

## Leong Hien POH

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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

- Jan 2026 - Dean's Chair Associate Professor, National University of Singapore.
- 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.

### Professional Activities

#### Administrative Positions in NUS

- 2024 – Deputy Head (Graduate & CET Programmes), NUS Department of Civil and Environmental Engineering
- 2023 – Director, NUS Centre for Protective Technology
- 2020 – 2024 Associate Head (Academic Matters), NUS Department of Civil and Environmental Engineering
- 2016 – 2023 Program Director, NUS M.Sc.(CE) Program
- 2023 Chair, NUS B.Eng. (Civil Engineering) programme accreditation by IES (Washington Accord)

#### Professional organizations / committees

- 2024 – Elected Council Member, The Institution of Engineers Singapore
- 2025 Deputy Chair, World Engineers Submit, The Institution of Engineers Singapore
- 2017 – Member, ASCE EMI Modeling Inelasticity and Multiscale Behavior Committee (2022, Vice-Chair; 2023-2025, Chair)
- 2017 – Member, ASCE EMI Computational Mechanics Committee
- 2020 Member, Project evaluation panel, Research Flanders Foundation (FWO), W&T9 Science and Technology of Construction and Built Environment Grant Call

#### Editorial Services

- Apr 2026 – Subject Editor (Civil Engineering), Engineering Failure Analysis
- 2021 – Associate Editor, Journal of Vibration Engineering & Technologies
- 2025 – Editorial Board, Finite Elements in Analysis and Design
- 2025 – Editorial Board, International Journal of Damage Mechanics

- 2025 – Editorial Board, Advances in Bridge Engineering
- 2025 – Early Career Editorial Advisory Board, International Journal for Numerical Methods in Engineering
- 2022 – 2026 Editorial Advisory Board, Engineering Failure Analysis
- 2026 Guest Editor, International Journal of Damage Mechanics
- 2026 Co-Guest Editor, Multiscale and Multidisciplinary Modeling, Experiments and
- 2013 Co-Guest Editor, Computational Materials Science v94

#### Others

- 2025 Proposal reviewer for Austrian Science Fund (FWF)
- 2021 Proposal reviewer for Research Grants Council of Hong Kong
- 2020 Proposal reviewer for Austrian Science Fund (FWF)
- 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

#### Honours and Awards

##### Research

- 2023 Inaugural Young Investigator Award, presented during the Fourth International Conference on Damage Mechanics at Louisiana State University, Baton Rouge, USA
- 2022 Lloyd H. Donnell Applied Mechanics Reviews Paper Award (co-author)  
by ASME Journal Applied Mechanics Reviews
- 2019 Asian-Pacific Association for Computational Mechanics Young Investigator Award

##### Teaching

- 2025 - 2029 NUS University Teaching Awards Honor Roll
- 2024 NUS Annual Teaching Excellence Award (Team category) - Team Leader
- 2024 NUS College of Design and Engineering College Educator Award
- 2023 NUS Annual Digital Education Award
- 2023 NUS College of Design and Engineering College Educator Award
- 2022 NUS Faculty of Engineering Innovative Teaching Award
- 2017 NUS Faculty of Engineering Teaching Honours List
- 2016 NUS Faculty of Engineering Teaching Honours List
- 2015 NUS Annual Teaching Excellence Award
- 2015 NUS Faculty of Engineering Teaching Honours List
- 2013 NUS Faculty of Engineering Teaching Commendation List

#### Others

- 2006 - 2010 Lee Kong Chian Graduate Scholarship
- 2004 The Institution of Engineers Singapore Gold Medal

## Grants

Mar 2026 - Sep 2027, DSO National Laboratories, S\$530k.

PI, Radiation shielding analysis of typical reinforced concrete components in Singapore

Jul 2025 - Dec 2026, Home Team Science & Technology Agency, S\$650k.

PI, Establishment of the correlation between National Institute of Justice 0108.01 ballistic protection levels with improvised explosive devices fragment capture capabilities

Feb 2025, Australian Synchrotron, AUD73k (Beamtime).

PI, Understanding and enhancing 3D printed concrete against projectile impacts

Jan 2025 - Sep 2025, DSTA, S\$120k.

PI, Development of Multi-Degree-Of-Freedom software tool for reinforced concrete columns and walls against blast loading

Jul 2024 - Dec 2025, DSTA, S\$1.26mil.

PI, 3D printed concrete structures against projectile impact (Variation Agreement)

Feb 2024, Australian Synchrotron, AUD98k (Beamtime).

PI, Anisotropic and confinement effects on mechanical properties of printed concrete

Sep 2023 - Sep 2025, Home Team Science & Technology Agency, S\$737k.

PI, Laboratory tests on concrete specimens and numerical calibration of concrete material models in LS-Dyna

Jul 2023 - Aug 2025, NAMIC-DSTA, S\$550k.

PI, 3D printed concrete structures against projectile impact

Mar 2023 - Dec 2023, Defence Science and Technology Agency, S\$350k.

PI, Dynamic impact test of green concrete

Sep 2021 - Sep 2023, Cities of Tomorrow Grant, S\$1.15mil.

Co-PI (for numerical model), Resilient building facade with robust material testing and machine learning framework

Feb 2021 - Apr 2026, Home Team Science & Technology Agency, S\$7.8mil.

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\$180k.

PI, 3D printed shaped charge copper liners with improved performance

Jan 2021 - Dec 2023, NUS Learning Innovation Fund, S\$138k.

PI, Integrated learning of structural analysis & project management via 3D virtual environment application

Jan 2021 - Mar 2022, NUS Enterprise Technology Acceleration Programme Grant, S\$49k.

PI, Tailored auxetic metamaterial for protection against impact events

Apr 2019 - Mar 2022, Ministry of Education Tier 1, S\$150k.

PI, Data driven design of concrete structures against impact loading.

Feb 2019 - Jan 2020, USyd - NUS Partnership Collaboration Award, S\$10k & AUD10k.

NUS PI, Design and optimisation of advanced composite structures for infrastructure protection

Aug 2018 - Jan 2021, National Additive Manufacturing Innovation Cluster, S\$204k.

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\$800k.  
PI, Assessing the effectiveness of ultra high-performance concrete against impact loading

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

Jan 2016 - Mar 2019, Ministry of Education Tier 2, S\$587k.  
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\$817k.  
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\$167k.  
PI, Multi-scale computational homogenization for heterogeneous materials

Mar 2012 - Feb 2015, Start-up, S\$180k.  
PI, Homogenization theory from crystal to macro gradient plasticity

## Thesis Committee

### Former Ph.D. students

1. Liu Yibin, Graduated in Feb 2026, "Design evaluation and optimization of additively manufactured shaped charge copper liners". (Main supervisor. Co-supervisor: A/Prof Vincent Tan)
2. Chen Yu, Graduated in Jun 2025, "Reduced-order modelling approach for alternative load path analysis of RC frame structures". (Sole supervisor)
3. Utami Yerikania, Graduated in Jun 2025, "Sustainable 3D printed concrete (3DPC) for civil infrastructure: anisotropy and impact resistance study". (Main supervisor. Co-supervisor: Dr Du Hongjian)
4. Wang Chenchen, Graduated in Apr 2025, "Collapse behavior of precast concrete structures with emulative moment-resisting connections". (Main supervisor. Co-supervisor: Dr Kong Kian Hau)
5. Yeoh Kirk Ming, Graduated in Jun 2024, "Multiscale modelling of composites with direct FE2". (Co-supervisor2. Main supervisor: A/Prof Vincent Tan. Co-supervisor1: Prof Tay Tong-Earn)
6. Yuan Zhongbo, Graduated in Feb 2024, "Multi-scale computational homogenization framework for heterogeneous materials and structures with machine learning". (Sole supervisor)
7. Zhang Yi, Graduated in May 2022, "Localizing gradient damage models for quasi-brittle fracture – size effect and simple numerical implementation". (Sole supervisor)
8. Deepak Kumar Pokkalla, Graduated in Apr 2021, "Isogeometric shape optimization of auxetics with prescribed nonlinear deformation". (Main supervisor. Co-supervisor: Prof Quek Ser Tong)
9. 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)
10. Xu Yanjie, Graduated in Dec 2019, "Localizing gradient enhancement for the continuum modelling of ductile fracture". (Sole supervisor)

11. 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)
12. Tan Swee Hong, Graduated in Dec 2018, “Homogenization towards wave propagation in composite materials”. (Sole supervisor)
13. 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)
14. Wang Zhao, Graduated in Dec 2018, “Localizing gradient damage models for dynamic fracture”. (Sole supervisor)
15. Raja Biswas, Graduated on Aug 2018, “A generalized micromorphic computational homogenization framework for heterogeneous materials and structures”. (Sole supervisor)
16. Sun Gang, Graduated in Jan 2018, “Localizing gradient damage models for the fracture of quasi-brittle materials”. (Sole supervisor)
17. 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 M.Eng. students

1. Han Fanghao, Graduated in Apr 2024, “Auxetic sandwich panels for protection against impact loads”. (Sole supervisor)
2. 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)
3. Deng Haoxiang, Graduated in Oct 2022, “Machine learning for constitutive modelling”. (Sole supervisor)
4. Zeng Zhuohong, Graduated in Nov 2019, “Chiral auxetics as a protective material”. (Sole supervisor)

#### External

2026	External examiner, PhD thesis from IIT Roorkee
2025	External examiner, PhD thesis from TU Dresden
2025	External examiner, PhD thesis from Curtin University
2024	External examiner, PhD thesis from Anna University Chennai
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
2019	External examiner, 3 PhD theses from The University of Sydney
2019	External examiner, PhD thesis from Anna University Chennai

### Awards received by group members

- 2024      *“A localizing gradient damage model for the dynamic fracture of quasi-brittle materials and its simple implementation in ABAQUS”*  
 PhD student Guangyuan Yang, 1st Place  
 Modeling Inelasticity & Multiscale Behavior Student Paper Competition  
 American Society of Civil Engineers EMI Conference, 28-31 May, Chicago, USA.
- 2022      *“Resistance of cement-based materials against high velocity projectile impact”*  
 Dr Zhang Fengling  
 Lee Seng Lip Medal and Prize  
 The top award in NUS Department of Civil and Environmental Engineering to a graduating or recently graduated student for his/her excellent PhD research.
- 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, 1st Place  
 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)

### Conference / Workshop Organization

Co-Chair, Fifth International Conference on Impact Loading of Structures and Materials, 29 Jun - 3 Jul 2026, National University of Singapore, Singapore.

Co-Chair, International Workshop on Multiscale, Multiphysics, and Multidisciplinary Research on Materials and Structures, 24 - 26 Sept 2025, National University of Singapore, Singapore.

Chair, Fifth International Conference for Damage Mechanics, 16 - 18 Jul 2025, National University of Singapore, Singapore.

Co-Chair, 30th International Conference on Computational & Experimental Engineering and Sciences, 3 - 6 Aug 2024, Singapore.

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

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.

### Journal Publications (#Corresponding Author)

1. Yuan, Z., Yeoh, K.M., **Poh<sup>#</sup>, L.H.**, 2026. An accessible and efficient finite element implementation for multiscale surrogate modeling using differential neural network setup. *Finite Elements in Analysis & Design* 257, 111503.
2. Li, W.J., Zhu, Q.Z., **Poh, L.H.**, Zhao, X.G., Shao, J.F., 2026. Damage-to-fracture transition via a multi-domain enhanced bond damage approach. *International Journal of Mechanical Sciences* 317, 111503.
3. Liu, Y., Yang, C., **Poh<sup>#</sup>, L.H.**, Tan, V.B.C., 2026. Microstructural characteristics, mechanical performance and constitutive modelling parameters of additively manufactured copper under quasi-static and dynamic loading conditions. *International Journal of Impact Engineering* 213, 105692.
4. Qu, Y., Chen, J., **Poh, L.H.**, Ye, Y., Jiao, L., 2026. Mechanical properties and protection effect of protective structures for high-pressure vessels under compressive loading. *Ocean Engineering* 343, 123212.
5. Li, W.J., Du, Y.L., Zhu, Q.Z., **Poh, L.H.**, 2026. Nonlocal anisotropic damage modeling enabled by the multidimensional quasi-bond approach. *Engineering Fracture Mechanics* 334, 111877.
6. Wang, J., Zhong, Y., Tang, Y., **Poh, L.H.**, 2026. Dual stage energy absorbing corrugated reinforced re-entrant honeycomb with enhanced stiffness. *International Journal of Mechanical Sciences* 313, 111319.
7. Tang, Y., Zhong, Y., Liu, R., **Poh, L.H.**, 2026. Ellipse-arc hybrid re-entrant honeycombs for dual-plateau energy absorption. *International Journal of Mechanical Sciences* 313, 111302.
8. Du, J., Zhang, F., Xiao, H., **Poh<sup>#</sup>, L.H.**, 2026. Influence of matrix strengthening, interface enhancement and fiber orientation on the flexural behavior and damage evolution of UHPC. *Cement and Concrete Composites* 168, 106494.
9. Chen, W., Kong, K.H. **Poh<sup>#</sup>, L.H.**, 2026. Collapse behavior of asymmetrical cast-in and precast concrete sub-assemblages under internal column loss scenarios. *Structures* 85, 111072.
10. Chen, Y., **Poh<sup>#</sup>, L.H.**, 2026. A simplified hinge model for nonlinear Alternative Load Path analysis of reinforced concrete structures. *Journal of Building Engineering* 118, 115080.
11. Du, J., Zhang, F., Xiao, H., **Poh<sup>#</sup>, L.H.**, Liu, M., Liu, R., 2026. Multiscale analysis of tensile behavior in steel fiber-reinforced cement-based composites: Integrated analysis via digital image correlation and acoustic emission. *Journal of Building Engineering* 118, 115091.
12. Chen, J., Qu, Y., **Poh, L.H.**, Hu, P., Sun, Z., 2026. Mechanical properties of cylindrical honeycomb buffers in the scour protection for sea-spanning bridges under impact loading. *Ocean Engineering* 345, 123795.
13. Giang, D.H., **Poh, L.H.**, Reza, A., 2026. An explicit mesh adaptive parallel hyperbolic phase field cohesive zone model based on generalized standard materials. *Computer Methods in Applied Mechanics and Engineering* 450, 118594.

14. Singh, S.K., Vengatachalam, B., **Poh<sup>#</sup>, L.H.**, 2026. Sandwich panels with wavy hexachiral core layer against blast loads. *Thin-Walled Structures* 212, 114022.
15. Huang, H.W., **Poh, L.H.**, Yu, H., Wang, Q., Wu, H.A., 2025. A rigorously convergent and irreversible gradient damage model. *Journal of the Mechanics and Physics of Solids* 203, 106262.
16. Ouyang, S., Zhong, Y., **Poh, L.H.**, Tang, Y., Liu, R., 2025. Designing re-entrant nested star-shaped honeycombs for energy-absorbing and load-bearing capabilities. *Engineering Structures* 335, 120258.
17. Li, W., Zhao, H., Zhong, Y., **Poh, L.H.**, Liu, R., 2025. Hybrid-honeycomb structures with hexagonal and auxetic cells for dual-tailorable Poisson's ratio and stiffness. *Materials Today Communications* 47, 112968.
18. Liu, R., Zhong, Y., **Poh, L.H.**, Tang, Y., Li, W., 2025. Constrained vibration of butterfly-shaped honeycomb sandwich panels under base motion. *International Journal of Mechanical Sciences* 296, 110267.
19. Ouyang, S., Li, W., **Poh, L.H.**, Zhong, Y., Tang, Y., 2025. Dual-enhanced stiffness and auxeticity in novel double re-entrant honeycombs with vertical fold-line stiffeners. *Thin-Walled Structures* 217, 113746.
20. Yerikania, U., Du, H., **Poh<sup>#</sup>, L.H.** 2025. A comprehensive experimental investigation of anisotropy behavior on highly carbon-minimized 3D printed concrete (3DPC). *Construction and Building Materials* 491, 142766.
21. Lyu, W., **Poh<sup>#</sup>, L.H.** 2025. Temperature effect on chloride transport in cement-based materials. *Journal of Building Engineering* 111, 113311.
22. Zhong, Y., Liu, R., **Poh, L.H.**, Liu, X., Tang, Y., 2025. Energy absorption characteristics of butterfly-shaped multicellular honeycomb structures under compressive loading. *Structures* 75, 108765.
23. Lin, Y., Zhong, Y., **Poh, L.H.**, Tang, Y., Liu, R., 2025. Gradient re-entrant honeycomb with quasi-ZPR and improved out-of-plane flexibility through tunable horizontal ligaments. *Thin-Walled Structures* 213, 113241.
24. Wang, C., Kong, K.H., **Poh<sup>#</sup>, L.H.** 2025. Structural response of precast reinforced concrete structure with emulative moment connections under internal column loss scenarios. *Engineering Failure Analysis* 167, 108995.
25. Yuan, Y., **Poh<sup>#</sup>, L.H.** 2024. Pre-trained transformer model as a surrogate in multiscale computational homogenization framework for elastoplastic composite materials subjected to generic loading paths. *Computer Methods in Applied Mechanics and Engineering* 421, 116745.
26. 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.
27. Yuan, Z., **Poh<sup>#</sup>, 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.
28. Zhang, Y.X., Xie, S.J., Guo, W., Ding, J., **Poh<sup>#</sup>, L.H.**, Sha<sup>#</sup>, Z.D., 2023. Multi-objective optimization for high-performance Fe-based metallic glasses via machine learning approach. *Journal of Alloys and Compounds* 960, 170793.
29. 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.
30. Su, Q., Wu, H., **Poh, L.H.**, Zhang, F., Zhou, F., Pang, S.D., 2023. Dynamic behavior of UHPC-FST under close-in explosions with large charge weight. *Engineering Structures* 277, 115475.
31. 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.

32. Wang, J., **Poh<sup>#</sup>, 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.
33. Pokkalla D.K., Wang, Z.-P., Teoh, J.C., **Poh<sup>#</sup>, 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.
34. Zhang, Y., Xu, Y., Wang, Y., **Poh<sup>#</sup>, L.H.**, 2022. A simple implementation of localizing gradient damage model in Abaqus. *International Journal of Damage Mechanics* 31, 1562-1591.
35. 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.
36. 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.
37. 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.
38. 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.
39. Xu, J., Li, P., **Poh<sup>#</sup>, 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.
40. Cui, T., Zhang, J., Li, K., Peng, J., Chen, H., Qin<sup>#</sup>, Q., **Poh<sup>#</sup>, L.H.**, 2022. Ballistic limit of sandwich plates with a metal foam core. *Journal of Applied Mechanics* 89, 021006.
41. Zhang, F.L., Shedbale, A.S., Zhong, R., **Poh<sup>#</sup>, 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.
42. Zhang, Y., Shedbale, A.S., Gan, Y., Moon, J., **Poh<sup>#</sup>, L.H.**, 2021. Size effect analysis of quasi-brittle fracture with localizing gradient damage model. *International Journal of Damage Mechanics* 30, 1012-1035.
43. Zhang, Y.X., Xing, G.C., Sha<sup>#</sup>, Z.D., **Poh<sup>#</sup>, 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.
44. Shedbale, A.S., Sun, G., **Poh<sup>#</sup>, 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.
45. Zhong, R., Zhang, F.L., **Poh<sup>#</sup>, 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.
46. 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.
47. Zhang, F.L., **Poh<sup>#</sup>, 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.
48. Kumar, D., **Poh<sup>#</sup>, 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.

49. Vengatachalam, B., Huang, R., **Poh<sup>#</sup>, L.H.**, Liu<sup>#</sup>, Z., Qin, Q., Swaddiwudhipong, S., 2021. Initial yield behavior of closed-cell aluminium foams in biaxial loading. *International Journal of Mechanical Sciences* 191, 106063.
50. 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.
51. 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.
52. 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.
53. 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.
54. Zhang, F., **Poh<sup>#</sup>, 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.
55. Wang, Z., Xie, Z., **Poh<sup>#</sup>, 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.
56. 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.
57. Zhu, Y.L., Jiang, S., **Poh<sup>#</sup>, 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.
58. Xu, Y.J., Biswas, R., **Poh<sup>#</sup>, L.H.**, 2020. Modelling of localized ductile fracture with volumetric locking-free tetrahedral elements. *International Journal for Numerical Methods in Engineering* 121, 2626-2654.
59. Tan, S.H., **Poh<sup>#</sup>, L.H.**, 2020. Enriched homogenized model for viscoelastic plane wave propagation in periodic layered composites. *Advanced Modeling and Simulation in Engineering Sciences* 7, 4.
60. 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.
61. Zhang, F., **Poh<sup>#</sup>, 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.
62. Biswas, R., **Poh<sup>#</sup>, 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.
63. Wang, Y., **Poh<sup>#</sup>, 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.
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### Conference Proceedings

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 / Plenary Talks

"Simplified robustness analysis for precast reinforced concrete structures against progressive collapse" (Keynote), *Innovative & Sustainable Infrastructure International Convention #2*, 19 Aug 2026, Putrajaya, Malaysia.

"The localizing gradient enhancement for modelling of material failure" (Keynote), *23rd ISME International Conference on Recent Advances in Mechanical Engineering*, 17-19 Dec 2025, Jaipur, India.

"Localizing gradient damage model for the dynamic fracture and its simple implementation in ABAQUS" (Invited), *14th International Symposium on Plasticity and Impact Mechanics*, 12-16 Oct 2025, Roorkee, India.

"Improved concrete damage plasticity model for complex loading conditions" (Invited), *International Workshop on Dynamic Loading*, 18-22 Aug 2025, Ningbo, China.

"Pre-trained surrogate models in a multiscale computational homogenization framework" (Plenary), *International Conference on Advanced Materials and Structural Mechanics*, 25-27 Jul 2025, Shenyang, China.

"A reduced order modeling approach for alternative load path analysis of reinforced concrete structure" (Invited), *Computational Engineering and Science for Safety and Environmental Problems*, 1-4 Jul 2025, Kobe, Japan.

"The localizing gradient damage model for dynamic fracture" (Plenary), *8th International Conference on Computational Modeling of Fracture and Failure of Materials and Structures*, 4-6 Jun 2025, Porto, Portugal.

"Improved plastic hinge models for ALP analysis of RC structures" (Invited), *1st International Conference on Engineering Structures*, 8-11 Nov 2024, Guangzhou, China.

“Pre-trained transformer model as a surrogate in multiscale computational homogenization framework” (Invited), 4th International Workshop on Advances in Computational Mechanics, 18-20 Sep 2024, Kitakyushu, Japan.

“Pre-trained transformer model as a surrogate in multiscale analysis for elastoplastic composite materials” (Keynote), Conference of Chinese Solid Mechanics, 29 Mar-01 Apr 2024, Nanjing, China.

“Modelling the dynamic fracture of quasi-brittle materials” (Invited), 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), 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 Department Talks

“Pre-trained surrogate models in a multiscale computational homogenization framework”, 29 Dec 2025, Southwest Jiaotong University, China.

“Advances in the modelling of concrete failure from material to structures”, 9 Oct 2025, Zhejiang University, China.

“Localizing gradient damage enhancement for material failure”, 27 Aug 2024, Tongji University, China.

“Recent advances in computational homogenization modelling of heterogeneous materials”, 27 Sep 2023, Xi’an Jiaotong University, China.

“Computational homogenization framework and regularized strain softening: developments and practical implementation in commercial software”, 31 May 2023, Oak Ridge National Laboratory, USA.

“Localizing gradient damage enhancement and its simple implementation in ABAQUS”, 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”, 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”, 2 Jul 2018, University of Michigan - Shanghai Jiao Tong University Joint Institute, Shanghai, China.

“Computational homogenization towards a micromorphic continuum”, 6 Sep 2016, Ghent University, Brussels.

“A localizing gradient damage model for material fracture”, 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” , 3-7 May 2015, Xi’an Jiaotong University, China.