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Associate Professor
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■ RESEARCH INTERESTS

Computational mechanics; Multiscale/Multiphysics; Failure analysis; Structural system analysis

■ EDUCATION

- **Ph.D.** (08/2004-06/2008)
 - Theoretical and Applied Mechanics, Northwestern University, Evanston, Illinois
 - Advisor: Dr. Ted Belytschko
 - Ph.D. thesis: Computations of the dynamic fracture of quasi-brittle plane and shell structures by the extended finite element method
- **M.S.** (03/2001-02/2003)
 - Department of Civil Engineering, Yonsei University, Seoul, Korea
 - Advisor: Dr. Sang-Ho Lee
 - M.S. thesis: Crack propagation analysis of steel structures by using the extended finite element method
- **B.S.** (03/1997-02/2001)
 - School of Civil and Urban Engineering, Yonsei University, Seoul, Korea

■ CURRENT APPOINTMENTS

- **Associate Professor** (08/2021-Present)
 - Civil, Environmental and Architectural Engineering, College of Engineering and Applied Science, University of Colorado Boulder, Colorado
- **Assistant Professor** (08/2014-08/2021)
 - Civil, Environmental and Architectural Engineering, College of Engineering and Applied Science, University of Colorado Boulder, Colorado
- **Faculty** (11/2014-08/2021)
 - Materials Science and Engineering Program, College of Engineering and Applied Science, University of Colorado Boulder, Colorado

■ PREVIOUS APPOINTMENTS

- **ONR Research Faculty Fellow** (2014-2016)
 - Computational Multiphysics Systems Laboratory, Naval Research Laboratory, Washington DC (Typical summer 10 weeks residency at NRL in each year)
- **Assistant Professor** (01/2011-08/2014)

- Civil and Environmental Engineering, College of Engineering and Computing, University of South Carolina, Columbia, South Carolina
- **Faculty** (01/2011-08/2014)
 - Interdisciplinary Mathematics Institute, College of Arts and Science, University of South Carolina, Columbia, South Carolina
- **Post-doctoral Fellow** (06/2008-12/2010)
 - Department of Mechanical Engineering, Northwestern University, Evanston, Illinois (Advisor: Dr. Ted Belytschko)
- **Graduate Research Assistant** (08/2004-06/2008)
 - Theoretical and Applied Mechanics, Northwestern University, Evanston, Illinois

■ AWARDS & HONORS

- **Teaching Award** (2019)
 - Department of Civil, Environmental and Architectural Engineering, University of Colorado Boulder (In recognition of dedication to undergraduate teaching)
- **U.S. Navy Faculty Research Fellowship** (2014-2016)
 - U.S. Office of Naval Research
- **Graduate Student Fellowship** (2005-2008)
 - 7th and 8th World Congress on Computational Mechanics
 - 8th and 9th U.S. National Congress on Computational Mechanics

■ PEER-REVIEWED JOURNAL PUBLICATIONS

(*Corresponding Author, ¹Graduate Student, ²Post-doctoral Fellow, and ³DOD/DOE Lab Members.)

- **2023**
- 55. A. Almasi, Y.C. Yoon, T.Y. Kim, T. A. Laursen, J.H. Song*, A strong-form meshfree collocation method for modeling stationary cracks with frictional contact, *International Journal of Non-Linear Mechanics* **148**: 10429 (2023). doi: [10.1016/j.ijnonlinmec.2022.104291](https://doi.org/10.1016/j.ijnonlinmec.2022.104291)
- **2022**
- 54. A. Almasi¹, T.Y. Kim, and **J.H. Song***, Strong form meshfree collocation method for frictional contact between a rigid pile and an elastic foundation. *Engineering with Computers*, (2022). (Special issue on Computational Modeling based on Nonlocal Theory) doi: [10.1007/s00366-022-01673-y](https://doi.org/10.1007/s00366-022-01673-y)
- **2021**
- 53. A. Beel¹ and **J.H. Song***, Strong-form meshfree collocation method for multi-body thermomechanical contact, *Engineering with Computers*, (2021). (Special issue on Computational Modeling based on Nonlocal Theory) doi: [10.1007/s00366-021-01513-5](https://doi.org/10.1007/s00366-021-01513-5)
- 52. P. Schaefferkoetter¹, J. G. Michopoulos and **J.H. Song***, Strong-form meshfree collocation method for non-equilibrium solidification of multi-component alloy, *Engineering with Computers*, (2021). (Special issue on Computational Modeling based on Nonlocal Theory) doi: [10.1007/s00366-021-01503-7](https://doi.org/10.1007/s00366-021-01503-7)
- 51. Y.C. Yoon* and **J.H. Song***, Interface immersed particle difference method for weak discontinuity in elliptic boundary value problems, *Computer Methods in Applied Mechanics and Engineering*, **375**: 113650 (2021). doi: [10.1016/j.cma.2020.113650](https://doi.org/10.1016/j.cma.2020.113650)
- **2020**

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50. S.I. Park²⁾, S.H. Lee*, A. Almasi¹⁾, **J.H. Song***, Extended IFC-based strong form meshfree collocation analysis of a bridge structure, *Automation in Construction*, **119**: 103364 (2020). doi: [10.1016/j.autcon.2020.103364](https://doi.org/10.1016/j.autcon.2020.103364)
49. I. Asareh¹⁾, **J.H. Song**, R. Mullen and Y. Qian*, A general mass lumping scheme for the variants of the XFEM, *International Journal for Numerical Methods in Engineering*, **121**: 2262-2284 (2020). doi: [10.1002/nme.6308](https://doi.org/10.1002/nme.6308)
48. T.Y. Kim*, W. Jiang, S³⁾. Lee, **J.H. Song** and E.J. Park, A Nitsche-type variational formulation for the shape deformation of a single component vesicle, *Computer Methods in Applied Mechanics and Engineering*, **359**: 112661 (2020). doi: [10.1016/j.cma.2019.112661](https://doi.org/10.1016/j.cma.2019.112661)
- **2019**
47. A. Almasi¹⁾, T.Y. Kim, T. A. Laursen, **J.H. Song***, A strong form meshfree collocation method for frictional contact on a rigid obstacle, *Computer Methods in Applied Mechanics and Engineering*, **357**: 112597 (2019). doi: [10.1016/j.cma.2019.112597](https://doi.org/10.1016/j.cma.2019.112597)
46. A. Almasi¹⁾, A. Beel¹⁾, T.Y. Kim, J. G. Michopoulos³⁾ and **J.H. Song***, Strong form collocation method for solidification and mechanical analysis of polycrystalline materials, *ASCE Journal of Engineering Mechanics*, **145**: 04019082 (2019). (Special Issue on Recent Advances in Computational Methods in Engineering Mechanics) doi: [10.1061/\(ASCE\)EM.1943-7889.0001665](https://doi.org/10.1061/(ASCE)EM.1943-7889.0001665)
45. I. Asareh¹⁾ and **J.H. Song***, Non-nodal extended finite element method (NXFEM) for modeling crack with four-node quadrilateral elements, *ASCE Journal of Engineering Mechanics*, **145**: 04019081 (2019). (Special Issue on Recent Advances in Computational Methods in Engineering Mechanics) doi: [10.1061/\(ASCE\)EM.1943-7889.0001662](https://doi.org/10.1061/(ASCE)EM.1943-7889.0001662)
44. A. Beel¹⁾, T.Y. Kim, W. Jiang³⁾ and **J.H. Song***, Strong form-based meshfree collocation method for wind-driven ocean circulation, *Computer Methods in Applied Mechanics and Engineering*, **351**: 404-421 (2019). doi: [10.1016/j.cma.2019.03.045](https://doi.org/10.1016/j.cma.2019.03.045)
43. Y.C. Yoon*, P. Schaefferkoetter¹⁾, T. Rabczuk and **J.H. Song***, New strong formulation for material nonlinear problems based on the particle difference method, *Engineering Analysis with Boundary Elements*, **98**: 310–327 (2019). (Special Issue on Boundary Element Method for Nonlinear Problems) doi: [10.1016/j.enganabound.2018.10.015](https://doi.org/10.1016/j.enganabound.2018.10.015)
- **2018**
42. I. Asareh¹⁾, T.Y. Kim* and **J.H. Song***, A linear complete extended finite element method for dynamic fracture simulation with non-nodal enrichments, *Finite Elements in Analysis and Design*, **152**: 27-45 (2018). doi: [10.1016/j.finel.2018.09.002](https://doi.org/10.1016/j.finel.2018.09.002)
41. I. Asareh¹⁾, Y.C. Yoon and **J.H. Song***, A numerical method for dynamic fracture using the extended finite element method with non-nodal enrichment parameters, *International Journal of Impact Engineering*, **121**: 63-76 (2018). doi: [10.1016/j.ijimpeng.2018.06.012](https://doi.org/10.1016/j.ijimpeng.2018.06.012)
40. K.C. Hoang²⁾, T.Y. Kim and **J.H. Song***, Fast and accurate two-field reduced basis approximation for parametrized thermoelasticity problems, *Finite Elements in Analysis and Design*, **141**: 96-118 (2018). doi: [10.1016/j.finel.2017.12.004](https://doi.org/10.1016/j.finel.2017.12.004)
39. **J.H. Song***, Y. Fu²⁾, T.Y. Kim, Y.C. Yoon, J.G. Michopoulos³⁾ and T. Rabczuk, Phase field simulations of coupled microstructure solidification problems via the strong form particle difference method, *International Journal of Mechanics and Materials in Design*, **14**: 491-509 (2018). (Special Issue on Advances in Computational Mechanics) doi: [10.1007/s10999-017-9386-1](https://doi.org/10.1007/s10999-017-9386-1)
- **2017**
38. Y. Fu*²⁾, J.G. Michopoulos³⁾ and **J.H. Song***, On investigating the thermomechanical properties of cross-linked epoxy via molecular dynamics analysis, *Nanoscale and Microscale Thermophysical Engineering*, **21**: 8-25 (2017). doi: [10.1080/15567265.2016.1263696](https://doi.org/10.1080/15567265.2016.1263696)

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37. Y. Fu²⁾, J.G. Michopoulos³⁾ and **J.H. Song***, Bridging the multi-phase field model with the molecular dynamics for the solidification of nano-crystals, *Journal of Computational Science*, **20**:187-197 (2017). doi:[10.1016/j.jocs.2016.10.014](https://doi.org/10.1016/j.jocs.2016.10.014)
- **2016**
36. K.C. Hoang²⁾, Y. Fu²⁾, and **J.H. Song***, An *hp*-proper orthogonal decomposition-moving least squares approach for molecular dynamics simulation, *Computer Methods in Applied Mechanics and Engineering*, **298**: 548–575 (2016). doi:[10.1016/j.cma.2015.10.003](https://doi.org/10.1016/j.cma.2015.10.003)
35. J. Lua*, T. Zhang, E. Fang and **J.H. Song***, Explicit Phantom Paired Shell Element Approach for Crack Branching and Impact Damage Prediction of Aluminum Structures, *International Journal of Impact Engineering*, **87**: 28–43 (2016). (*Special Issue on Experimental Testing and Computational Modeling of Dynamic Fracture*) doi:[10.1016/j.ijimpeng.2015.07.007](https://doi.org/10.1016/j.ijimpeng.2015.07.007)
- **2015**
34. Y. Fu²⁾, J. Michopoulos³⁾ and **J.H. Song***, Dynamic response of glassy polyethylene polymer nanocomposites to shock wave loading, *Journal of Polymer Science Part B: Polymer Physics*, **53**: 1292-1302 (2015). doi:[10.1002/polb.23758](https://doi.org/10.1002/polb.23758)
33. Y. Fu²⁾, J. Michopoulos³⁾, and **J.H. Song***, Coarse-grained molecular dynamics simulations of epoxy resin during the curing process, *Computational Materials Science*, **107**: 24-32 (2015). doi:[10.1016/j.commatsci.2015.04.022](https://doi.org/10.1016/j.commatsci.2015.04.022)
32. Y. Fu²⁾ and **J.H. Song***, Heat flux expressions that satisfy the conservation laws in atomistic system involving multibody potentials, *Journal of Computational Physics*, **294**: 191-207 (2015). doi:[10.1016/j.jcp.2015.03.050](https://doi.org/10.1016/j.jcp.2015.03.050)
31. Y. Fu²⁾ and **J.H. Song***, Large deformation mechanism of glassy polyethylene polymer nanocomposites: coarse grain molecular dynamics study, *Computational Materials Science*, **96**: 485-494 (2015). (*Special Issue on Polymeric Composites*) doi:[10.1016/j.commatsci.2014.06.003](https://doi.org/10.1016/j.commatsci.2014.06.003)
30. A. Tabarraeia*, S. Shadaloua and **J.H. Song**, Mechanical properties of Graphene nanoribbons with disordered edges, *Computational Materials Science*, **96**: 10-19 (2015). doi:[10.1016/j.commatsci.2014.08.001](https://doi.org/10.1016/j.commatsci.2014.08.001)
- **2014**
29. A. Tabarraie*, X. Wang, A. Sadeghirad and **J.H. Song**, An enhanced bridging domain method for linking atomistic and continuum domains, *Finite Elements in Analysis and Design*, **92**:36-49 (2014). doi:[10.1016/j.finel.2014.07.013](https://doi.org/10.1016/j.finel.2014.07.013)
28. Y. Fu²⁾ and **J.H. Song***, On computing stress in polymer systems involving multi-body potentials from molecular dynamics simulation, *Journal of Chemical Physics*, **141**: 054108 (2014). doi:[10.1063/1.4891606](https://doi.org/10.1063/1.4891606)
27. **J.H. Song*** and Y.C. Yoon, Multiscale failure analysis with coarse-grained micro cracks and damage, *Theoretical and Applied Fracture Mechanics*, **72**: 100-109 (2014). doi:[10.1016/j.tafmec.2014.04.005](https://doi.org/10.1016/j.tafmec.2014.04.005)
26. Y.C. Yoon and **J.H. Song***, Extended particle difference method for moving boundary problems, *Computational Mechanics*, **54**:723–743 (2014). doi:[10.1007/s00466-014-1029-x](https://doi.org/10.1007/s00466-014-1029-x)
25. Y.C. Yoon* and **J.H. Song**, Extended particle difference method for weak and strong discontinuity problems: Part II. Formulations and applications for various interfacial singularity problems, *Computational Mechanics*, **53**:1105-1128 (2014). doi:[10.1007/s00466-013-0951-7](https://doi.org/10.1007/s00466-013-0951-7)
24. Y.C. Yoon and **J.H. Song***, Extended particle difference method for weak and strong discontinuity problems: Part I. Derivation of the extended particle derivative approximation for the representation of weak and strong discontinuities, *Computational Mechanics*, **53**:1087-1103 (2014). doi:[10.1007/s00466-013-0950-8](https://doi.org/10.1007/s00466-013-0950-8)
- **2013**

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23. A. Tabarraei, **J.H. Song*** and H. Waisman, Two-scale approach for modeling adiabatic shear band propagation under impact loads, *International Journal for Multiscale Computational Engineering*, **11**: 543-563 (2013). (*Special Issue on Multiscale Methods in Fracture Mechanics with Extended/Generalized Finite Elements*) doi:[10.1615/IntJMultCompEng.2013005506](https://doi.org/10.1615/IntJMultCompEng.2013005506)
 22. **J.H. Song***, P. Lea and J. Oswald, Explicit dynamic finite element method for predicting implosion/explosion induced failure of shell structures, *Mathematical Problems in Engineering*, **2013**: 957286 (2013). (*Special Issue on Computational Methods for Fracture*) doi:[10.1155/2013/957286](https://doi.org/10.1155/2013/957286)
 21. **J.H. Song***, T. Menouillard and A. Tabarraei, Explicit dynamic finite element method for failure with smooth fracture energy dissipations, *Mathematical Problems in Engineering*, **2013**: 293861 (2013). (*Special Issue on Computational Methods for Fracture*) doi:[10.1155/2013/293861](https://doi.org/10.1155/2013/293861)
- **2012**
20. H. Nguyen-Vinh, I. Bakar, M.A. Msekh, **J.H. Song**, J. Muthu, G. Zi, P. Le, S. Bordas, R. Simpson, S. Natararajan, T. Lahmer and T. Rabczuk*, Extended finite element method for dynamic fracture of piezo electric materials, *Engineering Fracture Mechanics*, **92**:19-31 (2012). doi:[10.1016/j.engfracmech.2012.04.025](https://doi.org/10.1016/j.engfracmech.2012.04.025)
 19. O. Barkai, T. Menouillard, **J.H. Song**, T. Belytschko and D. Sherman*, Crack initiation and path selection in brittle specimens: a novel experimental method and computations, *Engineering Fracture Mechanics*, **89**:65-74 (2012). doi:[10.1016/j.engfracmech.2012.04.012](https://doi.org/10.1016/j.engfracmech.2012.04.012)
 18. T. Chau-Dinh, G. Zi*, P.S. Lee, T. Rabczuk, and **J.H. Song**, Phantom-node method for shell models with arbitrary cracks, *Computer & Structure*, **92-93**: 242-256 (2012). doi:[10.1016/j.compstruc.2011.10.021](https://doi.org/10.1016/j.compstruc.2011.10.021)
- **2010**
17. T. Belytschko* and **J.H. Song**, Coarse-graining of multiscale crack propagation, *International Journal for Numerical Methods in Engineering*, **81**:537-563 (2010). doi:[10.1002/nme.2694](https://doi.org/10.1002/nme.2694)
 16. T. Rabczuk, R. Gracie, **J.H. Song** and T. Belytschko*, Immersed particle method for fluid-structure interaction, *International Journal for Numerical Methods in Engineering*, **81**:48-71 (2010). (*Selected for the Most Cited Article of the Journal in 2012*) doi:[10.1002/nme.2670](https://doi.org/10.1002/nme.2670)
 15. T. Menouillard, **J.H. Song**, Q. Duan and T. Belytschko*, Time dependent crack tip enrichment for dynamic crack propagation, *International Journal of Fracture*, **162**: 33-49 (2010). doi:[10.1007/s10704-009-9405-9](https://doi.org/10.1007/s10704-009-9405-9)
- **2009**
14. Q. Duan, **J.H. Song**, T. Menouillard and T. Belytschko*, Element-local level set method for three dimensional dynamic crack growth, *International Journal for Numerical Methods in Engineering*, **80**:1520-1543 (2009). doi:[10.1002/nme.2665](https://doi.org/10.1002/nme.2665)
 13. **J.H. Song*** and T. Belytschko, Multiscale aggregating discontinuities method for micro-macro failure of composites, *Composite Part B: Engineering*, **40**:417-426 (2009). (*Special Issue on Blast/Impact on Engineered Nano Composite Materials*) doi:[10.1016/j.compositesb.2009.01.007](https://doi.org/10.1016/j.compositesb.2009.01.007)
 12. **J.H. Song*** and T. Belytschko, Dynamic fracture of shells subjected to impulsive loads, *Journal of Applied Mechanics-Transactions of the ASME*, **76**:051301 (2009). doi:[10.1115/1.3129711](https://doi.org/10.1115/1.3129711)
 11. T. Rabczuk, **J.H. Song*** and T. Belytschko, Simulations of instability in dynamic fracture by the cracking particles method, *Engineering Fracture Mechanics*, **76**:730-741 (2009). (*Special Issue on Multi-scale Analysis of Evolving Interfaces in (Multi) Materials - Multiscale Analysis*) doi:[10.1016/j.engfracmech.2008.06.002](https://doi.org/10.1016/j.engfracmech.2008.06.002)
 10. **J.H. Song** and T. Belytschko*, Cracking node method for dynamic fracture with finite elements, *International Journal for Numerical Methods in Engineering*, **77**:360-385 (2009). doi:[10.1002/nme.2415](https://doi.org/10.1002/nme.2415)
- **2008**

9. **J.H. Song***, H.W. Wang and T. Belytschko*, A comparative study on finite element methods for dynamic fracture, *Computational Mechanics*, **42**:239–250 (2008). (*Special Issue on Challenges in Computational Mechanics*) doi:[10.1007/s00466-007-0210-x](https://doi.org/10.1007/s00466-007-0210-x)
8. T. Belytschko*, S. Loehnert and **J.H. Song**, Multiscale aggregating discontinuities: A method for circumventing loss of material stability, *International Journal for Numerical Methods in Engineering*, **73**: 869-894 (2008). (*Included in Virtual Issue Honors the Work of Ted Belytschko, IJNME Editor Emeritus, in 2014*) doi:[10.1002/nme.2156](https://doi.org/10.1002/nme.2156)

- **2006**

7. **J.H. Song**, P.M.A. Areias and T. Belytschko*, A method for dynamic crack and shear band propagation with phantom nodes, *International Journal for Numerical Methods in Engineering*, **67**: 868-893 (2006). doi:[10.1002/nme.1652](https://doi.org/10.1002/nme.1652)
6. P.M.A. Areias, **J.H. Song** and T. Belytschko*, Analysis of fracture in thin shells by overlapping paired elements, *Computer Methods in Applied Mechanics and Engineering*, **195**: 5343-5360 (2006). doi:[10.1016/j.cma.2005.10.024](https://doi.org/10.1016/j.cma.2005.10.024)

- **2005**

5. P.M.A. Areias, **J.H. Song** and T. Belytschko*, A finite-strain quadrilateral shell element based on discrete Kirchhoff-Love constraints, *International Journal for Numerical Methods in Engineering*, **64**: 1166-1206 (2005). doi:[10.1002/nme.1389](https://doi.org/10.1002/nme.1389)
4. G. Zi*, **J.H. Song** and S.H. Lee, A new method for growing multiple cracks without remeshing and its application to fatigue crack growth, *KSCE Journal of the Korean Society of Civil Engineers*, **25**:183-190 (2005). (*In Korean*) [[PDF](#)]

- **2004**

3. G. Zi*, **J.H. Song**, E. Budyn, S.H. Lee and T. Belytschko, A method for growing multiple cracks without remeshing and its application to fatigue crack growth, *Modeling and Simulations in Materials Science and Engineering*, **12**: 901-915 (2004). (*Selected for the Most Downloaded Article of the Year in 2004 and Included in Publications of Institute of Physics Journal*) doi:[10.1088/0965-0393/12/5/009](https://doi.org/10.1088/0965-0393/12/5/009)
2. S.H. Lee*, **J.H. Song**, Y.C. Yoon, G. Zi and T. Belytschko, Combined extended and superimposed finite element method for crack, *International Journal for Numerical Methods in Engineering*, **59**:1119-1136 (2004). doi:[10.1002/nme.908](https://doi.org/10.1002/nme.908)

- **2003**

1. S.H. Lee*, **J.H. Song** and M.Y. Kim, Crack propagation analysis without mesh-dependency by using extended finite element method, *KSCE Journal of the Korean Society of Civil Engineers*, **23**: 1077-1086 (2003). (*In Korean*) [[PDF](#)]

■ BOOK

1. T. Rabczuk, **J.H. Song**, X. Zhuang and C. Anitescu, *Extended Finite Element and Meshfree Methods*, Academic Press, Elsevier, (2019). (*11 Chapters, 638 pages. Primary author of 5 Chapters; Ch. 3, 4, 7, 8, 9*) [[Link](#)]

■ CHAPTERS IN BOOK

4. T.Y. Kim, **J.H. Song** and T. A. Laursen, A strong form meshfree collocation method: engineering applications including frictional contact. *Current Trends and Open Problems in Computational Mechanics*, F. Aldakheel, B. Hudobivnik, M. Soleimani, H. Wessels, C. Weißenfels, M. Marino (Eds.), Springer (2022). [[Link](#)]

3. J. G. Michopoulos³⁾, A. Iliopoulos³⁾, J. Steuben³⁾, A. Birnbaum,³⁾ **J.H. Song**, Y. Fu¹⁾, A. Achuthan, R. Saunders³⁾, A. Bagchi³⁾, R. Fonda³⁾, D. Rowenhurst³⁾, S. Olig³⁾, F. Martin³⁾, J. Moran³⁾, and A. Beckwith³⁾, *Multiphysics Integrated Computational Materials Engineering Linking Additive Manufacturing Process Parameters with Part Performance*, ASME Advances in Computers and Information in Engineering Research, Vol. 2. (2021) [[Link](#)]
2. **J.H. Song** and T. Menouillard, *Explicit dynamic finite element method for fracture of Shells*, Computational Mechanics Research Trends: Computer Science, Technology and Applications, H. P. Berger (Eds.), Nova Science Publisher, pp. 291-317 (2009).
1. T. Belytschko, **J.H. Song**, H.W. Wang and R. Gracie, *On applications of XFEM to dynamic fracture and dislocations*, IUTAM Symposium on Discretization Methods for Evolving Discontinuities: Proceedings of the IUTAM Symposium held in Lyon, France, 4-7 September 2006, A. Combescure, R. de Borst and T. Belytschko (Eds.), Springer, pp. 155-170 (2007). [[Link](#)]

■ PROFESSIONAL SERVICE ACTIVITIES

• JOURNAL EDITORIAL

• Editorial Board Member

International Journal of Hydromechatronics, InderScience Publishers	2022-Present
Computers, Materials & Continua, Tech Science Press	2018-Present

• Journal Guest Editor

Special issue on “Computational modeling of material deterioration at various length scales,” <i>International Journal of Fracture</i> , Vol. 203, 2017. (14 articles)	2016-2017
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• Journal Co-guest Editor

Special issue on “Experimental testing and computational modeling of dynamic fracture,” <i>International Journal of Impact Engineering</i> , Vol. 87, 2016. (16 articles)	2015-2016
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• ORGANIZING ACADEMIC CONFERENCE

• Conference Scientific Committee

1. 9th International Conference on Fracture of Concrete and Concrete Structures (FraMCoS-9), Berkeley, California, 2016

• Conference Mini-symposium Organizer

2. Advanced computational methods and theories for predicting material behaviors at various length scales, *13th World Congress in Computational Mechanics*, New York, New York, 2018.
3. Advanced computational methods and theories for predicting material behaviors at various length scales, *14th US National Congress on Computational Mechanics*, Montreal, Canada, 2017.
4. Advances in computational failure modeling of advanced cement-based material and reinforced concrete in various length scales, *9th International Conference on Fracture of Concrete and Concrete Structures*, Berkeley, California, 2016.
5. Advanced computational method and theory for predicting material behaviors in various length scales, *13th US National Congress on Computational Mechanics*, San Diego, California, 2015.
6. Recent developments in computational methods for real-time computing for hybrid simulation, *ASCE Engineering Mechanics Institute Conference 2015*, Stanford, California, 2015.
7. Recent developments in computational failure analysis: from single scale to multiscale failure analysis, *11th US National Congress on Computational Mechanics*, Minneapolis, Minnesota, 2011.

• Conference Mini-symposium Co-organizer

8. Data-driven approaches to engineering mechanics, American Society of Civil Engineers (ASCE) - Engineering Mechanics Institute Conference 2022, Baltimore, Maryland, 2022.
9. Advanced computational methods and theories for multi-scale and multi-physics problems in solids and fluids, *20th International Conference on Fluid Flow Problem*, Chicago, Illinois, 2019.
10. Modeling and simulation in additive manufacturing, *14th US National Congress on Computational Mechanics*, Montreal, Canada, 2017.
11. Modeling and simulation of 3D printing and additive manufacturing, *13th US National Congress on Computational Mechanics*, San Diego, California, 2015.
12. Bridging atomistics and continuum: theory, method, and application, *17th US National Congress on Theoretical and Applied Mechanics*, East Lansing, Michigan, 2014.
13. Computational methods for blast and impact in mechanics of materials, *12th US National Congress on Computational Mechanics*, Rayleigh, North Carolina, 2013.
14. Recent developments in computational failure analysis, *4th European Conference on Computational Mechanics: Solids, Structures and Coupled Problems in Engineering*, Paris, France, 2010.
15. Advanced computational methods for fracture, *ASME International Mechanical Engineering Congress and Exposition*, Lake Buena Vista, Florida, 2009.

- **ACADEMIC COMMITTEE & SOCIETY AFFILIATIONS**

- **Technical Committee**

Member, ASCE/EMI Computational Mechanics Committee 2013-Present

- **Academic Society**

Member, American Society of Mechanical Engineers (ASME) 2014-Present

Member, American Society of Civil Engineers (ASCE) 2013-Present

Member, U.S. Association for Computational Mechanics (USACM) 2006-Present

Member, International Association for Computational Mechanics (IACM) 2006-Present

- **PEER-REVIEWING FOR JOURNALS** (*usually peer-review over 30 articles per year*)

- **Computational Mechanics:** *International Journal for Numerical Methods in Engineering, Computer Methods in Applied Mechanics and Engineering, Computational Mechanics, Journal of Computational Physics, Finite Elements in Analysis and Design, Engineering Analysis with Boundary Elements, etc.*

- **Solid Mechanics:** *International Journal of Solids and Structures, International Journal of Fracture, Engineering Fracture Mechanics, International Journal of Impact Engineering, Theoretical and Applied Fracture Mechanics, etc.*

- **Materials Science and Engineering:** *Computational Materials Science, International Journal of Mechanics and Materials in Design, International Journal of Mechanical Sciences, Materials, Polymer, Composites Part B – Engineering, Polymer Testing, etc.*

- **Civil Engineering:** *ASCE Computer-Aided Civil and Infrastructure Engineering, ASCE Journal of Computing in Civil Engineering, KSCE Journal of Civil Engineering, Frontiers of Structural and Civil Engineering, etc.*

- **Miscellaneous:** *Computers and Mathematics with Applications, Mathematical Problems in Engineering, Numerical Methods in Biomedical Engineering, Structural and Multidisciplinary Optimization, etc.*

- **PEER-REVIEWING FOR GRANT PROPOSALS**

- DOE, 2019 Consolidated Innovative Nuclear Research Funding, Proposal reviewer 2019

- DOE, 2019 Consolidated Innovative Nuclear Research Funding, Pre-proposal reviewer 2018
- NSF, Proposal review panel (P181503) 2018
- DOE, 2018 Consolidated Innovative Nuclear Research Funding, Proposal reviewer 2018
- DOE, 2017 Consolidated Innovative Nuclear Research Funding, Proposal reviewer 2016
- NSF, Proposal review panel (P170549) 2016
- U.S. Army Research Office, Proposal reviewer 2011