

CURRICULUM VITAE

(A) NAME

Xin Wang, Ph.D., P.Eng.
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Google Scholar: <https://scholar.google.ca/citations?user=fRk8NnIAAAAJ&hl=en>)

(B) EDUCATION

- Doctor of Philosophy (Mechanical Engineering)
University of Waterloo, Waterloo, Ontario, Canada, December 1997
- Master of Applied Science (Mechanical Engineering)
University of Waterloo, Waterloo, Ontario, Canada, October 1994
- B.A.Sc. (Engineering Mechanics)
Dalian University of Technology, Dalian, China, July 1985

(C) PROFESSIONAL EXPERIENCE

(a) Academic

- 2024/07-present
Chancellor's Professor, Department of Mechanical and Aerospace Engineering, Carleton University, Ottawa, Ontario, Canada
- 2011/07-present
Professor, Department of Mechanical and Aerospace Engineering, Carleton University, Ottawa, Ontario, Canada
- 2004/07-2011/06
Associate Professor, Dept. of Mechanical and Aerospace Engineering, Carleton University, Ottawa, Ontario, Canada
- 2000/07-2004/06
Assistant Professor, Department of Mechanical and Aerospace Engineering, Carleton University, Ottawa, Ontario, Canada

(b) Visiting Positions

- 2020/07-2023/07
Visiting Professor, Department of Civil and Environmental Engineering, Clarkson University, Potsdam, New York, USA
- 2014/07-2023/07
Adjunct Professor, School of Chemical Engineering, Tianjin University, Tianjin, China
- 2007/01-2007/06
Visiting Professor, Department of Mechanical Engineering, University of Waterloo, Waterloo, Ontario, Canada
- 2006/07-2006/12
Visiting Scientist, Canada Center for Mineral & Energy Technology (CANMET), Natural Resources Canada, Ottawa, Canada

(c) Industrial Experience

- 1997/12-2000/06
Senior Design Engineer, Nuclear Engineering,
Babcock and Wilcox Canada, Cambridge, Ontario, Canada

(d) Journal Editors

Guest editor for the journal *Metals*, and an associate editor for the journal *Frontiers in Materials*, *Mechanics of Materials* section. Serve on the editorial boards for the journal of *Advances in Bridge Engineering*.

(e) Conference Organizers

Member of the international scientific committees and the session organizer for *ASME International Conference on Ocean, Offshore, and Arctic Engineering*, (ASME OMAE conferences, 2004 – Present), Member of the international scientific committees for International Conference on Fracture, ICF 12, ICF 14 and ICF 15

(f) Awards and Honors

- Designated as Chancellor’s Professor, Carleton University, July 2024
- Listed in Stanford University’s Top 2% Most Highly Cited Scientists, 2021, 2022, 2023, 2024
- Conference Appreciation Award for Organizing OMAE 2020 Conference, ASME, 2020
- Carleton University Research Achievement Award, 2007-2008

(D) SCHOLARLY STUDIES AND RESEARCH PUBLICATIONS

Refereed Journal Publications (Published)

- [94] P. Jin, Z. Liu, H. Chen, M. Liu, X. Wang, X. Chen, “Mixed-mode I&II fatigue crack growth behaviors of 16MND5 steel: The role of crack driving forces and crack closure”, *International Journal of Fatigue*, Vol. 183, Article number 108228, pp. 1-14, 2024
- [93] M. Liu, Z. Liu, P. Jin, J. Li, X. Liu, Z. Zhang, X. Wang, X. Chen, “Analysis of crack-tip stress field in unidirectional fiber-reinforced composites based on 3D micromechanical model”, *Engineering Fracture Mechanics*, Vol. 301, Article number 110029, pp. 1-15, 2024.
- [92] A. Rana, R.E. Miller, X. Wang, “Two parameter characterization of semi-circular cracks in anisotropic plastic materials”, *Engineering Fracture Mechanics*, Vol. 299, Article number 109954, pp. 1-18, 2024.
- [91] J. Wang, J. Hu, P. Jin, H. Chen, S. Fu, Z. Liu, H. Gao, X. Wang, X. Chen, “Fracture parameters analysis of compact tension specimens with deflected fatigue cracks: ZK60 magnesium alloy”, *Theoretical and Applied Fracture Mechanics*, Vol. 127. Article number 104068, pp. 1-16, 2023.

- [90] P. Jin, X. Wang, H. Chen, Z. Liu, X. Chen, “Analysis of mixed-mode Compact-Tension-Shear (CTS) specimens with slanted propagating cracks”, *Theoretical and Applied Fracture Mechanics*, Vol. 127. Article number 104037, pp. 1-14, 2023.
- [89] B. Qiang, H. Qiu, Y. Li, X. Wang, G. Kang, “Stress intensity factors and weight functions for semi-elliptical cracks at weld toes in U-rib-to-deck joints”, *Theoretical and Applied Fracture Mechanics*, Vol. 123. Article number 103697, pp. 1-11, 2023.
- [88] X. Wang and J.P. Dempsey, “On the T -stress extraction method used by current version of Abaqus”, *Engineering Fracture Mechanics*, Vol. 276, Article number 108881, pp. 1-4, 2022.
- [87] Z. Liu, X. Wang, Z. Zhang, P. Jin, X. Chen, “Solutions and applications of 3D elastic–plastic constraint parameters for clamped single edge notched tension (SENT) specimens”, *Engineering Fracture Mechanics*, Vol. 272, Article number 108713, pp. 1-18, 2022.
- [86] C. Bassindale, X. Wang, W.R. Tyson, S. Xu, “Modeling the effect of backfill on dynamic fracture propagation in steel pipelines”, *Journal of Pipeline Science and Engineering*, Vol. 2, Article number 100069, pp. 1-5, 2022.
- [85] C. Bassindale, X. Wang, W.R. Tyson, S. Xu, “Analysis of dynamic fracture propagation in steel pipes using a shell-based constant-CTOA fracture model”, *International Journal of Pressure Vessels and Piping*, Vol. 198, Article number 104677, pp. 1-7, 2022.
- [84] M. Cohen, X Wang, “Stress Intensity Factors and T -Stress Solutions for 3D Asymmetric Four-Point Shear Specimens”, *Metals*, Vol. 12, Article number 1068, pp. 1-17, 2022.
- [83] X. Sun, Z. Liu, X. Wang, X. Chen, “Determination of ductile fracture properties of 16MND5 steels under varying constraint levels using machine learning methods”, *International Journal of Mechanical Sciences*, Vol. 224, Article number 107331, pp. 1-16, 2022.
- [82] C. Bassindale, X. Wang, W.R. Tyson, S. Xu, C. Guan, B. Rothwell, “Analysis of full-scale burst tests by FE modelling using constant CTOA fracture criterion”, *Journal of Pipeline Science and Engineering*, Vol. 2, pp. 52-59, 2022.
- [81] P. Jin, Z. Liu, X. Wang and X. Chen, “Three-dimensional analysis of mixed mode compact-tension-shear (CTS) specimens: stress intensity factors, T -stresses and crack initiation angles”, *Theoretical and Applied Fracture Mechanics*, Vol. 118, Article number 103218, pp. 1- 17, 2022.
- [80] Y. Huang and X. Wang, “On the fracture toughness testing for single-edge notched bend specimen of orthotropic materials”, *Composite Structures*, Vol. 281, Article number 114970, pp. 1- 13, 2022

- [79] J. Yan, X. Wang, K. Chen and K.N. Lee, “Sintering modeling of thermal barrier coatings at elevated temperatures: A review of recent advances”, *Coatings*, Vol. 11, Article number 1214, pp. 1-27, 2021.
- [78] C. Bassindale, X. Wang, W.R. Tyson and S. Xu, “On the transferability of CTOA from small-scale DWTT to full-scale pipe using a cohesive zone model”, *Fatigue & Fracture of Engineering Materials & Structures*, Vol. 44, pp. 2591-2594, 2021.
- [77] Z. Liu, X. Wang, R.E. Miller, P. Jin, Y. Shen and X. Chen, “Determination of R-curves for thermal aged 16MND5 bainitic forging steel using 3D constraint-based fracture mechanics”, *Theoretical and Applied Fracture Mechanics*, Vol. 116, Article number 103084, pp. 1-16, 2021.
- [76] Z. Liu, X. Wang, R.E. Miller, J. Hu and X. Chen, “Fracture toughness of thermal aged 16MND5 bainitic forging steel under varying 3D constraint conditions: An experimental study using SENT specimens”, *Theoretical and Applied Fracture Mechanics*, Vol. 114, Article number 103025, pp. 1-17, 2021.
- [75] X. Wang and K. Chen, “Determination of complex stress intensity factors for interface cracks in bi-material specimens subjected to ununiform stresses”, *Engineering Fracture Mechanics*, Vol. 246, Article number 107619, 2021.
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- [73] B. Qiang and X. Wang, “Evaluating stress intensity factors for surface cracks in an orthotropic steel deck accounting for the welding residual stresses”, *Theoretical and Applied Fracture Mechanics*, Vol. 110, Article number 102827, 2020.
- [72] C. Bassindale, X. Wang, W. R. Tyson and S. Xu, “Fast ductile fracture: Effect of inertia on propagation resistance and CTOA in pipe steels”, *International Journal of Pressure Vessels and Piping*, Vol.187, Article number 104163, 2020.
- [71] Y. Huang, X. Wang and X. Duan, “Evaluation of crack opening displacement of through-wall circumferential-cracked pipe using direct weight function method”, *Theoretical and Applied Fracture Mechanics*, Vol. 108, Article number 102595, 2020.
- [70] C. Bassindale, R.E. Miller and X. Wang, “Effect of single initial overload and mean load on the low-cycle fatigue life of normalized 300 M alloy steel”, *International Journal of Fatigue*, Vol. 130, Article number 105273, 2020.
- [69] Z. Liu, X. Wang, S. Shi, Y. Shen and X. Chen, “Application of modified normalization method for J-R curve determination using clamped SENT specimens with varying in-plane

- and out-of-plane constraints”, *Engineering Fracture Mechanics*, Vol. 230, Article number 106968, 2020.
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- [60] S. Parmar, C. Bassindale, X. Wang, W. R. Tyson and S. Xu, “Simulation of ductile fracture in pipeline steels under varying constraint conditions using cohesive zone modeling”, *International Journal of Pressure Vessels and Piping*, Vol. 162, pp. 86-97, 2018.
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- [32] J. Yu, X. Wang and C.L. Tan, " T -stress Solutions of Cracks in Rectangular Plates with Multiple Holes", *Structural Engineering and Mechanics*, Vol. 26, pp. 557-568, 2007.
- [31] K. Guo, R. Bell and X. Wang, "The Stress Intensity Factor Solutions for a Padded Plate Geometry under General Loading Conditions", *International Journal of Fatigue*, Vol. 29, pp. 481-488, 2007.
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- [29] J. Qu and X. Wang, "Solutions of T -stresses for Quarter-Elliptical Corner Cracks in Finite Thickness Plates Subject to Tension and Bending", *International Journal of Pressure Vessels and Piping*, Vol. 83, pp. 593-606, 2006.
- [28] P. Shah, C.L. Tan and X. Wang, "Evaluation of T -stress for an interface crack between dissimilar anisotropic materials using the boundary element method", *Computer Modeling in Engineering & Science*, Vol. 11, pp. 185-198, 2006.
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- [23] J. Li, C.L. Tan and X. Wang, "Weight Functions for T -stress for Edge Cracks in Thick-Walled Cylinder", *ASME Journal of Pressure Vessels Technology*, Vol. 127, pp. 457-463, 2005.
- [22] X. Yu and X. Wang, "Weight Functions for T -Stress for Semi-Elliptical Surface Cracks in Finite Thickness Plates", *Journal of Strain Analysis for Engineering Design*, Vol. 40, pp. 403-420, 2005.
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- [19] X. Wang, "Elastic T -Stress for Penny-Shaped Cracks under Tension and Bending", *Engineering Fracture Mechanics*, Vol. 71, pp. 2283-2298, 2004.
- [18] J. Li, X. Wang and C.L. Tan, "Weight Functions for the Determination of Stress Intensity Factor and T -Stress for Edge-Cracked Plates with Built-in Ends", *International Journal of Pressure Vessels and Piping*, Vol. 81, pp. 285-296, 2004.
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- [16] C.L. Tan and X. Wang, "The Use of Quarter-Point Crack-Tip Elements for T -stress Determination in Boundary Element Method Analysis", *Engineering Fracture Mechanics*, Vol. 70, pp. 2247-2252, 2003.
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- [14] X. Wang, "Elastic T -Stress for Semi-Elliptical Surface Cracks in Finite Thickness Plates", *Engineering Fracture Mechanics*, Vol. 70, pp. 731-756, 2003.
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- [11] X. Wang, "Elastic T -Stress for Cracks in Test Specimens Subjected to Non-Uniform Stress Distributions", *Engineering Fracture Mechanics*, Vol. 69, pp. 1339-1352, 2002.
- [10] X. Wang, "Stress Intensity Factors and Weight Functions for Deep Semi-Elliptical Surface Cracks in Finite Thickness Plates", *Fatigue & Fracture of Engineering Materials & Structures*, Vol. 25, pp. 291-304, 2002.
- [9] X. Wang and S.B. Lambert, "Semi-Elliptical Surface Cracks in Finite Thickness Plates with Built-in Ends, Part II: Weight Function Solutions", *Engineering Fracture Mechanics*, Vol. 68, pp. 1743-1754, 2001.

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- [7] X. Wang, S.B. Lambert and G. Glinka, “Approximate Weight Functions for Embedded Elliptical Cracks”, *Engineering Fracture Mechanics*, Vol. 59, pp. 381-392, 1998.
- [6] X. Wang and S.B. Lambert, “Weight Functions and Stress Intensity Factors for Semi-Elliptical Cracks in T-Plate Welded Joints”, *Fatigue & Fracture of Engineering Materials & Structures*, Vol. 21, pp. 99-117, 1998.
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Refereed Conferences (Papers Fully Reviewed)

- [67] P. Jin, Z. Liu, X. Chen, X. Wang, “Stress Intensity Factors and *T*-Stress Solutions for Mixed-Mode Compact-Tension-Shear (CTS) Specimens with Slanted Propagating Cracks”, Paper No. OMAE2023-108192, *ASME International Conference on Ocean, Offshore and Arctic Engineering*, OMAE2023, Melbourne, Australia, June, 2023
- [66] C. Bassindale, X. Wang, W.R. Tyson and S. Xu, “Development of CTOA Requirements for Ductile Fracture Arrest in Gas Pipelines: FE Model and Simulations”, Paper No. IPC2022-87157, *ASME International Pipeline Conference*, Calgary, Alberta, Canada, September, 2022.

- [65] S. Xu, C. Bassindale, X. Wang, B.W. Williams, W.R. Tyson and C. Guan, “Engineering Approach for Ductile Fracture Arrest Based on CTOA”, Paper No. IPC2022-86825, *ASME International Pipeline Conference*, Calgary, Alberta, Canada, September, 2022.
- [64] J. Yan, X. Wang and K. Chen, “Failure Behavior Analysis of Thermal Barrier Coatings under Adverse Environment: Analytical and Numerical Modeling:”, *Symposium on High Temperature Oxidation of Metals and Ceramics in MS&T22, Materials Science & Technology, Technical Meeting and Exhibition*, Pittsburgh, Pennsylvania, U.S.A., October, 2022
- [63] C. Bassindale, X. Wang, W.R. Tyson and S. Xu, “Modelling the effect of backfill on dynamic fracture propagation in steel pipelines”, *Proceedings of the International Conference on Technology for Future and Ageing Pipelines 2022*, Gent, Belgium, March 2022.
- [62] Z. Liu, X. Wang, R.E. Miller, Y. Shen and X. Chen, “Application of 3D constraint-based fracture mechanics for the determination of R-curves of thermal aged 16MND5 steel”, *Proceedings of the ASME 2021 Pressure Vessels and Piping Conference*, (Paper No. PVP2021-61656), PVP2021, Virtual, Online, July 2021.
- [61] B. Qiang and X. Wang, “Determination of the welding residual stresses in welded joints and their effects on SIFs for surface cracks: a review of recent progress”, *Proceedings of the ASME 40th International Conference on Ocean, Offshore, and Arctic Engineering*, (Paper No. OMAE2021-62310), OMAE2021, Virtual, Online, June 2021.
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