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Education

- Oct 2011 Ph.D. (Joint Degree), National University of Singapore, Eindhoven University of Technology.
- Aug 2005 M.Eng. (Accelerated Program), National University of Singapore.
- Dec 2003 B.Eng. (First Class Honors), Civil Engineering, National University of Singapore.

Employment

- Jul 2018 - Associate Professor, National University of Singapore.
- Nov 2011 - Jun 2018 Assistant Professor, National University of Singapore.
- Apr 2005 - Jul 2006 Senior Development Officer, Building and Construction Authority.

Teaching

- CE6006 Advanced Finite Element Method (lecturer)
- CE6003 Numerical Methods in Engineering Mechanics (lecturer)
- CE3155 Structural Analysis (co-lecturer)
- MA2501 Differential Equations and Systems (co-lecturer, tutor)
- EG1109 Statics and Mechanics of Materials (tutor)

Honours and Awards

- 2023 Inaugural Young Investigator Award, presented during the Fourth International Conference on Damage Mechanics at Louisiana State University, Baton Rouge, USA
- 2023 NUS Annual Digital Education Award
- 2023 NUS College of Design and Engineering College Educator Award
- 2022 Lloyd H. Donnell Applied Mechanics Reviews Paper Award, for the paper "Fatigue of Metallic Glasses" published in ASME Applied Mechanics Reviews (co-author)
- 2022 NUS Faculty of Engineering Innovative Teaching Award
- 2019 Asian-Pacific Association for Computational Mechanics Young Investigator Award
- 2017 - 2018 NUS Faculty of Engineering Teaching Honours List
- 2016 - 2017 NUS Faculty of Engineering Teaching Honours List
- 2015 - 2016 NUS Annual Teaching Excellence Award
NUS Faculty of Engineering Teaching Honours List
- 2013 - 2014 NUS Faculty of Engineering Teaching Commendation List
- 2006 - 2010 Lee Kong Chian Graduate Scholarship
- 2004 The Institution of Engineers Singapore Gold Medal

Awards received by group members

- 2020 *“Isogeometric shape optimization of auxetics with prescribed nonlinear deformation”*
 PhD student Deepak Kumar, 1st Place
 Modeling Inelasticity & Multiscale Behavior Student Paper Competition (Online)
 American Society of Civil Engineers EMI Conference.
- 2019 *“Capturing size effect in quasi-brittle fracture with localizing gradient damage enhancement”*
 PhD student Zhang Yi, Best Presenter Award
 The 32nd KKHTCNN Symposium on Civil Engineering, 24-26 Oct, Daejeon, Korea.
- 2017 *“A micromorphic computational homogenization framework for heterogeneous materials”*
 PhD student Raja Biswas, Winner
 Modeling Inelasticity & Multiscale Behavior Student Paper Competition
 American Society of Civil Engineers EMI Conference, 4-7 Jun, San Diego, USA.

Awards received by undergraduate students

- 2018 3rd prize, Tenth Inter-University Invitational Civil Engineering Competition, total 15 teams.
 Organized by the University of Macau. (Mentor to NUS team)
- 2017 1st and 4th prize, Annual Bridge Design Competition, total 25 teams.
 Organized by the Nanyang Technological University. (Mentor to three NUS teams)

Grants

- Jul 2023 - Jun 2025, NAMIC-DSTA, S\$549,900.
 PI, 3D printed concrete structures against projectile impact
- Mar 2023 - Dec 2023, Defence Science and Technology Agency, S\$349,700.
 PI, Dynamic impact test of green concrete
- Sep 2021 - Sep 2023, Cities of Tomorrow Grant, S\$1,149,000.
 Co-PI (for numerical model), Resilient building facade with robust material testing and machine learning framework
- Feb 2021 - Jan 2026, Home Team Science & Technology Agency, S\$7,805,222.
 Research Program Manager, Development of design guidelines for precast concrete and steel-composite structures against progressive collapse
 PI, Precast concrete structures
- Mar 2021 - Feb 2024, Ministry of Education Tier 1, S\$180,000.
 PI, 3D printed shaped charge copper liners with improved performance
- Jan 2021 - Dec 2023, NUS Learning Innovation Fund, S\$137,951.
 PI, Integrated learning of structural analysis & project management via 3D virtual environment application
- Jan 2021 - Mar 2022, NUS Enterprise Technology Acceleration Programme Grant, S\$49,000.
 PI, Tailored auxetic metamaterial for protection against impact events
- Apr 2019 - Mar 2022, Ministry of Education Tier 1, S\$150,000.
 PI, Data driven design of concrete structures against impact loading.

Feb 2019 - Jan 2020, USyd - NUS Partnership Collaboration Award, S\$10,000 & AUD10,000.
NUS PI, Design and optimisation of advanced composite structures for infrastructure protection

Aug 2018 - Jan 2021, National Additive Manufacturing Innovation Cluster, S\$204,000.
PI, 3D printed auxetic structures for protection against impact events
Industry Partner: Beth-El (Asia Pacific) Pte Ltd

Apr 2018 - Jul 2020, Defence Science and Technology Agency, S\$799,980.
PI, Assessing the effectiveness of ultra high-performance concrete against impact loading

Mar 2016 - Feb 2019, Ministry of Education Tier 1, S\$168,000.
PI, A physically based damage model for the brittle fracture of polycrystals

Jan 2016 - Mar 2019, Ministry of Education Tier 2, S\$586,950.
PI, Multiscale tailor-made cellular structures with enhanced mechanical properties
Collaborator: Prof Samuel Forest, MINES ParisTech
Collaborator: A/Prof Justin Dirrenberger, Arts et Métiers ParisTech

Feb 2014 - Feb 2019, NRF Keppel-NUS Corporate Laboratory, S\$817,000.
PI, Flexural failure of ice on a sloping-sided structure
Industry Partner: Keppel Offshore & Marine Technology Centre Pte Ltd

Mar 2013 - Feb 2016, Ministry of Education Tier 1, S\$166,870.
PI, Multi-scale computational homogenization for heterogeneous materials

Mar 2012 - Feb 2015, Start-up, S\$179,988.
PI, Homogenization theory from crystal to macro gradient plasticity

Professional Activities

- 2020 – Associate Head (Academic Matters), NUS Department of Civil and Environmental Engineering
- 2023 – Director, Centre for Protective Technology
- 2016 – 2023 Program Director, NUS M.Sc.(CE) Program
- 2021 – Associate Editor, Journal of Micromechanics and Molecular Physics
- 2021 – Associate Editor, Journal of Vibration Engineering & Technologies
- 2022 – Editorial Advisory Board, Engineering Failure Analysis
- 2017 – Member, ASCE EMI Computational Mechanics Committee
- 2017 – Member, ASCE EMI Modeling Inelasticity and Multiscale Behavior Committee
(2022, Vice-Chair; 2023-2025, Chair)
- 2019 – Committee Member, Association for Computational Mechanics (Singapore)
- 2020 Member, Project evaluation panel, Research Flanders Foundation (FWO),
W&T9 Science and Technology of Construction and Built Environment Grant Call
- 2022 Rapporteur, PhD defense from Ecole des Mines de Paris
- 2021 Opponent, PhD defense from Aalto University
- 2021 External examiner, PhD thesis from Monash University
- 2021 External examiner, PhD thesis from The University of Sydney
- 2020 External examiner, PhD thesis from City University of Hong Kong
- 2020 External examiner, PhD thesis from Anna University Chennai

2020	Proposal reviewer for Austrian Science Fund (FWF)
2019	External examiner, 3 PhD theses from The University of Sydney
2019	External examiner, PhD thesis from Anna University Chennai
2019	Proposal reviewer for Czech Science Foundation
2018	Proposal reviewer for Research Grants Council of Hong Kong
2017	Proposal reviewer for Research Foundation Flanders (FWO), Belgium
2017	Member, NUS CEE research benchmarking committee
2013	Co-Guest Editor, Computational Materials Science v94

Former PhD students

1. Zhang Yi, Graduated in May 2022, “Localizing gradient damage models for quasi-brittle fracture – size effect and simple numerical implementation”. (Sole supervisor)
2. Deepak Kumar Pokkalla, Graduated in Apr 2021, “Isogeometric shape optimization of auxetics with prescribed nonlinear deformation”. (Main supervisor. Co-supervisor: Prof Quek Ser Tong)
3. Zhang Fengling, Graduated in Dec 2020, “Resistance of cement-based materials against high-velocity small caliber deformable and non-deformable projectile impact”. (Main supervisor. Co-supervisor: Prof Zhang Min-Hong)
4. Xu Yanjie, Graduated in Dec 2019, “Localizing gradient enhancement for the continuum modelling of ductile fracture”. (Sole supervisor)
5. Balaji Vengatachalam, Graduated in Apr 2019, “Mechanical modelling and characterization of closed-cell aluminium foams”. (Main supervisor. Co-supervisors: Prof Somsak Swaddiwudhipong, Prof Liu Zishun)
6. Tan Swee Hong, Graduated in Dec 2018, “Homogenization towards wave propagation in composite materials”. (Sole supervisor)
7. Teo Fwu Chyi, Graduated in Dec 2018, “Load predictions for level ice interactions with sloping structures”. (Main supervisor. Co-supervisor: A/Prof Pang Sze Dai)
8. Wang Zhao, Graduated in Dec 2018, “Localizing gradient damage models for dynamic fracture”. (Sole supervisor)
9. Raja Biswas, Graduated on Aug 2018, “A generalized micromorphic computational homogenization framework for heterogeneous materials and structures”. (Sole supervisor)
10. Sun Gang, Graduated in Jan 2018, “Localizing gradient damage models for the fracture of quasi-brittle materials”. (Sole supervisor)
11. Le Hoang Thanh Nam, Graduated in May 2017, “High-strength concrete and fiber-reinforced cement composites for potential application in protective structures”. (Co-supervisor. Main supervisor: Prof Zhang Min-Hong)

Former MEng students

1. Chen Zhang, Graduated in Jan 2023, “Accelerated training of constitutive relations for history-dependent composite materials using Recurrent Neural Network with transfer learning”. (Sole supervisor)
2. Deng Haoxiang, Graduated in Oct 2022, “Machine learning for constitutive modelling”. (Sole supervisor)
3. Zeng Zhuohong, Graduated in Nov 2019, “Chiral auxetics as a protective material”. (Sole supervisor)

Conference and Workshop Organization

MS Co-organizer, Multiscale behavior of damage and failure mechanics, ASCE Engineering Mechanics Institute Conference, 6 - 9 Jun 2023, Georgia Tech, Atlanta, USA.

MS Co-organizer, Modelling and characterization of damage and failure, 4th International Conference on Damage Mechanics, 15 - 18 May 2023, Louisiana State University, Baton Rouge, USA.

MS Co-organizer, Recent Advances in Computational Modeling of Damage and Fracture, 15th World Congress on Computational Mechanics & 8th Asian Pacific Congress on Computational Mechanics, 31 Jul - 5 Aug 2022, Yokohama, Japan (Online).

Secretary, Local Organising Committee, 17th East Asia-Pacific Conference on Structural Engineering and Construction, 27 - 30 Jun 2022, Singapore (Online).

MS Co-organizer, Multiscale behavior of damage and failure mechanics, ASCE Engineering Mechanics Institute Conference, 31 May - 3 Jun 2022, Johns Hopkins University, Baltimore, USA.

MS Co-organizer, Multiscale behavior of damage and failure mechanics, ASCE Engineering Mechanics Institute Conference, 25 - 28 May 2021, Columbia University, New York, USA (Online).

MS Co-organizer, Computational modeling of damage and fracture, World Congress in Computational Mechanics and ECCOMAS Congress, 11 - 15 Jan 2021, Paris, France (Online).

Scientific Committee, Congrès International de Géotechnique - Ouvrages - Structures, 31 Oct - 1 Nov 2019, Hanoi, Vietnam.

International Scientific Advisory Committee, 10th International Conference on Computational Methods, 9 - 13 Jul 2019, Singapore.

MS Co-organizer, Generalized continua, gradients and nonlocal mechanics, ASCE Engineering Mechanics Institute Conference, 19 - 21 Jun 2019, Caltech, California, USA.

MS Co-organizer, Multiscale behavior of damage and failure mechanics, ASCE Engineering Mechanics Institute Conference, 19 - 21 Jun 2019, Caltech, California, USA.

Technical Program Committee, 2nd International Conference on Modeling in Mechanics and Materials, 29-31 Mar 2019, Suzhou, China.

MS Co-organizer, Computational generalized continua, gradients and nonlocal mechanics, 13th World Congress on Computational Mechanics, 22-27 Jul 2018, New York, USA.

International Scientific Committee, 3rd International Conference on Damage Mechanics, 6-8 Jul 2018, Tongji University, Shanghai, China.

MS Co-organizer, Computational modelling of damage and fracture, 6th European Conference on Computational Mechanics, 11-15 Jun 2018, Glasgow, UK.

MS Co-organizer, Multiscale behavior of damage and failure mechanics, ASCE Engineering Mechanics Institute Conference, 29 May-1 Jun 2018, M.I.T., Cambridge MA, USA.

Scientific Committee, Congrès International de Géotechnique - Ouvrages - Structures, 26-27 Oct 2017, Ho Chi Minh City, Vietnam.

Scientific Committee, International Conference on Advances in Computational Mechanics, 2-4 Aug 2017, Phu Quoc Island, Vietnam.

International Scientific Advisory Committee, 8th International Conference on Computational Methods, 25-29 Jul 2017, Guilin, China.

MS Co-organizer, Multi-resolution modelling with generalized continua, 12th World Congress on Computational Mechanics, 24-29 Jul 2016, Seoul, Korea.

Organizing Committee, International Symposium on Frontiers in Applied Mechanics, 4-7 Dec 2014, Singapore.

Organizing Committee, 5th Asian Pacific Congress on Computational Mechanics, 11-14 Dec 2013, Singapore.

Organizing Committee, 26th KKHTCNN Symposium on Civil Engineering, 18-20 Nov 2013, Singapore.

Secretary, 23rd International Workshop on Computational Mechanics of Materials, 2-5 Oct 2013, Singapore.

MS Co-organizer, Nonlocal continua and homogenization theories, 5th Asian Pacific Congress on Computational Mechanics, 11-14 Dec 2013, Singapore.

Journal Publications (#Corresponding Author, +Student and *Postdoc working in my group)

1. Yeoh⁺, K.M., Poh, L.H., Tay, T.E., Tan, V.B.C., 2023. Multiscale modelling of sandwich structured composites using direct FE2. *Composites Science and Technology* 239, 110066.
2. Yuan⁺, Z., Poh[#], L.H., 2023. Accelerated offline setup of homogenized microscopic model for multi-scale analyses using neural network with knowledge transfer. *International Journal for Numerical Methods in Engineering* 124, 3063-3086.
3. Zhang, Y.X., Xie, S.J., Guo, W., Ding, J., Poh[#], L.H., Sha[#], Z.D., 2023. Multi-objective optimization for high-performance Fe-based metallic glasses via machine learning approach. *Journal of Alloys and Compounds* 960, 170793.
4. Wang⁺, J., Poh, L.H., Guo, X., 2023. Localizing gradient damage model based on a decomposition of elastic strain energy density. *Engineering Fracture Mechanics* 279, 109032.
5. Su, Q., Wu, H., Poh, L.H., Zhang, F., Zhou, F., Pang, S.D., 2023. Dynamic behavior of UHPC-FST under colse-in explosions with large charge weight. *Engineering Structures* 277, 115475.
6. Sha, Z., Teng, Y., Poh, L.H., Wang, T., Gao, H., 2022. Shear band control for improved strength-ductility synergy in metallic glasses. *Applied Mechanics Reviews* 74, 050801.
7. Wang⁺, J., Poh[#], L.H., Guo, X., 2022. Mixed mode fracture of geometrically similar FRUHPC notched beams with the localizing gradient damage model. *Engineering Fracture Mechanics* 275, 108843.
8. Pokkalla⁺ D.K., Wang, Z.-P., Teoh, J.C., Poh[#], L.H., Lim, C.T., Quek, S.T., 2022. Soft missing rib structures with controllable negative Poisson's ratios over large strains via isogeometric design optimization. *Journal of Engineering Mechanics* 148, 04022063.
9. Zhang⁺, Y., Xu^{*}, Y., Wang, Y., Poh[#], L.H., 2022. A simple implementation of localizing gradient damage model in Abaqus. *International Journal of Damage Mechanics* 31, 1562-1591.
10. Li⁺, W.-J., You, T., Ni, T., Zhu, Q.-Z., Poh, L.H., 2022. The extended peridynamic model for elastoplastic and/or fracture problems. *International Journal for Numerical Methods in Engineering* 123, 5201-5229.
11. Yeoh⁺, K.M., Poh, L.H., Tay, T.E., Tan, V.B.C., 2022. Multiscale computational homogenisation of shear-flexible beam elements: a Direct FE2 approach. *Computational Mechanics* 70, 891-910.

12. Shi⁺, Z., Zhong, Y., Xy. L., Poh, L.H., You, J., 2022. Structural analysis of composite sandwich plates with enhanced pyramid lattice core using VAM-based reduced-order equivalent model. *Composite Structures* 290, 115480.
13. Zhi, J., Poh, L.H., Tay, T.E., Tan, V.B.C., 2022. Direct FE2 modeling of heterogeneous materials with a micromorphic computational homogenization framework. *Computer Methods in Applied Mechanics and Engineering* 393, 114837.
14. Xu⁺, J., Li, P., Poh[#], L.H., Zhang, Y., Tan, V.B.C., 2022. Direct FE2 for concurrent multilevel modelling of heterogeneous thin plate structures. *Computer Methods in Applied Mechanics and Engineering* 392, 114658.
15. Cui, T., Zhang, J., Li, K., Peng, J., Chen, H., Qin[#], Q., Poh[#], L.H., 2022. Ballistic limit of sandwich plates with a metal foam core. *Journal of Applied Mechanics* 89, 021006.
16. Zhang⁺, F.L., Shedbale*, A.S., Zhong*, R., Poh[#], L.H., Zhang, M.H., 2021. Ultra-high performance concrete subjected to high-velocity projectile impact: implementation of K&C model with consideration of failure surfaces and dynamic increase factors. *International Journal of Impact Engineering* 155, 103907.
17. Zhang⁺, Y., Shedbale*, A.S., Gan, Y., Moon, J., Poh[#], L.H., 2021. Size effect analysis of quasi-brittle fracture with localizing gradient damage model. *International Journal of Damage Mechanics* 30, 1012-1035.
18. Zhang, Y.X., Xing, G.C., Sha[#], Z.D., Poh[#], L.H., 2021. A two-step fused machine learning approach for the prediction of glass forming ability of metallic glasses. *Journal of Alloys and Compounds* 875, 160040.
19. Shedbale*, A.S., Sun⁺, G., Poh[#], L.H., 2021. A localizing gradient enhanced isotropic damage model with Ottosen equivalent strain for the mixed-mode fracture of concrete. *International Journal of Mechanical Sciences* 199, 106410.
20. Zhong*, R., Zhang⁺, F.L., Poh[#], L.H., Wang S., Le, H.T.N., Zhang, M.H., 2021. Assessing the effectiveness of UHPFRC, FRHSC and ECC against high velocity projectile impact. *Cement and Concrete Composites* 120, 104013.
21. Pae, J., Zhang⁺, Y., Poh, L.H., Moon, J., 2021. Three-dimensional transport properties of mortar with a high water-to-cement ratio using X-ray computed tomography. *Construction and Building Materials* 281, 122608.
22. Zhang⁺, F.L., Poh[#], L.H., Zhang, M.H., 2021. Effect of bauxite aggregate in cement composites on mechanical properties and resistance against high-velocity projectile impact. *Cement and Concrete Composites* 118, 103915.
23. Kumar⁺, D., Poh[#], L.H., Quek, S.T., 2021. Isogeometric shape optimization of missing rib auxetics with prescribed negative Poisson's ratio over large strains using genetic algorithm. *International Journal of Mechanical Sciences* 193, 106169.
24. Vengatachalam⁺, B., Huang, R., Poh[#], L.H., Liu[#], Z., Qin, Q., Swaddiwudhipong, S., 2021. Initial yield behavior of closed-cell aluminium foams in biaxial loading. *International Journal of Mechanical Sciences* 191, 106063.
25. Sha, Z., Lin, W., Poh, L.H., Xing, G., Liu, Z., Wang, T.J., Gao, H.J., 2020. Fatigue of metallic glasses. *Applied Mechanics Review* 72, 050801.
26. Ngei, A., Kumar, S., Poh, L.H., 2020. A localizing gradient damage enhancement with micromorphic stress-based anisotropic nonlocal interactions. *International Journal for Numerical Methods in Engineering* 121, 4003-4027.
27. Loew, P.J., Poh, L.H., Peters, B., Beex, L.A.A., 2020. Accelerating fatigue simulations of a phase-field damage model for rubber. *Computer Methods in Applied Mechanics and Engineering* 370, 113247.
28. Wei, D., Hurley, R.C., Poh, L.H., Dias-da-Costa, D., Gan, Y., 2020. The role of particle morphology on concrete fracture behavior: A meso-scale modelling approach. *Cement and Concrete Research* 134, 106096.

29. Zhang⁺, F., Poh[#], L.H., Zhang, M.H., 2020. Resistance of cement-based materials against high-velocity small caliber deformable projectile impact. *International Journal of Impact Engineering* 144, 103629.
30. Wang, Z., Xie, Z., Poh[#], L.H., 2020. An isogeometric numerical study of partially and fully implicit schemes for transient adjoint shape sensitivity analysis. *Frontiers of Mechanical Engineering*, doi.org/10.1007/s11465-019-0575-5.
31. Zhang, W., Qin, Q., Li, J., Li, K., Poh, L.H., Li, Y., Zhang, J., Xie, S., Chen, H., Zhao, J., 2020. Deformation and failure of hybrid composite sandwich beams with a metal foam core under quasi-static load and low-velocity impact. *Composite Structures* 242, 112175.
32. Zhu, Y.L., Jiang, S., Poh[#], L.H., Shao, Y., Wang, Q., 2020. Enhanced hexa-missing rib auxetics for achieving targeted constant NPR and in-plane isotropy at finite deformation. *Smart Materials and Structures* 29, 045030.
33. Xu⁺, Y.J., Biswas^{*}, R., Poh[#], L.H., 2020. Modelling of localized ductile fracture with volumetric locking-free tetrahedral elements. *International Journal for Numerical Methods in Engineering* 121, 2626-2654.
34. Tan⁺, S.H., Poh[#], L.H., 2020. Enriched homogenized model for viscoelastic plane wave propagation in periodic layered composites. *Advanced Modeling and Simulation in Engineering Sciences* 7, 4.
35. Wang, Y.J., Liao, Z., Shi, S., Wang, Z.P., Poh, L.H., 2020. Data-driven structural design optimization for petal-shaped auxetics using isogeometric analysis. *Computer Modeling in Engineering & Sciences* 122, 433-458.
36. Zhang⁺, F., Poh[#], L.H., Zhang, M.-H., 2020. Critical parameters for the penetration depth in cement-based materials subjected to small caliber non-deformable projectile impact. *International Journal of Impact Engineering* 137, 103471.
37. Biswas^{*}, R., Poh[#], L.H., Shedbale^{*}, A.S., 2020. A micromorphic computational homogenization framework for auxetic tetra-chiral structures. *Journal of the Mechanics and Physics of Solids* 135, 103801.
38. Wang^{*}, Y., Poh[#], L.H., 2019. Initial-contact-induced bending failure of a semi-infinite ice sheet with a radial-before-circumferential-crack pattern. *Cold Regions Science and Technology* 168, 102866.
39. Tan⁺, S.H., Poh[#], L.H., Tkalic^{*}, D., 2019. Homogenized enriched model for blast wave propagation in meta-concrete with viscoelastic compliant layer. *International Journal for Numerical Methods in Engineering* 119, 1395-1418.
40. Xu⁺, Y., Poh[#], L.H., 2019. Localizing gradient-enhanced Rousellier model for ductile fracture. *International Journal for Numerical Methods in Engineering* 119, 826-851.
41. Kumar⁺, D., Wang^{*}, Z.-P., Poh[#], L.H., Quek, S.T., 2019. Isogeometric shape optimization of smoothed petal auxetics with prescribed nonlinear deformation. *Computer Methods in Applied Mechanics and Engineering* 356, 16-43.
42. Zhao⁺, W., Shedbale^{*}, A.S., Kumar^{*}, S., Poh[#], L.H., 2019. Localizing gradient damage model with micro inertia effect for dynamic fracture. *Computer Methods in Applied Mechanics and Engineering* 355, 492-512.
43. Vengatachalam⁺, B., Poh[#], L.H., Liu, Z.S., Qin, Q.H., Swaddiwudhipong, S., 2019. Three dimensional modelling of closed-cell aluminium foams with predictive macroscopic behavior. *Mechanics of Materials* 136, 103067.
44. Zhu, Y., Zeng⁺, Z., Wang, Z.-P., Poh[#], L.H., Shao, Y.B., 2019. Hierarchical hexachiral auxetics for large elasto-plastic deformation. *Materials Research Express* 6, 085701.
45. Biswas^{*}, R., Shedbale^{*}, A.S., Poh[#], L.H., 2019. Nonlinear analyses with a micromorphic computational homogenization framework for composite materials. *Computer Methods in Applied Mechanics and Engineering* 350, 362-395.

46. Wang*, Z.P., Poh#, L.H., Zhu*, Y., Dirrenberger, J., Forest, S., 2019. Systematic design of tetra-petals auxetic structures with stiffness constraint. *Materials & Design* 170, 107669.
47. Sarkar, S., Singh, I.V., Mishra, B.K., Shedbale*, A.S., Poh, L.H., 2019. A comparative study and ABAQUS implementation of conventional and localizing gradient enhanced damage models. *Finite Elements in Analysis and Design* 160, 1-31.
48. Sha, Z., Teng, Y., Poh, L.H., Pei, Q., Xing, G., Gao, H., 2019. Notch strengthening in nanoscale metallic glasses. *Acta Materialia* 169, 147-154.
49. Zhao+, W., Poh#, L.H., 2018. A homogenized localizing gradient damage model with micro inertia effect. *Journal of the Mechanics and Physics of Solids* 116, 370-390.
50. Qin, Q., Zhang, W., Liu, S., Li, J., Zhang#, J., Poh#, L.H., 2018. On dynamic response of corrugated sandwich beams with metal foam-filled folded plate core subjected to low-velocity impact. *Composites Part A* 114, 107-116.
51. Kumar*, S., Wang*, Y., Poh#, L.H., Chen, B., 2018. Floating node method with domain-based interaction integral for generic 2D crack growths. *Theoretical and Applied Fracture Mechanics* 96, 483-496.
52. Wang*, Z.-P., Poh#, L.H., 2018. Optimal form and size characterization of planar isotropic petal-shaped auxetics with tunable effective properties using IGA. *Composite Structures* 201, 486-502.
53. Tan+, S.H., Poh#, L.H., 2018. Homogenized gradient elasticity model for plane wave propagation in bi-laminate composites. *Journal of Engineering Mechanics* 144, 04018075.
54. Zhu*, Y., Wang*, Z.-P., Poh#, L.H., 2018. Auxetic hexachiral structures with wavy ligaments for large elasto-plastic deformation. *Smart Materials and Structures* 27, 055001.
55. Massart, T.J., Sonon, B., Ehab Moustafa Kamel, K., Poh, L.H., Sun+, G., 2018. Level set-based generation of representative volume elements for the damage analysis of irregular masonry. *Meccanica* 53, 1737-1755.
56. Le+, H.T.N., Poh#, L.H., Wang, S., Zhang, M.H., 2017. Critical parameters for the compressive strength of high-strength concrete. *Cement and Concrete Composites* 82, 202-216.
57. Qin*, Q., Xiang, C., Zhang, J., Wang, M., Wang#, T.J., Poh#, L.H., 2017. On low-velocity impact response of metal foam core sandwich beam: A dual beam model. *Composite Structures* 176, 1039-1049.
58. Wang*, Z.-P., Poh#, L.H., Dirrenberger, J., Zhu*, Y., Forest, S., 2017. Isogeometric shape optimization of smoothed petal auxetic structures via computational periodic homogenization. *Computer Methods in Applied Mechanics and Engineering* 323, 250-271.
59. Wang*, Y., Poh#, L.H., 2017. Velocity effect on the bending failure of ice sheets against wide sloping structures. *Journal of Offshore Mechanics and Arctic Engineering* 139, 051501.
60. Teo+, F.C., Poh#, L.H., Pang, S.D., 2017. On the flexural failure of thick ice against sloping structures. *Journal of Offshore Mechanics and Arctic Engineering* 139, 041501.
Highlighted in the Twitter account of ASME Journals on 12 May 2017 (@ASMEJournals #offshore)
61. Poh#, L.H., Sun+, G., 2017. Localizing gradient damage model with decreasing interactions. *International Journal for Numerical Methods in Engineering* 110, 503-522.
62. Biswas+, R., Poh#, L.H., 2017. A micromorphic computational homogenization framework for heterogeneous materials. *Journal of the Mechanics and Physics of Solids* 102, 187-208.
63. Zhu*, Y., Poh#, L.H., 2017. On an energetic or dissipative isotropic hardening mechanism for thermo-mechanical models in cyclic loading. *International Journal of Mechanical Sciences* 122, 297-307.

64. Kumar⁺, D., Biswas⁺, R., Poh, L.H., Wahab, M.A., 2017. Fretting fatigue stress analysis in heterogeneous material using direct numerical simulations in solid mechanics. *Tribology International* 109, 124-132.
65. Wang, S., Le⁺, H.T.N., Poh, L.H., Quek, S.T., Zhang, M.H., 2017. Effect of high strain rate on compressive behavior of strain-hardening cement composite in comparison to that of ordinary fiber-reinforced concrete. *Construction and Building Materials* 136, 31-43.
66. Wang*, Y., Poh, L.H., Yue, Q., 2016. Reinvestigation of ice-induced vibrations of conical jacket structures using dimensionless parameters. *International Journal of Offshore and Polar Engineering* 26, 327-332.
67. Poh[#], L.H., Peerlings, R.H.J., 2016. The plastic rotation effect in an isotropic gradient plasticity model for applications at the meso scale. *International Journal of Solids and Structures* 78, 57-69.
68. Zhu*, Y., Poh[#], L.H., 2016. A finite deformation elasto-plastic cyclic constitutive model for ratchetting of metallic materials. *International Journal of Mechanical Sciences* 117, 265-274.
69. Sun⁺, G., Poh[#], L.H., 2016. Homogenization of intergranular fracture towards a transient gradient damage model. *Journal of the Mechanics and Physics of Solids* 95, 374-392.
70. Wang, S., Le⁺, H.T.N., Poh, L.H., Feng, H., Zhang, M.H., 2016. Resistance of high-performance fiber-reinforced cement composites against high-velocity projectile impact. *International Journal of Impact Engineering* 95, 89-104.
71. Zhu, Y., Kang, G., Yu, C., Poh, L.H., 2016. Logarithmic rate based elasto-viscoplastic cyclic constitutive model for soft biological tissues. *Journal of the Mechanical Behavior of Biomedical Materials* 61, 397-409.
72. Poh[#], L.H., Phan*, V.T., 2016. Numerical implementation and validation of a consistently homogenized higher order plasticity model. *International Journal for Numerical Methods in Engineering* 106, 454-483.
73. Poh[#], L.H., 2013. Scale transition of a higher order plasticity model – a consistent homogenization theory from meso to macro. *Journal of the Mechanics and Physics of Solids* 61, 2692-2710.
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Conference Proceedings (#Corresponding Author, + Ph.D. student, * Postdoc)

Wang^{*#}, Y., Poh, L.H., Croasdale, K., 2019. Rubble height prediction based on a rubble mass conservation model. Proceedings of the 25th International Conference on Port and Ocean Engineering under Arctic Conditions (POAC), 9-13 Jun, Delft, Netherlands.

Wang^{*#}, Y., Poh, L.H., 2016. Velocity effects on wide sloping structure ice loads. Proceedings of the ASME 35th International Conference on Ocean, Offshore and Arctic Engineering (OMAE), 19-24 Jun, Busan, Korea.

Teo^{+#}, F.C., Poh, L.H., Pang, S.D., 2016. Breaking load of thick ice on sloping structures. Proceedings of the ASME 35th International Conference on Ocean, Offshore and Arctic Engineering (OMAE), 19-24 Jun, Busan, Korea.

Pang, S.D., Zhang^{+#}, J., Poh, L.H., Law, E., Yap, K.T., 2015. The modelling of ice-structure interaction with cohesive element: limitations and challenges. Proceedings of International Conference on Port and Ocean Engineering under Arctic Conditions (POAC), 14-18 Jun, Trondheim, Norway.

Palmer[#], A.C., Bai, W., Poh, L.H., Yap, K.T., 2015. Ice jamming between the legs of multi-leg platforms. Proceedings of International Conference on Port and Ocean Engineering under Arctic Conditions (POAC), 14-18 Jun, Trondheim, Norway.

Invited / Keynote Presentations

“Modelling the dynamic fracture of quasi-brittle materials” (Invited, full financial support), International Workshop on high-rate loading, 10-15 Sep 2023, Ningbo University, China.

“Isotropic damage model with localizing gradient enhancement for the mixed mode fracture of quasi-brittle materials” (Keynote), 5th International Conference on Frontiers in Applied Mechanics (Hybrid), 24-27 Sep 2020, Xi’an, China.

“A localizing gradient damage model for the mixed-mode fracture of concrete” (Keynote, full financial support), Second International Conference on Civil, Structural and Environmental Engineering, 15 Mar 2019, Tamil Nadu, India.

“A micromorphic computational homogenization framework for heterogeneous materials in finite deformation” (Keynote), 16th European Mechanics of Material Conference, 26-28 Mar 2018, Nantes, France.

“A gradient damage formulation with transient nonlocal interactions” (Invited), International Congress of Theoretical and Applied Mechanics, 21-26 Aug 2016, Montreal, Canada.

“A transient gradient damage model for localized brittle failure” (Keynote), European Congress on Computational Methods in Applied Sciences and Engineering, 5-10 Jun 2016, Crete Island, Greece.

“An isotropic higher order plasticity model - homogenization theory from meso to macro” (Keynote), 5th Asia Pacific Congress on Computational Mechanics and 4th International Symposium on Computational Mechanics, 11-14 Dec 2013, Singapore.

Invited Talks

“Localizing gradient damage enhancement and its simple implementation in ABAQUS” (Full financial support), 22 May 2023, University of Missouri, USA.

“Localizing gradient damage enhancement and its simple implementation in ABAQUS” (Webinar), 11 Nov 2022, Peking University, China.

“Seminar I: Localizing gradient enhancement for plasticity and damage modelling” & “Seminar II: Localizing gradient enhancement for complex fracture processes and its simple implementation in ABAQUS” (Webinars), Seminar Series: Multiscale Analysis of Advanced Structures and Composites, 13-14 Sep 2022, Xi’an Jiaotong University, China.

“Localizing gradient enhanced damage models for quasi-brittle materials”, Advances in Numerical Methods for Engineering Applications (Webinar), 25-29 Oct 2021, organised by IIT Ropar, India.

“A localizing gradient damage model for the fracture of materials” (Full financial support), 8 Jan 2019, Xi’an Jiaotong University, China.

“A micromorphic computational homogenization framework for heterogeneous materials”, 12 Sep 2018, Institute of High Performance Computing, Singapore.

“Localizing gradient damage models for material fracture” (Partial financial support), 2 Jul 2018, University of Michigan - Shanghai Jiao Tong University Joint Institute, Shanghai, China.

“Computational homogenization towards a micromorphic continuum” (Partial financial support), 6 Sep 2016, Ghent University, Brussels.

“A localizing gradient damage model for material fracture” (Full financial support from Netherlands 3TU Research Centre), 24 Jun 2016, Delft University of Technology, Netherlands.

“A bottom-up reformulation of the micromorphic theory: applications in plasticity and damage mechanics”, 2 Jun 2015, Centre des Matériaux Mines ParisTech, France.

“A bottom-up homogenization theory for higher-order damage models” (Full financial support), 3-7 May 2015, Xi’an Jiaotong University, China.