

Xiaosheng Gao

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Professional Preparation

Xi'an Jiaotong University, Xi'an, China	Engineering Mechanics	B.S., 1987
Xi'an Jiaotong University, Xi'an, China	Solid Mechanics	M.S., 1990
Brown University, Providence, RI	Applied Mathematics	M.S., 1995
Brown University, Providence, RI	Solid Mechanics	Ph.D., 1998
University of Illinois, Urbana, IL	Structural Engineering	Postdoc, 1998-2000

Appointments

Since 8/2011	Professor of Mechanical Engineering, University of Akron
Summer 2007	Office of Naval Research Summer Faculty Fellow
8/2006-7/2011	Associate Professor of Mechanical Engineering, University of Akron
Summer 2006	Office of Naval Research Summer Faculty Fellow
Summer 2005	Visiting Professor, National University of Singapore
1/2001-7/2006	Assistant Professor of Mechanical Engineering, University of Akron
9/1997-12/2000	Postdoctoral Research Associate, University of Illinois at Urbana-Champaign
11/1996-5/1997	Visiting Scholar, Royal Institute of Technology, Sweden
7/1990-8/1992	Assistant Professor, Northwestern Polytechnic University, China

Synergistic Activities

(i) Course Instruction: Dynamics; Kinematics of Machines; Engineering Analysis; Analysis of Mechanical Components; Engineering Fracture Mechanics; Introduction to Finite Element Method; Continuum Mechanics; Finite Element Analysis I & II; Theory and Applications of Plasticity

(ii) Research Activities: Constitutive modeling of advanced materials; Multiscale modeling and materials characterization; Mechanism-based approaches for simulation of fracture process and structural reliability assessment

(iii) Awards & Honors: ONR Young Investigator Award, 2002; Elected as a Fellow of the American Society of Mechanical Engineers, June 2013

(iv) Journal Editorship & Referee:

- Editorial board: Journal of Mechanical Engineering Science (June 2014 – present), Machines (April 2016 – present), World Journal of Mechanics (March 2011 – present), Modelling and Simulation in Engineering (March 2010 – March 2014)
- Referee for various funding bodies, such as NSF, DoD, DoE, and NSERC (Canada)
- External PhD thesis examiner for overseas universities
- Manuscript reviewer for over 30 international journals

(v) Other Professional Services: Organizer/co-organizer of a number of international conferences and mini-symposia; Technical advisor for Global Engineering and Materials, Inc.

Selected Publications

(i) Patents:

- Gao, X. and Fu, Y. “Ballistic Materials Having a Three-Dimensional Sphere Structure”, Patent No.: US 9846014 B2, Dec. 19, 2017.

(ii) Book Chapters:

- Gao, X. Probabilistic Modeling of Cleavage Fracture in the Ductile-to-Brittle Transition Region, Chapter 5 (pp. 161-177) of “Structural Materials and Engineering” (ISBN 978-1-60692-927-8), Nova Science Publishers, 2009.

(iii) Journal Articles:

- J1. Miao, Y., Lv, S., Srivatsan, T.S. and Gao, X. (2019) The Mechanical and Electrochemical Coupled Pitting Behavior of a 2219 Aluminum Alloy: A Theoretical and Experimental Study. Accepted for publication in Journal of Engineering Materials and Technology.
- J2. Zeng, Chuan and Gao, X. (2019) Effect of the Deformation Dependent Permittivity on the Actuation of a Pre-Stretched Circular Dielectric Actuator. Accepted for publication in Mechanics Research Communications.
- J3. Huang C. and Gao, X. (2019) Development of a Phase Field Method for Modeling Brittle and Ductile Fracture. Computational Materials Science. Article 109089, DOI: <https://doi.org/10.1016/j.commatsci.2019.109089>.
- J4. Li, Z., Lv, S., Gao, X. and Srivatsan, T.S. (2019) Influence of Surface Quality on Pitting Corrosion Behavior of an Aluminum Alloy. Emerging Materials Research, 8(2), 206–211. <https://doi.org/10.1680/jemmr.19.00022>.
- J5. Li, Z., Lv, S., Zhang, W., Gao, X. and Srivatsan, T.S. (2019) Influence of Environment on Response Characteristics of a High Strength Aluminum Alloy. Emerging Materials Research, 8(2), 175–187. <https://doi.org/10.1680/jemmr.18.00173>.
- J6. Luo, T., Huang, C. and Gao, X. (2019) An Investigation of the Effect of Hydrogen on Ductile Fracture Using a Unit Cell Model. International Journal of Hydrogen Energy, 44, 8627-8640. <https://doi.org/10.1016/j.ijhydene.2019.02.069>.
- J7. Liu, J., Zhong, D., Li, Y., Tang, Z., Gao, X., Zhang Z. and Huang, F. (2019) Numerical Simulation and Test on Damage of Rotary Engine Blades Impacted by Bird. International Journal of Crashworthiness, 24(1), 106-120. DOI: 10.1080/13588265.2018.1452548.
- J8. Huang, C., Luo, T., Gao, X. and Graham, S.M. (2018) Modeling the Effect of Hydrogen on Ductile Fracture. Materials Performance and Characterization, 7(2), 101-118.
- J9. Liu, J., Li, Y., Yu, X., Gao, X. and Liu, Z. (2018) Design of Aircraft Structures against Threat of Bird Strikes. Chinese Journal of Aeronautics, 31(7), 1535-1558.
- J10. Luo, T. and Gao, X. (2018) On the Prediction of Ductile Fracture by Void Coalescence and Strain Localization. Journal of the Mechanics and Physics of Solids, 113, 82-104.
- J11. Liu, J., Li, Y., Yu, X., Tang, Z., Gao, X., Lv, J. and Zhang, Z. (2017) A Novel Design for Reinforcing the Aircraft Tail Leading Edge Structure against Bird Strike. International Journal of Impact Engineering, 105, 89-101.
- J12. Tan, X., Guo, W.G., Gao, X., Liu, K., Wang, J. and Zhou, P. (2017) A New Technique for Conducting Split Hopkinson Tensile Bar Test at Elevated Temperatures. Experimental Techniques, 41(2), 191-201.
- J13. Lv, S.L., Zhang, M., Gao, X. and Srivatsan, T.S. (2017) Investigating and Rationalizing Influence of Saline Environment on Response of an Aluminum Alloy: Experimental and Numerical Study. Journal of Engineering Materials and Technology, 139(1), p. 011006, DOI: 10.1115/1.4034924.
- J14. Reakes, C., Gao, X. and Srivatsan, T.S. (2017) A Two-Parameter Fracture Mechanics Approach to Analyze Threaded Fasteners of a High Strength Steel. SOJ Material Science and Engineering, 5(2), 1-5.
- J15. Wang, W., Dai, Y., Zhang C., Gao, X. and Zhao, M. (2016) Micromechanical Modeling of Fiber-Reinforced Composites with Statistically Equivalent Random Fiber Distribution. Materials, 9(8), DOI: 10.3390/ma9080624.

- J16. Zhai, J., Luo, T., Gao, X., Graham, S.M., Baral, M., Korkolis, Y.P. and Knudsen, E. (2016) Modeling the Ductile Damage Process in Commercially Pure Titanium. *International Journal of Solids and Structures*, 91, 26-45.
- J17. Reakes, C., Gao, X. and Srivatsan, T.S. (2016) Analysis of Threaded Fasteners of a High Strength Steel: Role of Flaw Size and Orientation – A Numerical Study. *Neural, Parallel, and Scientific Computations*, 24, 335-350.
- J18. Liu, J., Li, Y., Gao, X., Liu, P. and L. Kong (2015) Dynamic Response of Bird Strike on Aluminum Foam-Based Sandwich Panels. *International Journal of Crashworthiness*, 20, 325-336.
- J19. Wang, J., Guo, W.G., Gao, X. and Su, J. (2015) The Third-Type of Strain Aging and the Constitutive Modeling of a Q235B Steel over a Wide Range of Temperatures and Strain Rates. *International Journal of Plasticity*, 65, 85-107.
- J20. Fu, Y., Zhou, J. and Gao, X. (2014) Sandwiched hollow sphere structures: A study of ballistic impact behavior using numerical simulation. *Journal of Mechanical Engineering Science*, 228, 2068–2078.
- J21. Zhou, J., Gao, X., Sobotka, J.C., Webler, B.A. and Cockeram B.V. (2014) On the Extension of the Gurson-Type Porous Plasticity Models for Prediction of Ductile Fracture under Shear-Dominated Conditions. *International Journal of Solids and Structures*, 51, 3273–3291.
- J22. Liu, J., Li, Y., Gao, X. and Yu, X. (2014) A Numerical Model for Bird Strike on Sidewall Structure of an Aircraft Nose. *Chinese Journal of Aeronautics*, 27, 542-549.
- J23. Zhai, J., Gao, X., Sobotka, J.C., Webler, B.A. and Cockeram B.V. (2014) Modeling the Tension-Compression Asymmetric Yield Behavior of a β -Treated Zircaloy-4. *Journal of Nuclear Materials*, 451, 292–299.
- J24. Liu, J., Li, Y. and Gao, X. (2014) Bird Strike on a Flat Plate: Experiments and Numerical Simulations. *International Journal of Impact Engineering*, 70, 21-37.
- J25. Wang, W., Wan, X., Zhou, J., Zhao, M., Li, Y., Shang, S. and Gao, X. (2014) Damage and Failure of a Laminated Carbon-Fiber-Reinforced Composite under Low-Velocity Impact. *Journal of Aerospace Engineering*, 27, 308–317.
- J26. Li, J., Zhao, M., Gao, X., Wan, X. and Zhou, J. (2014) Modeling the Stiffness, Strength and Progressive Failure Behavior of Woven Fabric Reinforced Composites. *Journal of Composite Materials*, 48, 735–747.
- J27. Lv, S.L., Cu, Y., Gao, X. and Srivatsan, T.S. (2013) Influence of Exposure to Aggressive Environment on Fatigue Behavior of a Shot Peened High Strength Aluminum Alloy. *Materials Science and Engineering A*, 574, 243–252.
- J28. Fu, Y., Zhou, J. and Gao, X. (2013) Design and Numerical Simulation of a New Sandwiched Sphere Structure for Ballistic Protection. *International Journal of Impact Engineering*, 58, 66-75.
- J29. Lv, S.L., Cu, Y., Zhang, W., Tong, X., Srivatsan, T.S. and Gao, X. (2013) Influence of Shot Peening on Failure of an Aluminum Alloy Exposed to Aggressive Aqueous Environments. *Journal of Materials Engineering and Performance*, 22, 1735-1743.
- J30. Guo, W.G. and Gao, X. (2013) On the Constitutive Modeling of a Structural Steel over a Range of Strain Rates and Temperatures. *Materials Science and Engineering A*, 561, 468–476.
- J31. Lv, S.L., Mu, Q., Gao, X. and Srivatsan, T.S. (2013) Influence of Morphology of Corrosion on Fracture Initiation in an Aluminum Alloy. *Materials and Design*, 45, 96-102.
- J32. Zhou, J., Hayden, M. and Gao, X. (2013) An Investigation of the Strain Rate and Temperature Effects on the Plastic Flow Stress and Ductile Failure Strain of Aluminum Alloys 5083-H116, 6082-T6 and a 5183 Weld Metal. *Journal of Mechanical Engineering Science*, 227, 883–895.
- J33. Zhou, J., Gao, X., Hayden, M. and Joyce, J.A. (2012) Modeling the Ductile Fracture Behavior of an Aluminum Alloy 5083-H116 Including the Residual Stress Effect. *Engineering Fracture Mechanics*, 85, 103-116.
- J34. Hu, S., Xia, Z. and Gao, X. (2012) Strong Adhesion and Friction Coupling in Hierarchical Carbon Nanotube Arrays for Dry Adhesive Applications. *ACS Applied Materials and Interfaces*, 4, 1972-1980.

- J35. Zhang, T., Gao, X., Webler, B.A., Cockeram, B.V., Hayden, M. and Graham, S.M. (2012) Application of the Plasticity Models that Involve Three Stress Invariants. *International Journal of Applied Mechanics*, Vol. 4, No. 2: 1-24; DOI: 10.1142/S1758825112500214.
- J36. Graham, S.M., Zhang, T., Gao, X. and Hayden, M. (2012) Development of a Combined Tension–Torsion Experiment for Calibration of Ductile Fracture Models under Conditions of Low Triaxiality. *International Journal of Mechanical Sciences*, 54, 172-181.
- J37. Jiang, H., Gao, X. and Srivatsan, T.S. (2011) Enabling and Understanding Failure of Engineering Structures Using the Technique of Cohesive Elements. *International Journal of Engineering Sciences and Management*, 1, 1-14.
- J38. Gao, X., Zhang, T., Zhou, J., Graham, S.M., Hayden, M. and Roe, C. (2011) On Stress-State Dependent Plasticity Modeling: Significance of the Hydrostatic Stress, the Third Invariant of Stress Deviator and the Non-Associated Flow Rule. *International Journal of Plasticity*, 27, 217–231.
- J39. Hu, S., Jiang, H., Xia, Z. and Gao, X. (2010) Friction and Adhesion of Hierarchical Carbon Nanotube Structures for Biomimetic Dry Adhesives: Multiscale Modeling. *ACS Applied Materials and Interfaces*, 2, 2570-2578.
- J40. Jiang, H., Gao, X. and Srivatsan, T.S. (2010) A Cohesive Zone Model for Studying Crack Growth in Materials and Structures. *Neural, Parallel, and Scientific Computations*, 18, 291–306.
- J41. Gao, X. (2010) Fracture Assessment of Ferritic Steel Components under Dynamic Loading. *International Journal of Pressure Vessels and Piping*, 87, 511-519.
- J42. Stearns, J., Gao, X., Srivatsan, T.S., and Lam, P.C. (2010) The Mechanical Response of a Rotating Wheel: Influence of Inflation Pressure and Radial Loads. *International Journal of Vehicle Design*, 53, 166-180.
- J43. Gao, X., Zhang, G. and Roe, C. (2010) A Study on the Effect of the Stress State on Ductile Fracture. *International Journal of Damage Mechanics*, 19, 75-94.
- J44. Prakash, S., Gao, X. and Srivatsan, T.S. (2010) A Computational Analysis to Assess the Influence of Specimen Geometry on Cleavage Fracture Toughness of Metallic Materials. *Neural, Parallel, and Scientific Computations*, 18, 33–46.
- J45. Prakash, S., Gao, X. and Srivatsan, T.S. (2009) Numerical Modeling of the Constraint Effects on Cleavage Fracture Toughness. *Neural, Parallel, and Scientific Computations*, 17, 445–462.
- J46. Gao, X., Zhang, T., Hayden, M. and Roe, C. (2009) Effects of the Stress State on Plasticity and Ductile Failure of an Aluminum 5083 Alloy. *International Journal of Plasticity*, 25, 2366–2382.
- J47. Jiang, H., Gao, X. and Srivatsan, T.S. (2009) Predicting the Influence of Overload and Loading Mode on Fatigue Crack Growth: A Numerical Approach Using Irreversible Cohesive Elements. *Finite Elements in Analysis and Design*, 45, 675-685.
- J48. Young, B.A., Gao, X. and Srivatsan, T.S. (2009) A Study of Life Prediction Differences for a Nickel-Base Alloy 690 Using a Threshold and a Non-threshold Model. *Journal of Nuclear Materials*, 394, 63–66.
- J49. Joyce, J.A. and Gao, X. (2008) Analysis of Material Inhomogeneity in the European Round Robin Fracture Toughness Data Set. *Journal of ASTM International*, 5 (No. 9), 1-19 (DOI: 10.1520/JAI101512).
- J50. Gao, X., Joyce, J.A. and Roe, C. (2008) An Investigation of the Loading Rate Dependence of the Weibull Stress Parameters. *Engineering Fracture Mechanics*, 75, 1451–1467.
- J51. Kim, J., Zhang, G. and Gao, X. (2007) Modeling of Ductile Fracture: Application of the Mechanism-Based Concepts. *International Journal of Solids and Structures*, 44, 1844-1862.
- J52. Young, B.A., Gao, X., Srivatsan, T.S. and King, P.J. (2007) The Response of Alloy 690 Tubing in Pressurized Water Reactor Environment. *Materials and Design*, 28, 373-379.
- J53. Gao, X., Zhang, G. and Srivatsan, T.S. (2006) Prediction of Cleavage Fracture in the Ductile-to-Brittle Transition Region of Pressure Vessel Steels: A Probabilistic Model. *Key Engineering Materials*, Vols. 324-325, 283-286.
- J54. Young, B.A., Gao, X., Srivatsan, T.S. and King, P.J. (2006) An Investigation of the Fatigue Crack Growth Behavior of Inconel 690. *Materials Science and Engineering A*, 416, 187-191.

- J55. Gao, X., Zhang, G. and Srivatsan, T.S. (2006) A Probabilistic Model for Prediction of Cleavage Fracture in the Ductile-to-Brittle Transition Region and the Effect of Temperature on Model Parameters. *Materials Science and Engineering A*, 415, 264-272.
- J56. Stearns, J., Srivatsan, T.S., Gao, X., Prakash, A. and Lam, P.C. (2006) Understanding the Influence of Pressure and Radial Loads on Stress and Displacement Response of a Rotating Body: The Automobile Wheel. *International Journal of Rotating Machinery*, 2006, 1-8 (DOI: 10.1155/IJRM/2006/60193).
- J57. Gao, X. and Kim, J. (2006) Modeling of Ductile Fracture: Significance of Void Coalescence. *International Journal of Solids and Structures*, 43, 6277-6293.
- J58. Stearns, J., Srivatsan, T.S., Gao, X., Prakash, A. and Lam, P.C. (2005) Analysis of Stress and Strain Distribution in a Vehicle Wheel: Finite Element Analysis versus Experimental Method. *Journal of Strain Analysis for Engineering Design*, 40, 513-524.
- J59. Gao, X., Wang, T. and Kim, J. (2005) On Ductile Fracture Initiation Toughness: Effects of Void Volume Fraction, Void Shape and Void Distribution. *International Journal of Solids and Structures*, 42, 5097-5117.
- J60. Gao, X., Zhang, G. and Srivatsan, T.S. (2005) Prediction of Cleavage Fracture in Ferritic Steels: A Modified Weibull Stress Model. *Materials Science and Engineering A*, 394, 210-219.
- J61. Gao, X. and Dodds, R.H. (2005) Loading Rate Effects on Parameters of the Weibull Stress Model for Ferritic Steels. *Engineering Fracture Mechanics*, 72, 2416-2425.
- J62. Kim, J. and Gao, X. (2005) A Generalized Approach to Formulate the Consistent Tangent Stiffness in Plasticity with Application to the GLD Porous Material Model. *International Journal of Solids and Structures*, 42, 103-122.
- J63. Kim, J., Gao, X. and Srivatsan, T.S. (2004) Modeling of Void Growth in Ductile Solids: Effects of Stress Triaxiality and Initial Porosity. *Engineering Fracture Mechanics*, 71, 379-400.
- J64. Kim, J., Gao, X. and Srivatsan, T.S. (2003) Modeling of Crack Growth in Ductile Solids: A Three-Dimensional Analysis. *International Journal of Solids and Structures*, 40, 7357-7374.
- J65. Gao, X., Dodds, R.H., Tregoning, R.L. and Joyce, J.A. (2001) Weibull Stress Model for Cleavage Fracture Under High-Rate Loading. *Fatigue and Fracture of Engineering Materials and Structures*, 24, 551-564.
- J66. Gao, X. and Dodds, R.H. (2001) An Engineering Approach to Assess Constraint Effects on Cleavage Fracture Toughness. *Engineering Fracture Mechanics*, 68, 263-283.
- J67. Gao, X., Dodds, R.H., Tregoning, R.L. and Joyce, J.A. (2000) Prediction of the T₀ Shift Between Specimens of Different Constraints Using the T-Stress Based T-Functions. *International Journal of Fracture*, 104, L3-8.
- J68. Ruggieri, C., Gao, X. and Dodds, R.H. (2000) Transferability of Elastic-Plastic Fracture Toughness Using the Weibull Stress Approach: Significance of Parameter Calibration. *Engineering Fracture Mechanics*, 67, 101-117.
- J69. Gullerud, A.S., Gao, X., Dodds, R.H. and Haj-Ali, R. (2000) Simulation of Ductile Crack Growth Using Computational Cells: Numerical Aspects. *Engineering Fracture Mechanics*, 66, 65-92.
- J70. Gao, X. and Dodds, R.H. (2000) Constraint Effects on the Ductile-to-Cleavage Transition Temperature of Ferritic Steels: A Weibull Stress Model. *International Journal of Fracture*, 102, 43-69.
- J71. Gao, X., Dodds, R.H., Tregoning, R.L., Joyce, J.A. and Link, R.E. (1999) A Weibull Stress Model to Predict Cleavage Fracture in Plates Containing Surface Cracks. *Fatigue and Fracture of Engineering Materials and Structures*, 22, 481-493.
- J72. Gao, X., Faleskog, J. and Shih, C.F. (1999) Analysis of Ductile to Cleavage Transition in Part-Through Cracks Using a Cell Model Incorporating Statistics. *Fatigue and Fracture of Engineering Materials and Structures*, 22, 239-250.
- J73. Gao, X., Ruggieri, C. and Dodds, R.H. (1998) Calibration of Weibull Stress Parameters Using Fracture Toughness Data. *International Journal of Fracture*, 92, 175-200.
- J74. Gao, X. and Shih, C.F. (1998) A Parametric Study of Mixed-Mode I / III Ductile Fracture in Tough Materials under Small Scale Yielding. *Engineering Fracture Mechanics*, 60, 407-420.

- J75. Gao, X., Faleskog, J., Dodds, R.H. and Shih, C.F. (1998) Ductile Tearing in Part-Through Cracks – Experiments and Cell-Model Predictions. *Engineering Fracture Mechanics*, 59, 761-777.
- J76. Gao, X., Faleskog, J. and Shih, C.F. (1998) Cell Model for Nonlinear Fracture Analysis – II. Fracture-Process Calibration and Verification. *International Journal of Fracture*, 89, 375-398.
- J77. Faleskog, J., Gao, X. and Shih, C.F. (1998) Cell Model for Nonlinear Fracture Analysis – I. Micromechanics Calibration. *International Journal of Fracture*, 89, 355-373.
- J78. Shih, C.F., Faleskog, J. and Gao, X. (1996) A Cell Model for Analyzing Material Failure. *GATHER / SCATTER*, 12, 18-19.
- J79. Gao, X., Shih, C.F., Tvergaard, V. and Needleman, A. (1996) Constraint Effects on the Ductile-Brittle Transition in Small Scale Yielding. *Journal of the Mechanics and Physics of Solids*, 44, 1255-1282.
- J80. Gao, X. and Kuang, Z.B. (1992) Mode I Fracture in Two Dissimilar Functional Non-homogeneous Planes. *Engineering Fracture Mechanics*, 42, 33-44.

(iv) Conference Papers:

- C1. Gao, X. (2018) Modeling the Effect of Stress State on Ductile Fracture. In *Advanced Plasticity, Damage, and Fracture with Applications (Proceedings of ICPDF'18: the 24th International Conferences on Plasticity, Damage, and Fracture; Eds. A.S. Khan; NEAT Press, ISBN: 978-0-9911654-5-2)*, 3 pages.
- C2. Gao, X., Huang, C., Luo, T. and Graham S.M. (2017) Modeling the Effect of Hydrogen on Ductile Fracture. In *Proceedings of the 17th International ASTM/ESIS Symposium on Fatigue and Fracture Mechanics (41th National Symposium on Fatigue and Fracture Mechanics)*, May 10-12, 2017, Toronto, Canada (6 pages, CD-ROM).
- C3. Gao, X., Zhou, J. and Zhai, J. (2014) Modeling of Ductile Fracture at Engineering Scales: A Mechanism-Based Approach. Invited paper presented at the 2014 MRS Fall Meeting (Manuscript ID: 2031062; 12 pages) and published in *MRS Online Proceedings Library*, Volume 1759, 2015, mrsf14-1759-xx04-05, doi: 10.1557/opl.2015.52, Cambridge University Press.
- C4. Gao, X., Zhou, J. and Hayden, M. (2013) Modeling the Effect of Residual Stress on the Ductile Fracture Behavior of an Aluminum Alloy 5083-H116. In *Proceedings of the 13th International Conference on Fracture*, June 16-21, 2013, Beijing, China (M10-002: 10 pages).
- C5. Gao, X. (2013) A Mechanism-Based Approach for Predicting Ductile Fracture of Metallic Alloys. In *Proceedings of the 13th International Conference on Fracture*, June 16-21, 2013, Beijing, China (S12-020: 10 pages).
- C6. Gao, X. (2011) Modeling the Plastic Response of Metallic Alloys: Significance of the Hydrostatic Stress, the Third Invariant of Stress Deviator and the Non-associated Flow Rule. In *Macro to Nano-scale Inelastic Deformation and Failure of Materials & Multi-scale Modeling (Proceedings of the 17th International Symposium on Plasticity and its Current Applications; Eds. A.S. Khan; NEAT Press, ISBN: 0-9659463-1-2)*, pp. 103-105.
- C7. Gao, X., Zhang, T., Roe, C. and Hayden, M. (2009) Effect of the Lode Parameter on Ductile Fracture. In *Proceedings of the 12th International Conference on Fracture*, July 12-17, 2009, Ottawa, Canada (Paper ID: 794.573.00).
- C8. Gao, X., Petti, J. and Dodds, R.H. (2008) The Weibull Stress Model for Predicting Cleavage Fracture in the Ductile-to-Brittle Transition Region. In *Proceedings of the ASME Pressure Vessels and Piping Conference – 2008*, Vol. 6, PT A and B, pp. 927-936 (Paper ID: PVP2008-61080).
- C9. Gao, X. and Roe, C. (2008) Effect of Stress State on Ductile Fracture. In *Mechanics & Mechanisms of Finite Plastic Deformation (Proceedings of the 14th International Symposium on Plasticity and its Current Applications; Eds. A.S. Khan and B. Farrokh; NEAT Press, ISBN: 0-9659463-8-X)*, pp. 118-120.
- C10. Gao, X., Zhang, G. and Srivatsan, T.S. (2006) Prediction of Cleavage Fracture in the Ductile-to-Brittle Transition Region of Pressure Vessel Steels: A Probabilistic Model. In *Proceedings of the 5th International Conference on Fracture and Damage Mechanics (FDM 2006)*, Sept. 13-15, Harbin, China.

- C11. Xiao, Y., Regatti, S., Kutuva, S., Reddy, N.P., Gao, X., Hariharan, S.I., Kulkarni, S. (2006) A Framework for Integrating Virtual Surgery Modules. In Proceedings of the IADIS International Conference Health Informatics 2006 (part of IADIS Virtual Multi Conference on Computer Science and Information System, May 15-19, 2006), pp. 297-300.
- C12. Kutuva, S., Reddy, N.P., Xiao, Y., Gao, X., Hariharan, S.I. and Kulkarni, S. (2006) A Novel and Fast Virtual Surgical System Using Fuzzy Logic. In Proceedings of the IADIS International Conference Computer Graphics and Visualization 2006 (part of IADIS Virtual Multi Conference on Computer Science and Information System, May 15-19, 2006), pp. 277-281.
- C13. Gao, X., Petti, J. and Dodds, R.H. (2006) Recent Development in the Weibull Stress Model for Prediction of Cleavage Fracture in Ferritic Steels. In Proceedings of the 9th European Mechanics of Materials Conference (edited by J. Besson, D. Moineau, and D. Steglich), Moret sur Loing, France, May 9-12, 2006, pp. 93-98.
- C14. Gao, X. and Kim, J. (2005) Modeling of Crack Growth in Ductile Solids. In Proceedings of the ASME Applied Mechanics Division, Vol. 256, pp. 335-344 (IMECE2005 Paper ID: IMECE2005-80225).
- C15. Guruprasad, G., Srivatsan, T.S., Zhang, G., Gao, X. and Radhakrishnan, R. (2005) The Microstructure of a TiB₂-B₄C Ceramic Composite Synthesized by in-situ Displacement Reaction: Experimental Observations versus Numerical Predictions. In Processing and Fabrication of Advanced Materials XIV (Eds. T.S. Srivatsan, R.A. Varin, R. Abbaschian and S. Viswanathan), pp. 79-108.
- C16. Gao, X. and Dodds, R.H. (2005) Analysis of Loading Rate Effects on Cleavage Fracture Toughness of Ferritic Steels. In Proceedings of the 11th International Conference on Fracture, March 20-25, 2005, Turin, Italy (Paper ID: 3361).
- C17. Gao, X. and Kim, J. (2005) A Generalized Approach to Formulate the Consistent Tangent Stiffness in Plasticity with Application to an Anisotropic Porous Material Model. In Dislocations, Plasticity, Damage and Metal Forming: Material Response and Multiscale Modeling (Proceedings of the 11th International Symposium on Plasticity and its Current Applications; Eds. A.S. Khan and A.R. Khoei; NEAT Press, ISBN: 0-9659463-5-5), pp. 34-36.
- C18. Wang, T. and Gao, X. (2004) Electric Dipole Model and Computer Simulation of the Fracture Behavior of a Conductive Crack in a Dielectric Material. In Mechanically Active Materials (edited by K.J. Van Vliet, R.D. James, P.T. Mather, and W.C. Crone), Mater. Res. Soc. Symp. Proc. 855E, Warrendale, PA, 2005.
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(v) Invited Talks / Keynote Speeches:

1. Gao, X. Modeling the effect of stress state on ductile fracture, keynote lecture at the 24th International Conference on Plasticity, Damage and Fracture, Jan. 3-8, 2018, San Juan, Puerto Rico.
2. Gao, X. Recent Developments in Plasticity and Ductile Fracture Modeling, special keynote speaker at the 2nd International Conference & Exhibition on Fatigue, Durability and Fracture Mechanics, Sept. 28-30, 2016, Bangalore, India.
3. Gao, X., Zhou, J. and Graham, S.M. Modeling the Effect of Stress State on Plastic Deformation and Ductile Fracture, invited talk at the IUTAM Symposium on "Ductile Failure & Localization", March 17-20, 2015, Paris, France.
4. Gao, X. Modeling of Ductile Fracture at Engineering Scales: A Mechanism-Based Approach. Invited speaker at the 2014 MRS Fall Meeting & Exhibit, Nov. 30 - Dec. 5, 2014, Boston, MA.
5. Gao, X. Modeling the Effects of Stress State on the Plastic Response and Ductile Failure Process of Metallic Alloys, invited keynote speech at the Second International Conference on Metallic Materials and Processing, September 29 - October 3, 2014, Las Vegas, NV.
6. Gao, X. Effects of Stress State on Plasticity and Ductile Fracture Modeling, invited talk at the International Symposium on Mechanics of Inhomogeneous Media, July 25-27, 2014, Xi'an, China.
7. Gao, X. A Mechanism-Based Approach for Predicting Ductile Fracture of Metallic Alloys, keynote presentation at the 13th International Conference on Fracture, June 16-21, 2013, Beijing, China.
8. Gao, X. Modeling the Effect of Stress State on Plasticity and Ductile Fracture, invited talk at the 2nd International Conference on Computational Modeling of Fracture and Failure of Materials and Structures (CFRAC 2011), June 6-8, 2011, Barcelona, Spain.
9. Gao, X. Modeling the Plastic Response of Metallic Alloys: Significance of the Hydrostatic Stress, the Third Invariant of Stress Deviator and the Non-associated Flow Rule. Invited presentation at PLASTICITY 2011: The 17th International Symposium on Plasticity and Its Current Applications, Jan. 3-8, 2011, Puerto Vallarta, Mexico.
10. Gao, X. Top-Down Approaches to Predict Fracture, invited speaker at the 2nd International Workshops on Advances in Computational Mechanics, March 29-31, 2010, Yokohama, Japan.
11. Gao, X. and Roe, C. Effect of Stress State on Ductile Fracture, invited presentation at the 14th International Symposium on Plasticity and Its Current Applications, Jan. 3-8, 2008, Kona, Hawaii.
12. Gao, X. and Kim, J. A Mechanism-Based Approach to Predict Ductile Crack Growth in Metallic Alloys, invited talk at the Symposium on Physics and Mechanics of Advanced Materials, 2nd MRS-S Conference on Advanced Materials, Jan. 18-20, 2006, Singapore.
13. Gao, X. and Kim, J. A Generalized Approach to Formulate the Consistent Tangent Stiffness for Plasticity with Application to an Anisotropic Porous Material Model, invited presentation at the Eleventh International Symposium on Plasticity and its Current Applications, Jan. 4-8, 2005, Kauai, Hawaii.