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Education & Qualifications

- 1998-2001 Doctor of Philosophy (Mechanical Engineering)
University of Oxford, Hertford College, UK
1996-1998 Master of Philosophy (Manufacturing Engineering)
University of Cambridge, Queens' College, UK
1992-1995 Bachelor of Engineering (Mechanical Engineering)
University of Manchester, UK

Research Interests

- Pedestrian and Motorcycle safety
- Application of finite element human model to impact biomechanics injury analysis
- Vehicle crashworthiness design and optimisation
- Metal foam and its application in Automotive and biomechanics
- Accident and injury reconstructions
- Application of finite element method to Mechanical system and product design

Current teaching Involvement

- Finite element methods in engineering
- Engineering Dynamics
- Linear Algebra (International course)
- Calculus II (International Course)
- Vehicle crash and human body simulation techniques (International Course)

Past teaching Involvement

- Continuum mechanics
- Engineering Elasticity
- Numerical methods in engineering
- Automatic Control
- Introduction to composite materials
- Metal forming analysis
- Manufacturing Technology (International course)
- Modelling and Simulation in Manufacturing Technology (International course)

Past research grants

Title	Source
▪ Implementation of the constitutive equations of PET into finite element model for simulations of an injection stretch-blow moulding	Faculty of Engineering KMITNB (Principal investigator)
▪ Development of a 3D finite element model for hot powder forging process	National Metal and Material technology center (Principal investigator)
▪ Modelling of matrix-coated fibre composite component manufacturing processes	The Thailand research fund , academic division (Principal investigator)
▪ Numerical analysis of hot powder forging under various initial density distributions and friction conditions	Faculty of Engineering KMITNB (Principal investigator)
▪ Modelling of aluminium extrusion processes and die design	The Thailand research fund , Industrial division (co-researcher)
▪ Analysis of an optimum process condition for metal injection molding process for Stainless steel 316L	KMITNB (Principal investigator)
▪ Design and Analysis of high temperature forging die (Year 1)	The Thai-German Institute (Principal investigator)

Title	Source
▪ Design and Analysis of high temperature forging die (Year 2, continue project)	The Thai-German Institute (Principal investigator)
▪ Integrated design and analysis of precision metal forming die	The Thai-German Institute (Principal investigator)
▪ Study of the effects of preform design on forging process	NSTDA (Principal investigator)
▪ Cold forging die design and analysis (Year 1)	The Thai-German Institute (Principal investigator)
▪ Optimization of forging die design using finite volume method	KMUTNB (Principal investigator)
▪ Cold forging die design and analysis (Year 2 Continue project)	The Thai-German Institute (Principal investigator)
▪ Analysis of Water tank storage	SCG (Co-researcher)
▪ Parametric study of fixture design for Head Gimbals Assembly process	NECTEC (Principal investigator) (Hard disk cluster)
▪ Development of finite element model to assist design of Ti-foam hip prosthesis	KMUTNB (Principal investigator)
▪ Study of effects of vehicle-front shapes and impact speeds on post-crash pedestrian kinematics and injury mechanisms	The Mitsui Sumitomo Insurance Welfare Foundation (Principal investigator)
▪ Determination of PTT Shuttle Bus for Drawing up Quality Standard	PTT public company ltd (Co-researcher).

Current research grants

Title	Source
▪ Study of effects of rider hand grip force and postures on braking distance and rider falling characteristics	Faculty of Engineering KMUTNB (Principal investigator)
▪ Development of CG-based bus design software	Department of Land Transport (co-researcher)
▪ Study of effect of Child-pillion sitting posture on post-motorcycle crash injury severity	Thai Roads Foundations
▪ Development of Motorcycle Helmet for Pre-School Children Using Metal Foam	The Science and Technology research grant (Principal investigator) Thailand Toray Science Foundation
▪ Studies of motorcyclist and child pillion kinematics and injury mechanisms for improvement of VRU safety assessment methodologies	Toyota Motor Corporation-Japan (Principal investigator)

Awards Scholarships & Prizes

1991-2001	The Royal Thai Government Scholarship
1999	A Zonta International Amelia Earhart Fellowship Award
1998	Runner up of the ABAQUS UK research student competition for the best technical paper
1995	Final year (1994/95) course prize (Best Achievement)

Professional Experiences and Activities

2014-Present	Programme coordinator of Automotive Safety and Assessment Engineering, TGGS, KMUTNB
2014-Present	ASEAN NCAP Technical Committee Member
2015	Chairperson of the Vehicle Safety and Testing Regulations session at the Automotive Summit hosted by Thailand Automotive Institute
2015- Present	Reviewer of Journal of Mechanical Science and technology, Springer
2012- Present	Reviewer of SAE technical papers
2014	Organising Committee member of the ASEAN Automobile Safety Forum-II at Bangkok, Thailand
2014	Technical Committee member and Chairperson of Vehicle Safety Session at the 3 rd Asia Automobile Institute Summit (AAI Summit) hosted by Thailand Automotive Institute and Japan Automobile Research Institute
2013	Technical committee member of the 17th ASIA-PACIFIC Automotive Engineering Conference (APAC-17) hosted by the Society of Automotive Engineering Thailand (TSAE)

2009-2014	Associated Professor in the department of Production Engineering, Faculty of Engineering, KMUTNB
2007-2014	Deputy head of Mould and Die Research and Development Centre, KMUTNB
2004-2009	Assistant Professor in the department of Production Engineering, Faculty of Engineering, King Mongkut's Institute of Technology North Bangkok
2005-present	Patent representative for the Department of Intellectual Property, Thailand
2004	Guest lecturer Mahanakorn University
2001-2004	Lecturer in the department of Production Engineering, Faculty of Engineering, King Mongkut's Institute of Technology North Bangkok
2002-2004	The Thai German Graduate School Production Engineering Course Co-ordinator
2001-2003	Assistant to the head of department, student affairs
2001-2004	2000 and 2001 Teaching assistant: Mechanical engineering laboratory (Stress analysis) for 3rd year undergraduate students of the Department of Engineering Science, University of Oxford
Summer 1999	Co-ordinator for Headstart 1999 –a program offered by the Department of Engineering Science, University of Oxford to students placed through the engineering education scheme
1998 and 1999	Teaching assistant: Materials Laboratory for 2nd year undergraduate students of the Department of Engineering Science, University of Oxford
1996	Co-ordinator for the final year's short project on " <i>Development of preti net based fault diagnosis scheme for laboratory assembly system</i> " Manufacturing Engineering and Management Division, University of Cambridge

Invited Lectures Seminars and Training Courses

- Guest speaker: a training course: sheet metal forming in automotive industries using finite element methods, Technology Fair at King Mongkut's University of Technology Thonburi 29 January 2002
- Faculty of Engineering Seminar, King Mongkut's Institute of Technology North Bangkok, 2002
- Training course on finite element method at Brother Auto Parts Co.Ltd.
- Training course on Application of finite element method to Extrusion die design, MT-Alumet Co. Ltd.
- Training Course on Metal Forming Processes for lecturers from Laos, Thai-French Innovation centre
- Training course on finite element method at Rajamangala University of Technology Lanna

Consultancies

- Charoenlab Auto Part Co. Ltd. "Production of automotive parts"
- Thai Summit Auto Parts industry Co. Ltd. "Improvement of Chassis Design"
- Interoyal Engineering Co. Ltd. "Finite element analysis of a cooling tower blade"

Publications

International Journal papers

- Carmai, J., Baik, K.H, Dunne, F.P.E., Grant, P.S., Cantor, B., 2002. Interface effects during consolidation in titanium alloy components locally reinforced with matrix-coated fibre composite. *Acta Materialia*, 50(20), pp. 4981-4993.
- Carmai, J., Dunne, F.P.E., 2003. Constitutive equations for densification of matrix-coated fibre composite during hot isostatic pressing. *International Journal of Plasticity*, 19(3), pp. 345-363.
- Carmai, J., Dunne, F. P. E., 2003. Simple model for consolidation of matrix-coated fibre composites. *Materials Science and Technology* 19, pp 919-924.
- Carmai, J., Dunne, F.P.E., 2004. Generalised constitutive equations for the densification of matrix-coated fibre composites. *Materials Science and Technology* 20, pp 478-484.
- Tanwongwan, W., Manonukul, A., Carmai, J., 2005. Effects of Powder Size and Initial Arrangement on Cold Compaction. *The JSME international journal Series A* 48(4) pp 376-380.
- Carmai, J., Dunne, F.P.E., 2005. A model for the consolidation of hexagonal array matrix-coated fibre composites. *Modelling and Simulations in Materials Science and Engineering*. 13, pp 1005–1014
- Jaisue, S., Carmai, J., Pitakthapanaphong, S, Dechjarern, S., 2008. 3D finite element analysis of metal flow in hot aluminium extrusion of T-shape profile with various offset pocket. *Journal of Achievements in Materials and Manufacturing Engineering*. 31 (2) , pp 463-468.
- Tanwongwan, W., Carmai J., 2011. Finite element modelling of Titanium foam behaviour for dental application. *Lecture Notes in Engineering and Computer Science* 2192,1, pp. 2501-2506.

International Conference Proceedings

- Carmai, J., Dunne, F. P. E., Spence. J., 1998. The development of process models for superplasticity. In *Proceedings of the 13th ABAQUS UK user conference*, Chester UK, 9-10 September.
- Dunne, F.P.E., Carmai, J., 2002. Interfacial effects in the consolidation of matrix coated fibre composites. In *Proceedings of the Ninth International Symposium on Plasticity and its Current Applications* (Eds A S Khan, O Lopez-Pamies), Plasticity '02, Aruba, NEAT Press, Maryland, USA.

- Carmai, J., Dunne, F. P. E., 2002. The development of process models for consolidation of titanium alloy coated silicon carbide fibre composites, In Proceedings of World Congress on Computational Mechanics, Vienna Austria, 7– 12 July.
- Carmai, J., Dunne, F. P. E., 2002. A simple approach to modelling consolidation of matrix-coated fibre composites, In Proceedings of JSME/ASME international conference on materials and processing 2002, Honolulu, Hawaii, USA, 15-18 October.
- Carmai, J. 2003. Finite element study of interfacial effects in the consolidation of matrix-coated fibre composites. In Proceedings of the 17th conference of mechanical engineering network of Thailand, Prachinburi Thailand, 15-17 October 2003.
- Tanwongwan, W., Otarawanna, S., Manonukul, A. and Carmai, J., Cold compaction of non-spherical particles. In Proceedings of the 4th International Conference on Physical and Numerical Simulation of Materials Processing, Shanghai, China, 17-20 May 2004.
- Asawapitayachote T., Carmai, J., Manonukul A., 2005. Finite element study of effects of a non-uniform initial density distribution on powder forging process. In Proceedings of JSME/ASME international conference on materials and processing 2005, Seattle, USA, 22-24 June 2005.
- Asawapitayachote T., Carmai, J., Manonukul A., 2006. Numerical analysis of powder forging under various initial density distributions and friction conditions. In Proceedings of the 9th International ESAFORM Conference on Material Forming 26-28 April, 2006, Glasgow UK.
- Carmai, J. Dunne, F.P.E, 2005. Analysis of consolidation of matrix-coated fibre composite by power law creep. In Proceedings of the 9th International ESAFORM Conference on Material Forming 26-28 April, 2006, Glasgow, UK.
- Naksakul P., Carmai J. and Manonukul A., 2012. Finite element analysis to assist design of an automated assembly machine. In the proceedings of the 4th International Data storage technology conference. 9-10 January 2012, Bangkok, Thailand.
- Kongsakul W., Carmai, J., 2014. Finite element analysis of pedestrian-city car collisions to assist design of pedestrian-friendly front structure. Under review for the International Conference in Automotive Engineering, April 2014.
- Charoenthong S., Carmai, J., 2014. Finite element study of post crash kinematics and injury mechanisms of bus-pedestrian collisions. Under review for the International Conference in Automotive Engineering, April 2014.
- Kongsakul W., Carmai J., Chareonthong S., 2015, Finite Element study of effect of modified front-end structure with aluminium foam to reduce pedestrian injury , In Proceedings of the 24th International Technical Conference on the Enhanced Safety of Vehicles, Sweden, 8-12 June 2015.
- Putra I.P.A., Carmai J., Koetnuyom S., Markert B., 2015, The Effects of Active Muscle Contraction into Pedestrian Kinematics and Injury during Vehicle Pedestrian Collision. In Proceedings of the 10th European LS-DYNA Conference , 15-17 June 2015, Germany
- Sharma N., Markert B., Carmai J., Koetnuyom S., Effects of active muscle contraction on whiplash injury. In Proceedings of Applied Mathematics and Mechanics, Proceeding of Applied mathematics and mechanics, Joint DMV and GAMM(GESELLSCHAFT für ANGEWANDTE MATHEMATIK und MECHANIK e.V.) Annual Meeting 2016.

National Refereed Conference Proceedings

- Tanwongwan, W., Carmai, J., Manonukul, A., 2003. 3D Finite element model of hot powder forging process. In Proceedings of the 17th conference of mechanical engineering network of Thailand, Prachinburi Thailand, 15-17 October 2003.
- Chaikittiratana A., Carmai J., Keudsakul, S., 2003. Finite element modeling of the PET injection stretch blow moulding process using hyperelastic material law. In Proceedings of the 17th conference of mechanical engineering network of Thailand, Prachinburi Thailand, 15-17 October 2003.
- Tanwongwan, W., Otarawanna, S., Manonukul, A. , Carmai, J., 2004. Effects of Particle Shape on Metal Powder Compaction Process. In first national conference on metal forming technology. Bangkok, Thailand, 1-8 January 2004.
- Carmai, J., 2004. Development of a constitutive consolidation model for hexagonal array packing of matrix-coated fibre composites. In Proceedings of The 8th Annual National Symposium on Computational Science and Engineering, Suranaree University of Technology, Nakhorn Ratchasima, Thailand, 21-23 July 2004.
- Chaikittiratana A., Carmai J., Keudsakul, S., 2004. Visco-hyperelastic finite element modelling of the PET injection stretch-blow moulding process. In Proceedings of The 8th Annual National Symposium on Computational Science and Engineering, Suranaree University of Technology, Nakhorn Ratchasima, Thailand, 21-23 July 2004.
- Otarawanna, S., Manonukul, A., Carmai, J. 2004. Finite Element Modelling of P/M Die Compaction Process. In Proceedings of The Third Thailand Materials Science and Technology Conference, Bangkok, Thailand, 10-11 August 2004.
- Otarawanna, S., Manonukul, A., Carmai, J., 2004. Modelling of Metal Powder Compaction using the modified Drucker-Prager Cap Model. In the Proceedings of the 18th conference of mechanical engineering network of Thailand, Khonkaen Thailand, 19-21 October (2004).
- Tanwongwan, W., Manonukul, A., Carmai, J., 2005. Cold compaction of different metal powder arrangement. In Proceedings of The 9th Annual National Symposium on Computational Science and Engineering, Faculty of Science, Mahidol University Thailand, 23-25 March 2005.

- Tanwongwan, W., Manonukul, A., Carmai, J., 2005. Effects of powder size on cold compaction of stainless steel 316L. In Proceedings of The 9th Annual National Symposium on Computational Science and Engineering, Faculty of Science, Mahidol University Thailand, 23-25 March 2005.
- Jaisue, S., Carmai, J., Pitakthapanaphong, S., Dechjarern, S., 2005. Finite element study of effect of offset pockets on metal flow in aluminium extrusion. In the Proceedings of the 19th conference of mechanical engineering network of Thailand, Phuket, Thailand, 19-21 October 2005.
- Otarawanna, S., Tanwongwan, W., Manonukul, A. and Carmai, J., 2005. Modelling of Powder with internal pores. In the Proceedings of the 19th conference of mechanical engineering network of Thailand, Phuket, Thailand, 19-21 October 2005.
- Tanwongwan, W., Manonukul, A. and Carmai, J., 2005. Effects of Experimental Distribution of Powder Size on Cold Compaction. In the Proceedings of the 19th conference of mechanical engineering network of Thailand, Phuket Thailand, 19-21 October 2005.
- Prachprayoon, P., Dechjarern, S., and Carmai, J., 2007. Extrusion Die Design Using Finite Element Method. In the Proceedings of the 21st conference of mechanical engineering network of Thailand, Phuket, Thailand, 17-19 October 2007.
- Tanwongwan, W., and Carmai, J., 2009. Finite Element Model for Hot Powder Forging of an Axisymmetric Part. In the Proceedings of the 23rd conference of mechanical engineering network of Thailand, Chiangmai, Thailand, 4-7 November 2009.
- Promkaew N, Carmai J., 2009. Influences of the die geometric parameters on metal flow during hot forging process. In the Proceedings of the 23rd conference of mechanical engineering network of Thailand, Chiangmai, Thailand, 4-7 November 2009.
- Naksakul P., Carmai J. and Manonukul A., 2011. Parametric analysis of fixture for Head Gimbal Assembly Process. In the Proceedings of Industrial Engineering Network, 20-21 October 2011.
- Promkaew N, Carmai J., 2011. Numerical Study of effects of design and process parameters on cold forging of axisymmetric part. In the Proceedings of the 25th conference of mechanical engineering network of Thailand, Krabi, Thailand, 19-21 October 2011.
- Waiwong A, Carmai J., 2012. Simulation of Titanium foam forging to produce implant components. In the Proceedings of the 26th conference of mechanical engineering network of Thailand, Chaingmai, Thailand, 2012.

Book Contributions

- Carmai, J., Dunne, F.P.E., Derby, B., 1999. Modelling the consolidation of matrix coated fibre composites. In Synthesis of Lightweight Metals III, (Eds. Froes, F.H., Ward-Close, C.M., McCormick, P.G., Eliezer, D.) The Minerals, Metals and Materials Society, Pennsylvania, USA, pp247-254.
- Carmai, J., Dunne, F.P.E., 2001. Micromechanical models for creep in the consolidation of composites. In IUTAM Symposium on Creep in Structures (Eds. Murakami, S., Ohno, N.), Kluwer, The Netherlands.
- Carmai, J., Dunne, F. P. E., 2004. Manufacture of ceramic fibre metal matrix composites: Processes and Modelling. In metal and ceramic composites (Eds. Cantor, B., Dunne, F., Stone, I.), Chapter 11, 178-200, Institute of Physics, London.
- Carmai, J., Tongpadungroj P., 2008. Automatic Control, King Mongkut's University of Technology North Bangkok.