JL Torero, V Verda, Two-scale Modelling Approach For Simulating Flows in Tunnel Fires, Proceedings of International Congress in Smoke Control in Buildings and Tunnels, Santander, Oct 2008.

30. G Rein, J Garcia, A Simeoni, V Tihay, L Ferrat, Smouldering natural fires: comparison of burning dynamics in boreal peat and Mediterranean humus, WIT Transaction on Ecology and the Environment 119, 2008, pp. 183-192. (Proceedings of Forest Fires: Modelling, Monitoring and Management of Forest Fires, Toledo, Sept 2008)
29. R Roxburgh, G Rein, Study of Wildfire In-draft Flows for Counter Fire Operations, WIT Transaction on Ecology and the Environment 119, 2008, pp. 13-22, ISBN 1-84564-141-2 (Proceedings of Forest Fires: Modelling, Monitoring and Management of Forest Fires, Toledo, Sept 2008).
28. A Simeoni, G Rein, J Garcia, V Tihay, Description of subsurface fires and some experimental considerations on their dynamics, International Conference on Mathematical Modelling of Dangerous Natural Phenomena and Catastrophes, Tomsk, June 30 - July 4, 2008.
27. G Rein, From Pyrolysis Kinetics to Models of Condensed-Phase Burning, (invited paper) in: Recent Advances in Flame Retardancy of Polymeric Materials, Vol. 19, M. Lewin (ed.), BCC, June 2008
26. C Switzer, P Pironi, G Rein, JL Torero, JI Gerhard, Experimental Studies of Self-Sustaining Thermal Aquifer Remediation for Non-Aqueous Phase Liquid Sources. Invited Keynote Lecture, in: Proceedings of ConSoil 2008, Milano, June 2008.
25. A Cowlard, W Jahn, C Abecassis-Empis, G Rein, J Torero, Sensor Assisted Fire Fighting, Suppression and Detection Research and Applications SUPDET08, Florida, March 2008
24. G Rein, R Carvel, JL Torero, Study of the Approximate Trajectories of Droplets from Water Suppression Systems in Tunnels, 3rd International Symposium on Tunnel Safety and Security, Stockholm, Mar. 2008.
23. C Abecassis-Empis, D Snorasson, J Lee, P Reszka, T Steinhaus, A Cowlard, H Biteau,T Stratford, M Gillie, S Welch, G Rein, JL Torero, The Dalmarnock Fire Tests, Bodycote Warrington Fire Research Prize for the Best Fire Safety Engineering Paper, Institute of Fire Engineers, 2007
22. W Jahn, G Rein, JL Torero, A Posteriori Modelling of Fire Test One, FireSeat 2007 The Dalmarnock Fire Tests, Edinburgh, Nov. 2007. Chp 11 in 'The Dalmarnock Fire Tests: Experiments and Modelling' ISBN 978-0-9557497-0-4
21. G Rein, JL Torero, W Jahn, J Stern-Gottfried, NL Ryder, S Desanghere, M Lázaro, F Mowrer, A Coles, D Joyeux, D Alvear, JA Capote, A Jowsey, P Reszka, A Priori Modelling of Fire Test One, FireSeat 2007 The Dalmarnock Fire Tests, Edinburgh, Nov. 2007. Chp 10 in 'The Dalmarnock Fire Tests: Experiments and Modelling' ISBN 978-0-9557497-0-4
20. G Rein, JL Torero, B Lane, On the Design Fire for Non-conventional Structures, Advanced Research Workshop on Fire Computer Modelling, Santander, Oct. 2007.
19. W Jahn, D Snorrason, C Abecassis-Empis, G Rein, S Welch, JL Torero, A Posteriori Modelling of the Dalmarnock Fire Tests, Proceedings of Advanced Research Workshop on Fire Computer Modelling, Santander, Oct. 2007.
18. G Rein, X Zhang, P Williams, B Hume, A Heise, A Jowsey, B Lane, JL Torero, Multi-story Fire Analysis for High-Rise Buildings, Proceedings of the 11th International Interflam Conference, London, Sept. 2007.
    http://hdl.handle.net/1842/1980
17. P Reszka, T Steinhaus, H Biteau, RO Carvel, G Rein, JL Torero, A Study of Fire Durability for a Road Tunnel Comparing CFD and Simple Analytical Models, EUROTUN07 Computational Methods in Tunnelling, Vienna, Aug. 2007.
16. G Rein, JL Torero, AC Fernandez-Pello, Modelling the Propagation of Forward and Opposed Smouldering Combustion, 81st EUROTHERM Reactive Heat Transfer in Porous Media, Albi, Jun. 2007.
15. A Cowlard, JB Richon, G Rein, S Welch, A Usmani, JL Torero, A Simple Methodology for Sensor Driven Prediction of Upward Flame Spread, Turkish Journal of Engineering and Environmental Sciences 31, pp. 403-413, 2007. Also in 5th Mediterranean Combustion Symposium, Tunisia, Sept. 2007 and 5th International Seminar on Fire and Explosion Hazards, Edinburgh, Apr. 2007, pp. 509-520.
14. A Jowsey, G Rein, C Abecassis-Empis, A Cowlard, P Reszka, T Steinhaus, JL Torero, A Usmani, B Lane, An Analytical Approach to Define Surface Heat Fluxes to Structural Members in Post-Flashover Fires, 5th International Seminar on Fire and Explosion Hazards, Edinburgh, Apr. 2007.
13. N Alvares, K Staggs, G Rein, Investigation of a Fatal Fire in a Moving Vehicle, 5th International Seminar on Fire and Explosion Hazards, Edinburgh, Apr. 2007, pp. 800-809.
12. G Rein, C Abecassis-Empis, A Amundarain, H Biteau, A Cowlard, A Chan, W Jahn, A Jowsey, P Reszka, T Steinhaus, RO Carvel, S Welch, JL Torero, J Stern-Gottfried, B Hume, A Coles, M

Lazaro, D Alvear, JA Capote, S Desanghere, D Joyeux, NL Ryder, C Schemel, F Mowrer, Round-Robin Study of Fire Modelling Blind-Predictions using the Dalmarnock Fire Test, 5th International Seminar on Fire and Explosion Hazards, Edinburgh, Apr. 2007 (FM Global Award for Best Paper). Also presented at Advanced Research Workshop on Fire Computer Modelling, Santander, Oct. 2007, pp. 78-91.

11. O Putzeys, G Rein, AC Fernandez-Pello, DL Urban, Piloted Ignition to Flaming in Smoldering Polyurethane Foam, 44th American Institute of Aeronautics and Astronautics Conference, Reno, Nevada, Jan. 2006.
10. G Rein, C Lautenberger, AC Fernandez-Pello, Using Genetic Algorithms to Derive the Parameters of Solid-Phase Combustion from Experiments, 20th International Colloquium on the Dynamics of Explosions and Reactive Systems, Montreal, Aug. 2005.
9. G Rein, C Lautenberger, AC Fernandez-Pello, JL Torero, DL Urban, On the Derivation of Polyurethane Kinetics Parameters using Genetic Algorithms and its Application to Smoldering Combustion, Progress in Computational Heat and Mass Transfers, Vol 1, pp. 578-584, 2005 (Proceedings of the 4th ICCHMT, Paris, May 2005).
8. C Ghabi, G Rein, HB Ticha, M Sassi, Bidimensional Numerical Model for Polyurethane Smoldering in a Fixed Bed, Progress in Computational Heat and Mass Transfers, Vol 1, pp. 572-578, 2005 (Proceedings of the 4th ICCHMT, Paris, May 2005).
7. G Rein, A Bar-Ilan, N Alvares, C Fernandez-Pello, Estimating the Performance of Enclose Fire Models by Correlating Forensic Evidence of Accidental Fires, Conference Proceedings of the 10th Interflam, Vol 2, pp. 1183-1194. Edinburgh, June 2004. Also presented at The International Technical Congress on Computational Simulation Fire Models in Engineering and Research, Santander, Spain, Oct 2004.
6. A Bar-Ilan, O Putzeys, G Rein, Y Tsuji, C Fernandez-Pello, DL Urban, Transition from Forward Smoldering to Flaming in Small Polyurethane Foam Samples Western States Section Spring Meeting, The Combustion Institute, Davis, California. Mar. 2004. Paper 04S-52.
5. G Rein, A Bar-Ilan, C Fernandez-Pello, JL Ellzey, DL Urban, Numerical Simulation of One-Dimensional Forward Smoldering in Microgravity, Western States Section Fall Meeting, The Combustion Institute, Los Angeles. Oct. 2003. Paper 03F-38.
4. C Fernandez-Pello, A Bar-Ilan, G Rein, DL Urban, JL Torero, Forced Forward Smoldering Experiments Aboard the Space Shuttle, 7th International Workshop on Microgravity Combustion, NASA Cleveland, Jun. 2003.
3. A Bar-Ilan, G Rein, C Fernandez-Pello, JL Torero, DL Urban Microgravity Forward Smoldering Experiments in the Space Shuttle 41st American Institute of Aeronautics and Astronautics Conference, Reno, Nevada, Jan. 2003.
2. A Bar-Ilan, D Rich, G Rein, C Fernandez-Pello, H Hanai, T Niioka, Flow-Assisted Flame Propagation Through a Porous Combustible in Microgravity, Western States Section Spring Meeting, The Combustion Institute. San Diego, California, Mar. 2002.
1. G Rein, A Andrés, Simulación Numérica de Transporte de Material Granular por Vibración, Anales de Ingeniería Mecánica, Año 14, pp. 2627-2638 (and XIV Congreso Nacional de Ingeniería Mecánica, Madrid, 2000).

15.5 Conference Presentations and other Scholarly Output

64. G Rein, R Hadden, C Zaccone, From organic matter to pyrogenic char to ash: the role of smouldering combustion in wildfires, Geophysical Research Abstracts Vol. 14, EGU2012-12040-1, **solicited** oral presentation, European Geoscience Union, Annual Meeting, Vienna 2012.
http://meetingorganizer.copernicus.org/EGU2012/EGU2012-12040-1.pdf

63. G Rein, Smouldering Fires in the Earth System, Geophysical Research Abstracts Vol. 14, EGU2012-129, oral presentation, European Geoscience Union, Annual Meeting, Vienna 2012.
http://meetingorganizer.copernicus.org/EGU2012/EGU2012-129.pdf

62. R Hadden, G Rein, Laboratory study of smouldering peat fires: dynamics and emissions, Geophysical Research Abstracts Vol. 14, EGU2012-14132, poster presentation, European Geoscience Union, Annual Meeting, Vienna 2012.
http://meetingorganizer.copernicus.org/EGU2012/EGU2012-14132.pdf

61. K Torrance, C Switzer, G Rein, R Hadden, C Belcher, R Carvel, H Keenan, Combustion emissions from a smoldering coal heap in North Lanarkshire Scotland, 9th International Symposium on Environmental Geochemistry, Aveiro, Jul 2012.

60. C Zaccone, G Rein, V D'Orazio, R Hadden, C Belcher, TM Miano, Evolution of the peat organic material following smouldering wildfires, IX National Meeting of the International Humic Substance Society Italian Chapter, Portici, Italy, 5-7 December 2011.
59. G Rein, Smouldering mega-fires in the Earth system, Exploring the Mega-fire Reality: A Forest Ecology and Management Conference, Florida, 14-17 Nov 2011.
    http://www.scribd.com/doc/72856943
58. K Torrance, C Switzer, G Rein, R Hadden, C Belcher, R Carvel, Investigation of self-sustained combustion of a coal waste heap in Scotland, Paper No. 282-8, 2011 GSA Annual Meeting, Minneapolis 9–12 Oct. 2011.
    http://gsa.confex.com/gsa/2011AM/finalprogram/abstract_195116.htm
57. C Belcher, J Yearsley, R Hadden, J McElwain, G Rein, The FireOx model and the Baseline flammability of Earth's ecosystems estimated from paleoatmospheric oxygen over the past 350 million years, Paper No. 120-6, 2011 GSA Annual Meeting, Minneapolis 9–12 Oct. 2011.
    http://gsa.confex.com/gsa/2011AM/finalprogram/abstract_194183.htm
56. G Rein, Accidental Burning of Fossil Fuels, Engineering Research Forum 2011, Royal Academy of Engineering, London, Sept 22, 211.
    http://www.scribd.com/doc/63489985
55. G Vigne, C G Montes, G Rein, Calculos de Ventilacion, Revista de Prevención de Incendios, 2011.
54. C Zaccone, G Rein, R Hadden, V D'Orazio, TM Miano, Organic matter evolution during smouldering fire along peat columns, In: "Relazione suolo-pianta e qualità delle produzioni", Abstracts of the XXIX National Congress of the Italian Society of Agricultural Chemistry, 21-23 September, 2011, Foggia, Italy, p. 32.
53. J Yearsley, C Belcher, R Hadden, G Rein, Fireox: an SIR model to describe the spread of smouldering peatland fire, Mathematical Models in Ecology and Evolution, Groningen, August 2011.
52. G Rein, Very long-term sequestration of solid phase carbon: Geo-engineering facilities for biochar storage, 3rd UK Biochar Conference, Edinburgh, May 2011.
    http://www.scribd.com/doc/61065720
51. G Rein, Climate Feedbacks on Smouldering Earth: Enhancement of Moisture deficit and self-heating of fossil and pre-fossil soils, Geophysical Research Abstracts 13, EGU2011-10500, oral presentation, European Geoscience Union, Annual Meeting, Vienna 2011.
    http://presentations.copernicus.org/EGU2011-10500_presentation.pdf
50. G Rein, AM Jonsdottir, J Stern-Gottfried, Comparison of Resulting Steel Temperatures from Travelling Fires and Traditional Design Methods - Case Study, Steel in Fire Forum, London, 12 April 2011.
49. G Rein, Travelling Fires in Structural Design (invited talk), 6th International Conference in Fire Safety Engineering, Madrid, Feb 2011.
    http://www.scribd.com/doc/49609283
48. G Vigne, G Rein, Modelización de Incendios: Ventajas y Riesgos, Revista de Prevención de Incendios 48 (4º Trimestre), pp. 52-56, 2010.
47. F Jervis, G Rein, J Torero, A Simeoni, The Role Of Moisture In The Burning Of Live And Dead Pine Needles, Poster, 12th International Interflam Conference, Nottingham, July 2010.
46. G Rein, Overview of Subsurface Peat fires and the 2009-2010 fire in Las Tablas de Daimiel National Park, Proceedings of the 15th International Humic Substances Society Meeting (IHSS15), Vol 1, pp. 284-288. Tenerife, June 2010.
45. R Hadden, G Rein, Ignition, suppression and CO/CO2 emissions of subsurface coal fires at laboratory scale, Geophysical Research Abstracts 12, EGU2010-34, Poster, European Geoscience Union, Annual Meeting, Vienna 2010
44. C Belcher, R Hadden, JC McElwain, G Rein, Fuelling the palaeoatmospheric oxygen debate: how much atmospheric oxygen is required for ignition and propagation of smouldering fires?, Geophysical Research Abstracts 12, EGU2010-6334, Poster, European Geoscience Union, Annual Meeting, Vienna 2010
43. G Rein, R Hadden, Smouldering Subsurface Fires in the Earth System, Geophysical Research Abstracts 12, EGU2010-33, Poster, European Geoscience Union, Annual Meeting, Vienna May 2010

42. G Rein, Incendio latente bajo las Tablas de Daimiel, Anuario El Pais 2010, p. 138, Madrid, 2010.
41. J Stern-Gottfried, G Rein, JL Torero, Experimental Review of the Homogeneous Temperature Assumption in Post-Flashover Compartment Fires, Poster, Spring Meeting of the Combustion Institute British Section, Edinburgh, Apr 2010 (Best Poster Award).
40. C Belcher, L Mander, G Rein, FX Jervis, M Haworth, J McElwain, Increased Fire Risk Associated with the Triassic-Jurassic Boundary Global Warming Event, The Geological Society of America, Annual Meeting, Portland, Oct 2009
39. G Rein, Measurements of Carbon Emissions from Smouldering Peat under Controlled Laboratory Conditions, GEIA-ACCENT Conference on Emissions of Gases and Aerosols –Progress, Modeling Needs and Emerging Issues Oslo, Oct. 2009.
38. G Rein, Smouldering Combustion Phenomena in Science and Technology, Current Research in Combustion: A Forum for Research Students and Early Career Researchers, Institute of Physics, Loughborough University, Sept 2009.
37. SL MacPhee, P Pironi, JI Gerhard, G Rein, Numerical Modelling of Smouldering Combustion as a Remediation Technology for NAPL Source Zones, Poster, American Geophysical Union, Joint Assembly, May 2009, Toronto
36. P Pironi, C Switzer, G Rein, JL Torero. JI Gerhard, Column Experiments of Smouldering Combustion as a Remediation Technology for NAPL Source Zones, Transactions AGU, 89 (53), American Geophysical Union, Dec 2008. Abstract H34C-03.
35. G. Rein, Design Fires for Non-Conventional Structures, (invited speaker) Workshop on Fire and Structures, 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008.
34. R Hadden, G Rein, Fire Fighting Coal Mine Fires: Characterization and extinguishing methods using small-scale Experiments, Poster, 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008. (Best Poster Award Audience Choice)
33. FX Jervis, G Rein, Characterization of live and dead pine needles during combustion, Poster at 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008
32. J Stern-Gottfried, G Rein, B Lane, JL Torero, Design Fires for Structural Analysis of Complex Buildings, Poster at 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008
31. F Colella, R Borchiellini, R Carvel, G Rein, JL Torero, V Verda, Two-scale Modelling Approach for Simulating Fire and Ventilation Flows in Tunnels, Poster at 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008
30. P Pironi, C Switzer, G Rein, JL Torero. JI Gerhard, Laboratory Experiments of Smouldering Combustion as a Remediation Technology for Contaminated Soil, Poster at 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008
29. C Switzer, P Pironi, P Reszka, G Rein, JL Torero. JI Gerhard, Scaling-up Experiments of Smouldering Combustion as a Remediation Technology for Contaminated Soil, Poster at 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008
28. A Cowlard, JB Richon, G Rein, S Welch, JL Torero, Sensor Driven Prediction of Upward Flame Spread, Poster at 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008
27. L Bustamante, T Rogaume, E Guillaume, F Richard, G Rein, JL Torero, Improving the Modelling of Thermal Decomposition of Polyether Polyurethane Foam, Poster at 9th Symposium of the International Association of Fire Safety Science, Karlsruhe, Sept 2008
26. G Rein, Gains and Threats from Smouldering Combustion to Biochar Production and Storage, 2008 International Biochar Initiative, Biochar, Sustainability and Security in a Changing Climate, Poster presentation, Newcastle, Sept 2008
25. G Rein, Damage to the Ecosystem and Emissions to the Atmosphere during Subsurface Wildland Fires, 32nd International Symposium on Combustion, The Combustion Institute. Work-in-Progress Poster. Montreal, Aug 2008. Also Poster at 9th Symposium on Fire Safety Science, Karlsruhe, Sep 2008.
24. W Jahn, G Rein, JL Torero, Forecasting Time to Flashover in Compartment Fires, 32nd International Symposium on Combustion, The Combustion Institute. Work-in-Progress Poster. Montreal, Aug 2008. Also poster at 9th Symposium on Fire Safety Science, Karlsruhe, Sep 2008.
23. G. Rein, Incendios en la Minería Subterránea, (invited speaker) Seminario Internacional de Ingeniería de Protección Contra Incendios, Engineering Services SAC, Lima, Peru, Aug 2008.
22. F Colella, R Borchiellini, R Carvel, G Rein, P Reszka, V Verda, Two-scale Modelling Approach to Tunnel Ventilation Flows, 21st Scottish Fluid Mechanics Meeting, Edinburgh, May 2008.

21. L Bustamante, T Rogaumea, E Guillaume, G Rein, JL Torero, Characterisation of the Kinetic of Decomposition of Polyether Polyurethane Foam – A Way for Finding Input Data for Fire Simulations, 2008 Annual Fire Conference, National Institute of Standards and Technology (NIST), MD, Mar. 2008.
20. G Rein, Severity, Mass Loss and Emissions from Wildland Smouldering Fires, Geophysical Research Abstracts 10 (EGU2008-A-02291), European Geosciences Union, General Assembly, Vienna, Mar. 2008.
19. C Switzer, P Pironi, A Fuentes, G Rein, JL Torero and JI Gerhard, STAR: Smouldering Technology for Aquifer Remediation, A Novel In-Situ Remediation Approach for NAPL Source Zones. European Conference on Natural Attenuation and In-Situ Remediation, Frankfurt, Germany, Nov. 2007.
18. P Pironi, C Switzer, G Rein, A Fuentes, JL Torero. JI Gerhard, Smouldering Technology for Aquifer Remediation (STAR) Proof of Concept and Process Sensitivity Experiments, Geological Society Bicentenary Conference, Poster, London, Sept 2007.
17. G Rein, JL Torero, Methodology to Calculate the Reaction Rates in Solid Materials using Thermogravimetry, 11th European Meeting on Fire Retardant Polymers, FRPM07, Bolton, Jul. 2007.
16. P Pironi, C Switzer, A Fuentes, G Rein, JL Torero. JI Gerhard, Small-Scale Experiments of In-Situ Smouldering Combustion for the Remediation of Contaminated Land. Poster at 21st International Colloquium on the Dynamics of Explosions and Reactive Systems, Poitiers, Jul. 2007.
15. G Rein, JI Gerhard, MIJ van Dijke, KS Sorbie, A Ryazanov, On the Immobilization of DNAPL in Porous Media due to Capillary Pressure Hysteresis, 5th Conference on Modelling Permeable Rocks, Institute of Mathematics and its Applications, Edinburgh, Mar. 2007.
14. C Switzer, P Pironi, G Rein, JI Gerhard, JL Torero, Burning Hazardous Liquids in the Soil as a Remediation Technology, 1st International Meeting of Fire Effects on Soil Properties, Barcelona, Feb. 2007.
13. G. Rein, Bombear agua sobre el fertilizante Ostedijk, Colaboran, La Vanguardia, 19 Feb. 2007.
12. C Ashton, G Rein, JD Rivera, JL Torero, C Legg, M Davies, A Gray, Experiments and Observations of Peat Smouldering Fires, 1st International Meeting of Fire Effects on Soil Properties, Barcelona, Feb. 2007.
11. J Gerhard, C Switzer, P Pironi, G Rein, JL Torero, In Situ Smouldering Combustion: A Novel Remediation Concept for NAPL Source Zones, Eos Transactions AGU 87 (52), American Geophysical Union, H24A-01, Dec. 2006.
10. T Rogaume, L Bustamante, F Richard, E Guillaume, G Rein, JL Torero, Caractérisation de la dégradation thermique de matériaux solides : Apports et intérêts, Groupement De Recherche Feu, Commissariat de l'Energie Atomique, Fontenay aux Roses, France, Dec. 2006.
9. N Alvares, K Staggs, G Rein, Fatal Mini-Van Fire: Application of modeling tools to asses possible ignition scenarios, ISO/TC92/SC4 Workshop on Assessment of Calculation Methods in Fire Safety Engineering, San Antonio, Texas, Apr. 2006.
8. G Rein, Computational Model of Forward and Opposed Smoldering Combustion with Improved Chemical Kinetics, PhD Thesis, University of California at Berkeley, 2005.
7. G Rein, C Lautenberger, AC Fernandez-Pello, JL Torero, DL Urban, Derivation of the Kinetics Parameters of Polyurethane Foam Using Genetic Algorithms, 4th Joint Meeting of the US Sections of the Combustion Institute, Philadelphia, Mar. 2005. Paper E02.
6. AC Fernandez-Pello, G Rein, Fire Modelling: Development and Applications. Invited Lecture, Proceedings of International Congress on Computational Fire Models in Engineering and Research, pp. 1-6, Santander (Spain), Oct 2004.
5. G Rein, C Lautenberger, AC Fernandez-Pello, The Application of Genetic Algorithms to Determine the Kinetic Constants in Heterogeneous Combustion Reactions, Workshop in Honor of Amable Liñán, Granada, Sept. 2004.
4. G Rein, J.B. Herren, AC. Fernandez-Pello, DL. Urban, On the Derivation of Polyurethane Kinetics Parameters using Genetic Algorithms 30th International Symposium on Combustion, The Combustion Institute. Work-in-Progress Poster. Chicago, Jul. 2004.
3. G Rein, Manual IIT del Usuario de Discontinuous Deformation Analysis (DDA) Internal Document, Instituto de Investigación Tecnológica, ICAI Universidad Pontificia de Comillas, 2001.
2. G Rein, A Andrés Computer Simulation of Granular Material Transport: Vibrating Feeders, Powder Handling & Processing 13 (2), 2001, pp. 181-184.
1. G Rein, A Andrés Simulación Numérica de Material Granular, Anales de Mecánica y Electricidad 77 (5), pp. 31-38, 2000