CURRICULUM VITAE
PERSONAL DETAILS

Surname   **LI**   **Forename**   **SHUGUANG**

Addresses   Department of Mechanical, Materials and Manufacturing Engineering, Faculty of Engineering
University of Nottingham, Nottingham NG7 2RD, UK
Tel.   0115-9513786
Email   **shuguang.li@nottingham.ac.uk**
http://www.nottingham.ac.uk/engineering/people/shuguang.li

Present Appointment (since June 2012)
Professor of Aerospace Composites, Faculty of Engineering, University of Nottingham

Positions Held

2009-2012	Associate Professor & Reader, Faculty of Engineering, University of Nottingham
2002-2009	Senior Lecturer, School of Mechanical, Aerospace and Civil Engineering, University of Manchester
1995-2002	Lecturer, Dept. Mech. Eng., UMIST
1992-1995	Postdoctoral research associate, Dept. Mech. Eng., UMIST
1988-1989	Visiting scholar, Ditto
1985-1988	Lecturer, Dept. of Aircraft Eng., Nanjing Aero. Inst., China (NUAA now)
1984-1985	Assistant lecturer, Ditto

Directorships
Director of the MSc course in Aerospace Technologies
Director of the AVIC/ACAE University Innovation Centre (UIC) for research

Education and Qualifications

FRAeS:	Since 2014	
PhD:	1993	Applied Mechanics, UMIST, UK
		Modelling damage in thin-walled filament wound structures
MEng:	1984	Solid Mechanics & Aircraft Structural Mechanics, Nanjing Aero. Inst., China (NUAA now)
		Initial post-buckling behaviour of composite material structures
BEng:	1982	Aircraft Design, Ditto

TEACHING EXPERIENCE

Modules Taught (* independently developed)
    * Analysis and Design of Composites (4th yr & MSc)
    Introduction to Aerospace Techniques (3rd yr & MSc)
    Aerospace Industry Organisation (MSc)
    * Computer Modelling Techniques (3rd yr)
    Fibre Reinforced Composites (3rd yr & MSc)
    Design Office (1st yr)
    Solids & Structures I (BEng and MEng 1st yr of Mech Eng and Aero Eng courses, at UoM)
    * Solids & Structures II (BEng and MEng 2nd yr of Mech Eng and Aero Eng courses, at UoM)
    * Solids, Structures & Integrity (BEng and MEng 3rd yr of Mech Eng course, at UoM)
    Elasticity (MEng 3rd & 4th yr option & MSc, at UoM)
    * Modelling and Simulation IV (4th yr option, at UoM)
    * Composites I & II (MSc, at UoM)
    Shell Structures (MSc, option, at UoM & NUAA)
    Variational Principles and Finite Elements (MSc, at NUAA)
    * Nonlinear Finite Element Analysis & Structural Stability (MSc, at NUAA)
    Mechanics of Aerostructures (3rd yr, at NUAA)

ESTEEM

Outside Appointments
Member the editorial board of the *International Journal of Mechanical Sciences*, Elsevier
Visiting Professor: College of Aerospace Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

Visiting Professor: School of Materials Science and Engineering, Zhejiang University, Hangzhou, China
Qinling Expert, AVIC Aircraft Strength Research Institute, Xi'an, China
Technical Consultant: Sinoma Science & Technology Co., Ltd., Nanjing, China
Technical Consultant: TechSim, Beijing, China (Paid as a non-executive director under a consultancy agreement)

Editorship (2006-2009)

Associate editor of *International Journal of Aerospace Engineering*¸ published by Hindawi Publishing Corporation.

Events

One of the two advisors with Professor P.A. Smith (Surrey) for the 2nd World-Wide Failure Exercise (WWFE-II): Evaluation of Theories for Predicting Failure in Polymer Composite Laminates under 3-D States of Stress, organised by Professor M.J. Hinton (NCC) and Dr A.S. Kaddour (QinetiQ)

One of the organisers for the 3rd World-Wide Failure Exercise (WWFE-III): Benchmarking of matrix cracking, damage and failure models for composites: Comparison between theories, in collaboration with Professor M.J. Hinton (NCC), Dr A.S. Kaddour (QinetiQ) and Professor P.A. Smith (Surrey)

Leader for Track 2.6 (Joints) of ICCM-21 in Xi'an China in August 2017

Member of scientific/organising committees of a number of international conferences

RESEARCH

Areas of Research

Composite materials & structures	Damage & failure of composites
Finite element modelling	Micromechanics and material characterisation
Buckling & structural stability	Design & analysis of light weight structures
Offshore applications of composites	Pressure vessels and shell structures

Computational Codes Developed

(1) S.Li, UnitCells© – an automated unit cell generation and analysis package on ABAQUS/CAE as a platform, where periodic boundary conditions are implemented strictly, 2011

(2) S.Li, LAMFAIL – A damage and failure analysis code for laminate composites, V1, 1995 and V2, 1998. It has later been incorporated into the Toolset design software developed in the National Integrated Research Programme for Composite Design Tools, led by AEA(UK), NPL and DERA, in 2002

(3) S.Li, UGENS – An ABAQUS User Subroutine for FE analysis of laminated composite structures incorporating a damage model for transverse matrix cracking, 1995

(4) S.Li, GNLBKL – A nonlinear FE code for large deflection, buckling and stability analysis of laminated composite structures (beams, plates & shells with or without stiffeners), 1988 (in China)

PUBLICATIONS

Papers in Preparation for Journal Publications

[1] J. Yan, S. Li, A closed form solution to the secondary perturbation mode for FE initial post-buckling analysis, to be finalised, 2017

[2] J. Yan, S. Li, The sensitivity of boundary conditions in FE analysis of initial post-buckling behaviour and the reproduction of the results obtained by analytical means, to be finalised, 2017

[3] E. Sitnikova, S. Li and D. Li, A continuum damage model for prediction of delamination initiation and evolution in laminated composites due to impact, to be finalised, 2017

[4] E. Sitnikova, S. Li and D. Li, A study of the mesh sensitivity in modelling delamination in double cantilever beams, to be finalised, 2017

[5] S. Li, The role of rotational symmetries in material characterisation, to be finalised, 2017

[6] S. Li, Unit cells for 3D braided textile composites, to be finalised, 2017

[7] S. Li, Determination of damage related material constants associated with matrix cracks in UD composites within the continuum damage mechanics framework, to be finalised, 2017

Book

[1] T.Feng, B.Mu and **S.Li**, *Numerical Methods in Analysis of Nonlinear Structural Stability*, Jiangsu Science & Technology Press, Nanjing, China, 1995 (in Chinese)

Book chapter

[1]   S. Li and E. Sitnikova, An Excursion into Representative Volume Elements and Unit Cells, in Volume 1 *Reinforcements and General Theories of Composites*, managed by Emmanuel Gdoutos, *Comprehensive Composite Materials II*, ed. by C. Zweben and P. Beaumont, 2017

[2]   P.H. Chan, K.Y. Tshai, M. Johnson, S Li, Chapter 9, FEA Modelling of FRP Repair, pp177-210, in *Offshore Risers, Rehabilitation of Pipelines Using Fibre Reinforced Polymer (FRP) Composites*, Editor V.M. Karbhari, Woodhead Publishing, June 2014

Papers Published in Peer Reviewed Journals

[3]   S. Li, J. Yan, G. Zhang and S. Duan, Commutativity of the strain energy density expression for the benefit of the FEM implementation of Koiter's initial post-buckling theory, Accepted for publication in *International Journal for Numerical Methods in Engineering*, Jan 2018

[4]   J.-J. Gou, X.-J. Ren, Y.-J.,Dai, S. Li, W.-Q. Tao. Study of thermal contact resistance of rough surfaces based on the practical topography, to appear in *Computers & Fluids*, 2016, https://doi.org/10.1016/j.compfluid.2016.09.018

[5]   S. Li, E. Sitnikova, Y Liang and A.S. Kaddour, The Tsai-Wu failure criterion rationalised in the context of UD composites, *Composites A*, 102:207-217, 2017

[6]   E. Sitnikova, S. Li and D. Li, Subtle features of delaminations in cross-ply laminates due to low speed impact, *Composites Science and Technology*, 149:149-158, 2017

[7]   P.H. Chan, K.Y. Tshai, M. Johnson, H.L. Choo, S. Li, K. Zakaria, Burst Strength of Carbon Fibre Reinforced Polyethylene Strip Pipeline Repair System –a numerical and experimental approach, *Journal of Composite Materials*, **49**(6):749–756, 2015

[8]   J.-J. Gou, H. Zhang, Y.-J. Dai, S. Li, W.-Q. Tao, Numerical prediction of effective thermal conductivities of 3d four-directional, braided composites, *Composite Structures*, 125:499-508, 2015

[9]   S. Li, L.F.C. Jeanmeure and Q. Pan, A composite materials characterisation tool — UnitCells, *Journal of Engineering Mathematics*, 95:279-293, 2015

[10]   R.S. Choudhry, S.F. Hassan, S. Li, R. Day, Damage in single lap joints of woven fabric reinforced polymeric composites subjected to transverse impact loading, *International Journal of Impact Engineering*, 80:76-93, 2015

[11]   S. Li, Reflection on 'finite rotation problem' in plate and shell theories and in finite element formulation —— Back to basics, *Int. J. Mech Sci*, 91:12-17, 2015

[12]   S. Li, S. Kyaw and A. Jones, Boundary conditions resulting from cylindrical and longitudinal periodicities, *Computers & Structures*, 133:122-130, 2014

[13]   P.H.Chan, K.Y. Tshai, M. Johnson, S. Li, Finite Element Analysis of Combined Static Loadings on Offshore Pipe Riser Repaired with Fibre-Reinforced Composite Laminates, *Journal of Reinforced Plastics and Composites*, 33:514–525, 2014

[14]   Y. Wang, J. Li, P. Agyakwa, C.M. Johnson and S. Li, Quantitative Microstructure Characterization of Ag Nanoparticle Sintered joints for Power Die Attachment, *Journal of Molecular Crystals and Liquid Crystals*, 604:11–26, 2014

[15]   A.S. Kaddour, M.J. Hinton, P.A. Smith and S. Li, Preface, *Journal of Composite Materials*, 47: 2415, 2013

[16]   A.S. Kaddour, M.J. Hinton, P.A. Smith and S. Li, The background to the third world-wide failure exercise, *Journal of Composite Materials*, 47: 2417–2426, 2013

[17]   A.S. Kaddour, M.J. Hinton, P.A. Smith, S. Li, 2013. Mechanical properties and details of composite laminates for the test cases used in the third world-wide failure exercise, *Journal of Composite Materials*, 47: 2427–2442, 2013

[18]   A.S. Kaddour, M.J. Hinton, P.A. Smith, S. Li, 2013. A comparison between the predictive capability of matrix cracking, damage and failure criteria for fibre reinforced composite laminates: Part A of the third world-wide failure exercise, *Journal of Composite Materials*, 47: 2449–2479, 2013

[19]   C. Qian, L.T. Harper, T.A. Turner, S. Li, N.A. Warrior, Determination of the size of representative volume elements for discontinuous fibre composites, *Comput Mat Sci*, 64:106-111, 2012

[20]   H. Li, E. Kandare, S. Li, Y. Wang, B.K. Kandola, P. Myler, A. R. Horrocks, Integrated thermal, micro- and macro-mechanical modelling of post-fire flexural behaviour of flame-retarded glass/epoxy composites, *Comput Mat Sci*., 59:22-32, 2012

[21]   C. Qian, L.T. Harper, T.A. Turner, S. Li, N.A. Warrior, Representative Volume Elements for Discontinuous Carbon Fibre Composites. Part 1: Boundary Conditions, *Composites Science and Technology*, 72:225-234, 2012

[22]   C. Qian, L.T. Harper, T.A. Turner, S. Li, N.A. Warrior, Representative Volume Elements for Discontinuous Carbon Fibre Composites. Part 2: Determining the critical size, *Composites Science and Technology*, 72:204-210, 2012

[23]   S. Li, On the periodic traction boundary conditions be imposed in micromechanical FE analyses of unit cells, *IMA Journal of Applied Mathematics*, 77:441-450, 2012

[24]   P.H. Chan, K.Y. Tshai, M. Johnson, H.L. Choo, S. Li, Finite Element Modelling of Composite Repair in Offshore Pipe Riser. *Advanced Materials Research*, 557–559:2239–2242. 2012

[25] J. Lopez-Puente and S. Li, Analysis of strain rate sensibility of carbon/epoxy woven laminates, *Int. J. Impact Engineering*, 2012, 48:54-64

[26] H. Li, S. Li, Y. Wang, E. Kandare, B.K. Kandola, P. Myler, A. R. Horrocks, Micromechanical finite element analyses of woven fabric composites at elevated temperatures using unit cells at multiple length scales, *Comput Mat Sci.*, 55:23–33, 2011

[27] S. Li and Z. Zou, The use of central reflection in the formulation of unit cells for micromechanical FEA, *Mech. of Mater.*, 43:824–834, 2011

[28] S. Li, N. Warrior, Z. Zou and F. Almaskari, A unit cell for FE analysis of materials with the microstructure of a staggered pattern, *Composites A*, 42:801-811, 2011

[29] S. Li, C. Zhou, H. Yu and L. Li, Formulation of a unit cell of a reduced size for plain weave textile composites, *Comput Mat Sci.*, 50:1770-1780, 2011

[30] H. Li, S. Li and Y. Wang, Prediction of effective thermal conductivities of woven fabric composites using unit cells at multiple length scales, *J. Mater. Res.*, 26(3):384-394, 2011

[31] S.M. Mohseni Shakib and S. Li, Modified three-rail shear fixture (ASTM D 4255/D 4255M) and an experimental study of nonlinear in-plane shear behaviour of FRC, *Composites Science and Technology*, 69, 1854-1866, 2009

[32] S. Li and F. Hafeez, Variation-based cracked laminate analysis revisited and fundamentally extended, *Int. J. Solids Struct.*, 46, 3505-3515, 2009

[33] S. Li, C. Singh and R. Talreja, A representative volume element based on translational symmetries for FE analysis of cracked laminates with two arrays of cracks, *Int. J. Solids Struct.*, 46, 1793-1804, 2009

[34] Z. Zou, P.J. Tan, S.R. Reid, S. Li and J.J. Harrigan, Dynamic crushing of honeycombs and features of shock front, *Int. J. Impact Engineering*, 36, 165-176, 2009

[35] **S. Li**, Boundary conditions for unit cells from periodic microstructures and their implications, *Composites Science and Technology*, **68**, 1962-1974, 2008

[36] R. Choudhry and **S. Li**, Modelling and characterization of impact damage in quickstep cured single lap joints, *The e-Journal of Nondestructive Testing*, **12**(2), 1435-4934, 2007

[37] C.G. Karroum, S.R. Reid and **S. Li**, Indentation of ring-stiffened cylinders by wedge-shaped indenters, Part 2: scale model tests, *Int. J. Mech. Sci.*, **49**, 39-53, 2007

[38] C.G. Karroum, S.R. Reid and **S. Li**, Indentation of ring-stiffened cylinders by wedge-shaped indenters, Part I: an experimental and finite element analysis, *Int. J. Mech. Sci.*, **49**, 13-38, 2007

[39] Z. Zou, P.J. Tan, S.R. Reid, **S. Li** and J.J. Harrigan, Dynamic crushing of a one-dimensional chain of type II structures, *Int. J. Impact Engineering*, **34**, 303-328, 2007

[40] **S. Li**, S.R. Reid and Z. Zou, Modelling damage of multiple delaminations and transverse matrix cracking in laminated composites due to low velocity lateral impact, *Composites Science and Technology*, **66**, 827-836 2006

[41] P.J. Tan, S.R. Reid, J.J. Harrigan, Z. Zou and **S. Li**, Dynamic compressive strength properties of aluminium foams. Part II – Shock theory and comparison with experimental data, *J. Mech. Phys. Solids*, **53**, 2206-2230, 2005

[42] P.J. Tan, S.R. Reid, J.J. Harrigan, Z. Zou and **S. Li**, Dynamic compressive strength properties of aluminium foams. Part I – Experimental data and observations, *J. Mech. Phys. Solids*, **53**, 2174-2205, 2005

[43] S.-H. Lim and **S. Li**, Energy release rates for transverse cracking and delaminations induced by transverse cracks in laminated composites, *Composites A*, **36**, 1467-1476, 2005

[44] A. Wongsto and **S. Li**, Micromechanical FE analysis of UD fibre-reinforced composites with fibres distributed at random over the transverse cross-section, *Composites A*, **36**, 1246-1266, 2005

[45] **S. Li**, S.R. Reid, P.D. Soden and M.J. Hinton, Modelling transverse cracking damage in thin, filament-wound tubes subjected to lateral indentation followed by internal pressure, *Int. J. Mech. Sci.*, **47**, pp 621-646, 2005

[46] **S. Li** and S.-H. Lim, Variational principles for generalised plane strain problems and their applications, *Composites A*, **36**, 353-365, 2005

[47] S. Li and A. Wongsto Unit cells for micromechanical analyses of particle reinforced composites, *Mech. Mater.*, 36, 543-572, 2004

[48] **S. Li**, The centre of twist for a prismatic bar under free torsion, *Int. J. Mech. Eng. Edu.*, **31**, 226-232, 2003

[49] Z. Zou, S.R. Reid and **S. Li**, A continuum damage model for delamination in laminated composites, *J. Mech. Phys. Solids*, **51**, 333-356, 2003

[50] Z. Zou, S.R. Reid, **S. Li** and P.D. Soden, Application of a delamination model to laminated composite structures, *Composite Structures*, **56**, 375-389, 2002

[51] Z. Zou and **S. Li**, Stresses in an infinite medium with two similar circular cylindrical inclusions, *Acta Mechanica*, **156**, 93-108, 2002

[52] Z. Zou, S.R. Reid, **S. Li** and P.D.Soden, Modelling interlaminar and intralaminar damage in filament wound pipes under quasi-static indentation, *J. Composite Materials*, **36**, 477-499, 2002

[53] Z. Zou, S.R. Reid, **S. Li** and P.D. Soden, General expressions for energy release rates for delamination in laminated composites, *Proc. Roy. Soc. Lond. A*, **458**, 645-667, 2002

[54] **S. Li** and J. Cook, An analysis of filament overwound toroidal pressure vessels and optimum design of such structures, *ASME J. Pressure Vessels Tech.*, **124**, 215-222, 2002

[55]   **S. Li**, A note on bending theory of prismatic bars, Discussion, *Int. J. Mech. Eng. Edu.*, 29, 278-278, 2001

[56]   **S. Li**, General unit cells for micromechanical analyses of unidirectional composites, *Composites A*, **32**, 815-826, 2001

[57]   Z. Zou, S.R. Reid, P.D. Soden and **S. Li**, Mode separation of energy release rate for delamination in composite laminates using sublaminates, *Int. J. Solids Struct.*, **38**, 2597-2613, 2001

[58]   Z. Zou, S.R. Reid, P.D. Soden and **S. Li**, Measurement of the critical energy release rate G_{IIc} for filament wound GRP pipes, *Composites A*, **32**, 271-280, 2001

[59]   L.N. McCartney and **S. Li**, Predicting the thermal expansion coefficients of fibre-reinforced composites, EC MMC Network Website, 2000

[60]   J. Curtis, M.J. Hinton, **S. Li**, S.R. Reid and P.D. Soden, Damage, deformation and residual strength of filament wound composite tubes subjected to lateral impact and quasi-static loading, *Composites B*, **31**, 419-433, 2000

[61]   **S. Li**, On the unit cell for micromechanical analysis of fibre-reinforced composites, *Proc. Roy. Soc. Lond. A*, **455**, 815-838, 1999

[62]   **S. Li**, S.R. Reid and P.D. Soden, A continuum damage model for transverse matrix cracking in laminated fibre-reinforced composites, *Phil. Trans. Roy. Soc. Lond. A*, **356**, 2379-2412, 1998

[63]   **S. Li**, Two propositions in the problem of the torsion of bars, *Int. J. Mech. Eng. Edu.*, **26**, 159-162, 1997.

[64]   **S. Li**, On the vectorial nature of the rotational degrees of freedom in spatial beam elements, *Computers & Structures*, **59**, 1199-1200, 1996

[65]   **S. Li**, Rigidities of one-dimensional laminates of composite materials, *ASCE, J. of Engrg. Mech.*, **122**, 371-374, 1996

[66]   **S. Li**, S.R. Reid and P.D. Soden, A finite strip analysis of cracked laminates, *Mech. of Mater.*, **18**, 289-311, 1994

[67]   **S. Li**, P.D. Soden, S.R. Reid and M.J. Hinton, Indentation of laminated filament-wound composite tubes, *Composites*, **24**, 407-421, 1993

[68]   B. Mu, T. Feng and **S. Li**, The solution of finite element equilibrium equations in the analysis of initial bifurcation post-buckling behaviour, *Journal of Applied Mechanics* (Chinese Journal), **7**, 1992 (in Chinese)

[69]   **S. Li** and S.R. Reid, On the symmetry conditions for laminated fibre-reinforced composite structures, *Int. J. Solids & Structures*, **29**, 2867-2880, 1992

[70]   B. Mustafa, **S. Li**, P.D. Soden, S.R. Reid, C.M. Leech and M.J. Hinton, Lateral indentation of filament wound GRP tubes, *Int. J. Mech. Sci.*, **34**, 443-457, 1992

[71]   **S. Li** and S.R. Reid, The plastic buckling of axially compressed square tubes, *ASME, J. Appl. Mech.*, **114**, 276-282, 1992

[72]   **S. Li**, Effect of axial compressibility on buckling of columns, Discussion, *ASCE, J. of Engrg. Mech.*, **117**, 2169-2171, 1991

[73]   **S. Li** and S.R. Reid, Relationship between the elastic buckling of square tubes and rectangular plates, *ASME, J. Appl. Mech.*, **112**, 969-973, 1990

[74]   **S. Li**, Determination of buckling mode and explicit expression of critical load for simply supported rectangular orthotropic plates under biaxial compression, *Applied Mathematics and Mechanics*, English Edition, **9**, 907-913, 1988

[75]   **S. Li**, Further Investigation of the buckling of shallow panels under axial compression, *Acta Aeronautica et Astronautica Sinic*, Publica Industria Editio, T.I., no.4, 37-42, 1986 (in Chinese)

[76]   J. Zhou, T. Feng and **S. Li**, Karman-Donnell equations for laminated composite cylindrical shells including transverse shear effect, *J. Nanjing Aero. Institute*, no.2, 46-53, 1986 (in Chinese)

[77]   J. Zhou, T. Feng and **S. Li**, Buckling and initial post-buckling analysis of composite panels under axial compression, *Acta Aeronautica et Astronautica Sinic*, **7**, 63-70, 1986 (in Chinese)

[78]   T. Feng and **S. Li**, Solution for the geometrically nonlinear problem of plates by iterative methods with moving coordinates, *J. Nanjing Aero. Inst.*, no.3, 1983 (in Chinese)

Thesis & Dissertation

[1]   **S. Li**, Theoretical and Experimental Analysis of Initial Postbuckling Behaviour of Composite Material Structures, M.Eng. Dissertation, Nanjing Aeronautical Institute, 1984 (in Chinese)

[2]   **S. Li**, Modelling Damage in Thin-Walled Filament Wound Structures, Ph.D. Thesis, University of Manchester, 1993

Papers Published in Conferences
        Numerous