

## PUBLICATIONS

Tze-jer Chuang

1. "The Shape of Intergranular Creep Cracks Growing by Surface Diffusion"  
T.-J. Chuang, and J. R. Rice  
*Acta. Metall.* 21, 1625 (1973).
2. "Elastic-Plastic Analysis of Control Rod Systems in the CRBR Reactor"  
T.-J. Chuang  
Westinghouse ARD Report (1975).
3. "Stress Analysis of a Large Rotating Apparatus using Finite Element Method"  
T.-J. Chuang  
Westinghouse LRA Report (1975).
4. "Finite Element Analysis of Switchgear Assemblies"  
T.-J. Chuang  
Westinghouse Switchgear Division Report (1976).
5. "Dynamic Analysis of Machinery-Foundation-Soil System"  
E. G. Fischer and T.-J. Chuang  
Westinghouse Report No. 77-7E7-ANALIS-R1 (1977).
6. "Rail-road Car Motion Study for Optimum Design"  
T.-J. Chuang  
Westinghouse AST Report (1979).
7. "Fracture Mechanics Analysis of LCP Components"  
T.-J. Chuang  
Westinghouse AST Report No. ES 80-0-65 (1980).
8. "Overview No. 2: Non-equilibrium Models for Diffusive Cavitation of Grain Interfaces"  
T.-J. Chuang, K. I. Kagawa, J. R. Rice and L. B. Sills  
*Acta. Metall.* 27, 265 (1979).
9. "Energy Variations in Diffusive Cavity Growth"  
J. R. Rice and T.-J. Chuang  
*J. Am. Ceram. Soc.* 64, 46 (1981).
10. "Effect of Deformation on the Fracture of Si<sub>3</sub>N<sub>4</sub> and SiAlON"  
R.J. Fields, T.-J. Chuang, E.R. Fuller, Jr. and N.J. Tighe  
Proceedings 2nd NATO ASI on Nitrogen Ceramics, Brighton, England, July 27 - August 7, 1981.

11. "A Diffusive Crack Growth Model for Creep Fracture"  
T. J. Chuang  
**J. Am. Ceram. Soc.** 65, 93-103 (1982).
12. "Effects of Crack Growth on the Load-Displacement Characteristics of Precracked Specimens under Bending"  
T.-J. Chuang, L. Chuck, R.J. Fields and E.R. Fuller, Jr.  
**Eng. Fract. Mech.** 18 [6], 1099 (1983).
13. "On the Energy-Release Rate Associated with Diffusional Crack Growth"  
T.-J. Chuang  
**International Journal of Fracture**, 23, 229-238 (1983).
14. "Crack Growth in SiAlON"  
R.J. Fields, E.R. Fuller, Jr., T.-J. Chuang, L. Chuck and K. Kobayashi  
*Fracture Mechanics of Ceramics*. Vol. 6, ed. R.C. Brady, A.G. Evans, D.P.H. Hasselman and F.F. Lange, pp. 463-473, Plenum Press, New York (1983).
15. "Characteristics of Creep Damage in Metals using Small Angle Neutron Scattering"  
E.R. Fuller, R.J. Fields, T.-J. Chuang and S. Singhal  
**J. of Research NBS**, 89, 35 (1984).
16. "Creep Cavitation and Crack Growth in Silicon Nitride"  
N.J. Tighe, S.M. Wiederhorn, T.-J. Chuang and C.L. McDaniel  
*Deformation of Ceramic Materials II*, Materials Science Research, Volume 18, pp. 587-604, eds. R. E. Tressler and R.C. Bradt, Plenum Press, New York (1984).
17. "Interaction of Line Singularities Near a Crack Tip and Their Application to Surface Stresses"  
R.M. Thomson, T.-J. Chuang and I.-H. Lin  
Trans. ASME PVP- Vol. 99, pp.187-194, (1986).
18. "Estimation of Power-law Creep Parameters from Bend Test Data"  
T.-J. Chuang  
**J. Mater. Sci.**, 21 [1], 165-175 (1986).
19. "The Role of Surface Stress in Fracture"  
R.M. Thomson, T.-J. Chuang and I.-H. Lin  
**Acta Metall.** 34 [6], 1133-43 (1986).
20. "On the Static Fatigue Limit at Elevated Temperature"  
T.-J. Chuang, R.E. Tressler and E.J. Minford  
**Mater. Sci. and Eng.** 82 [10], 187-196 (1986).

21. "Power-law Creep Characterization"  
 T.-J. Chuang and C.F. Chen, Software package SM-018-S86  
**Scripta Metall.** Vol. 20, pp. I-III (1986).
22. "Effect of Surface Tension on the Toughness of Glass"  
 T.-J. Chuang  
**J. Am. Ceram. Soc.** 70 [3], 160-164 (1987).
23. "Prediction of Tensile Behavior of Strain Softened Composites by Flexural Test Methods"  
 T.-J. Chuang and Y.W. Mai  
 Eds. G.C. Sih and S.E. Hsu, pp.647-657, VNU Science Press, Utrecht, The Netherlands, 1987.
24. "Strain Softening Behavior of Concrete and Fibre Cements in Flexural Bending"  
 T.-J. Chuang and Y. Mai  
 ACI Symposium on Fibre Concrete, Eds. G. Batson and S.P. Shah, SP105-5, pp. 85-100, (1987).
25. "Transient Behavior of Structural Ceramics under Flexural Creep"  
 T.-J. Chuang, S.M. Wiederhorn and C.F. Chen  
**Creep and Fracture of Eng. Mater. and Struct.** Ed. by B. Wilshire and R.W. Evans, Institute of Metals, London, England, pp. 957-973, 1987.
26. "High Temperature Mechanical Properties of Sialon Ceramics: Part II, Creep Characterization"  
 C.F. Chen and T.-J. Chuang  
*Proceedings Ceramic Engineering and Science*, Ed. D.C. Larsen, 8 [7-8], 796-804, (1987).
27. "Standard Test Development"  
 S.M. Wiederhorn, L. Chuck, T.-J. Chuang and K. Jakus  
 pp. 173-183 in *Proceedings of the 24th Automotive Technology Development Contractors Coordination Meeting P-197*, Dearborn, MI, 27-30 October 1986, Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096, April 1987.
28. "Creep and Reliability of Ceramic Materials at Elevated Temperatures"  
 S.M. Wiederhorn, T.-J. Chuang and D.F. Carroll  
*Int. Symp. Fine Ceramics*, Arita Japan, pp. 117-129 (1987).
29. "Damage-Enhanced Creep in a Siliconized Silicon Carbide: Mechanics of Deformation"  
 T.-J. Chuang and S.M. Wiederhorn  
**J. Am. Ceram. Soc.**, 71 [7], 595-601 (1988).

30. "Damage-Enhanced Creep in a Siliconized Silicon Carbide: Phenomenology"  
 S.M. Wiederhorn, D.E. Roberts, T.-J. Chuang and L. Chuck  
**J. Am. Ceram. Soc.**, 71 [7], 602-608 (1988).
31. "A Comparison of Creep Rupture Behavior in Tension and Bending"  
 D.F. Carroll, T.-J. Chuang and S.M. Wiederhorn  
**Ceramic Eng. and Sci. Proc.**, 9 [7-8] 635-642 (1988).
32. "Flexural Behavior of Strain-Softening Solids"  
 T.-J. Chuang and Y.-W. Mai  
**Int. J. Solids Structures** 25 [12], 1427-1443 (1989)
33. "Creep Rupture Behavior of a Metal Ceramic Particulate Composite"  
 T.-J. Chuang, D.F. Carroll and S.M. Wiederhorn  
*Advances in Fract. Res.*, Vol.4, pp.2965-2976, Pergamon Press, New York (1989).
34. "Diffusional Crack Growth in Alumina",  
 T.J. Chuang and N.J. Tighe  
*Proc. 3rd Int. Conf. Fundamentals Fracture*, pp.256-259 (1989)
35. "Improved Analysis for Flexural Creep with Application to SiAlON Ceramics,"  
 C.F. Chen and T.-J. Chuang  
**J. Am. Ceram. Soc.**, 73[8] 2366-73 (1990).
36. "An Application of a Simple Technique for Estimating Errors of Finite-Element Solutions Using a General-Purpose Code"  
 T.-J. Chuang, J. Tan and J.T. Fong  
 ASME PVP Vol.185, pp.105-115, Ed. K.H.Hsu (1990)
37. "A Test Method for Tensile Creep of Structural Ceramics using Flexural Beams,"  
 R.J. Krause and T.-J. Chuang  
 in *Ceramics Today-Tomorrow's Ceramics*, pp. 1865-74, Ed. P. Vincenzini, Elsevier Sci. Publishers, B.V., 1991.
38. "Steady-State Creep Behavior of Si/SiC C-Rings"  
 T.-J. Chuang , W.J. Liu and S. M. Wiederhorn  
**J. Am. Ceram. Soc.** 74, [10] 2531-37 (1991)
39. "Crack Growth Resistance of Strain-softening Materials under Flexural Loading"  
 T.-J. Chuang  
 ASCE 9th Structures Congress Proc.,pp. 466-469, Indianapolis, IN., April 29, 1991.
40. "Cavitation Damage during Flexural Creep of Sialon-Yag Ceramics"  
 C.-F. Chen, S.M. Wiederhorn and T.-J. Chuang  
**J. Am. Ceram. Soc.** 74 [7] 1658-62 (1991).

41. "Creep and Creep Fracture of Advanced Ceramics"  
 S.M. Wiederhorn, B.J. Hockey and T.-J. Chuang  
*Proc. NATO Toughening Mechanisms in Quasi-Brittle Materials*, Ed. S.P. Shah, pp. 555-576, Kluwer Academic Publishers, Dordrecht, the Netherlands (1991).
42. "An Extended Charles-Hillig Theory for Stress Corrosion Cracking of Glass"  
 T.-J. Chuang and E. R. Fuller  
**J. Am. Ceram. Soc.** 75, [3] 540-45 (1992).
43. "Analysis of Creep in a Si-SiC C-Ring by Finite Element Method"  
 T.-J. Chuang, Z.-D. Wang and D. Wu  
*ASME Trans. J. Eng. Mater. Tech.* 114 [3] 311-316 (1992).
44. "Asymmetric Tip Morphology of Creep Microcracks Growing along Bimaterial Interfaces"  
 T.-J. Chuang, J.-L. Chu and S. Lee  
**Acta Metall. Mater.** 40 [10] 2683-91 (1992).
45. "A Generic Model for Creep Rupture Lifetime Estimation on Fibrous Ceramic Composites"  
 T.-J. Chuang  
*Fracture Mechanics of Ceramics*, Vol.10, pp. 441-457, Plenum Press, New York, 1992.
46. "Diffusive Crack Growth at a Bimaterial Interface"  
 T.-J. Chuang, J.-L. Chu and S. Lee  
*Proc. 33rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Mechanics and Materials Conf.* Dallas, TX, April 13-15, 1992 Eds. G.L. Giles, O. Hal Burnside and W. Rogers, pp. 2964-2969 (1992).
47. "Diffusional Crack Growth in Dissimilar Media"  
 T.-J. Chuang, J.-L. Chu and S. Lee  
*Proc. 5th HITEMP Conference, Vol. III: Turbine Materials*, pp. 64-1) 64-16, Westlake, OH, Oct.27-28, 1992
48. "Diffusive Crack Growth at a Bimaterial Interface"  
 T.-J. Chuang, J.-L. Chu and S. Lee  
**ASME Trans. J. Appl. Mech.** Vol. 63, [9] 796-803 (1996)
49. "High Temperature Crack Growth in Dissimilar Media"  
 T.-J. Chuang, J.-L. Chu and S. Lee  
*Proc. 8th International Conference on Fracture*, Kiev, Ukraine, June 8-14, 1993.

50. "A Methodology to Predict Creep Life for Advanced Ceramics Using Continuum Damage Mechanics"  
T.-J. Chuang and S. F. Duffy  
in *Life Prediction Methodologies and Data for Ceramic Materials*, ASTM STP 1201, pp. 207-227, Eds. C.R. Brinkman and S.F. Duffy, 1994.
51. "On the Cavitation-induced Creep in Advanced Ceramics"  
T.-J. Chuang  
to be published in **J. Am. Ceram. Soc.**.
52. "Life Prediction on a Continuous Fiber Reinforced Ceramic Composite under Creep Conditions"  
T.-J. Chuang  
in ASME AD-Vol.36 *Fatigue and Fracture of Aerospace Structural Materials*, eds. A. Nagar and A.-Y. Kuo, pp. 73-84, 1993.
53. "A Life Prediction Model for Continuous Fiber Reinforced Ceramic Composites"  
T.-J. Chuang and S. F. Duffy  
Proc. 6th Annual HITEMP Review 1993--Vol. III: Turbine Materials-CMC's Fibers, NASA Publication 19117, pp. 77-1 -- 77-17, 1993.
54. "Modeling Fracture of Advanced Ceramic Materials"  
T.-J. Chuang, H. Cai and E. R. Fuller, Jr.  
in DoE Office of Industrial Technologies, Energy Efficiency and Renewable Energy, Advanced Industrial Materials Program, Annual Progress Report for FY 1993, ORNL/TM-12763, Coordinated by P. Angelini, pp. 73-87, June 1994.
55. "Effect of Surface Energy Anisotropy on the Creep Cavity Shapes Controlled by Surface Diffusion"  
T.-J. Chuang and Zhengdong Wang  
to be submitted to *Acta Metall et. Mater.*
56. "A Life Prediction Model for Continuous Fiber Ceramic Composites under Creep Conditions"  
T.-J. Chuang  
Proceedings of 5th Int. Symposium on Ceramic Materails and Components for Engines, Shanghai, China, May 29 - June 1, 1994, pp. 162-174, Eds. D.S.Yan, X.R.Fu and S.X.Shi, World Scientific Publishing Co.Pte.Ltd., Singapore.
57. "Design Diagrams for Heavy Metal Fluoride Glass Windows"  
D.C. Cranmer, T.-J. Chuang, S.W. Freiman and A.S. Raynes  
Proc. of the Topical meeting on High Power Laser Optical Components, Part 1, Unclassified Papers, J.L. Stanford, Ed., NWC TP 7080, pp. 98-114, December, 1990.

58. "Crack Development in Pulsed Laser-Deposited PZT Thin Films,"  
 H.M. Lee, T.-J. Chuang, C.K. Chiang, L.P. Cook and P. K. Schenck  
 MRS Proceedings, March 1993.
59. "Notch Sensitivity on the creep response of a siliconized silicon carbide,"  
 D. Wu, Z. Wang, T.-J. Chuang and R. F. Krause  
 to be submitted to ASME J. Eng. Mater. Tech.
60. "Optimum Design of a Ceramic Tensile Creep Specimen with Finite Element Technique,"  
 Z. Wang, C. K. Chiang and T.-J. Chuang  
**Journal of Research of NIST**, 102[1-2] pp.15-28 (1997)
61. "Analysis of Single Fiber Fragmentation Test"  
 S. Lee, T. Nguyen, J. Chin and T.-J. Chuang  
**J. Mater. Sci.** 33 [11] pp. 5221-5228 (1998)
62. "A non-osmotic blister growth model in coating systems"  
 T.-J. Chuang and T. Nguyen  
*in Damage and Failure of Interfaces*, ed. H. P. Rossmanith, pp. 203-209, A.A. Balkema Publishing, Rotterdam, Netherland, 1997
63. "A Fatigue Model for Fiber-reinforced Polymeric Composites"  
 H. Tang, T. Nguyen, T.-J. Chuang, J. Chin and J. Lesko  
**ASCE Trans. J. Mater. in Civil Engr.** 12, [2] pp. 97-104 (2000)
64. "Residual Stresses induced by Oxygen Diffusion in a Ceramic Membrane Tube"  
 T.-J. Chuang, E. R. Fuller, Jr. and A. Sane  
 to be submitted to **J. Am. Ceram. Soc.**
65. "Fracture of Alumina with Controlled Pores"  
 A. Zimmermann, M. Hoffman, B. D. Filnn, R. K. Bordia, T.-J. Chuang, E.R. Fuller, Jr.. and J. Rodel  
**J. Am. Ceram. Soc.** 81 [9] 2449-57 (1998).
66. "Finite Element Simulation of Straight Plunge Grinding for Advanced Ceramics"  
 T.-J. Chuang, H. Tang and S. Jahanmir  
**Journal of European Ceramic Society**, Vol. 23 [10] 1723-1733 (2003).
67. "On the Theory of Interaction Forces during Plunge Grinding"  
 T.-J. Chuang and S. Jahanmir  
 to be published

68. "On the Ductile/ Brittle Transition in Grinding Operations"  
 T.-J. Chuang and S. Jahanmir  
 to be published
69. "Fatigue life Predictions of PZT Using Continuum Damage Mechanics and Finite Element Methods"  
 T.-J. Chuang, Z. Wang, M. Hill and G. White  
 in *Fracture Mechanics of Ceramics*, Vol. 12, pp.135-148, Eds. R. C. Bradt, D.P.H. Hasselman, D. Munz, M. Sakai and V. Ya. Shevchenko, Plenum Press, New York, 1996.
70. "Some remarks on *Improved Analysis for Flexural Creep with Application to Sialon Ceramics*"  
 T.-J. Chuang  
**J. Am. Ceram. Soc.** 81 [10] 2749-50 (1998).
71. "A Micro-mechanic Model for Cathodic Blister Growth in Painted Steel@"  
 T.-J. Chuang, T. Nguyen and S. Lee  
**J. Coatings Tech.** 65 [8] 455-466 (1999).
72. "Elastic Flexure of Bilayered Beams Subject to Strain Differentials"  
 T.-J. Chuang and S. Lee  
**J. Mater. Res.** 15 [12] 2780-2788 (2000).
73. "Grain-Boundary Crack Growth in Interconnects with an Electric Current"  
 C.-Y. Liu, S. Lee and T.-J. Chuang  
**Mater. Sci and Eng. B** 86 101-108 (2001)
74. "Analysis of Residual Stress State in Thermal Barrier Coatings"  
 T.-J. Chuang and E. R. Fuller,Jr.  
*Fracture Mechanics of Ceramics*, Vol. 13, pp. 169-178, Eds. R. C. Bradt, D. Munz, M. Sakai V. Ya. Shevchenko and K. White, Kluwer Academic/Plenum Publishers, New York, 2002.
75. "Analysis of Residual Stress State in Thermal Barrier Coatings"  
 T.-J. Chuang and E. R. Fuller,Jr.  
 Proc. Of ANSYS User=s Group Conference, College Park, MD, 1999
76. "Finite Element Modeling of Hybride Polymer Composite Beams"  
 H. C. Tang, T.-J. Chuang, T. Nguyen, J. Chin and H. F. Wu  
 Proc. Of ANSYS User=s Group Conference, College Park, MD, 1999

77. "Transient Creep Cavity Growth in Structural Ceramics"  
 A. F. Bower and T.-J. Chuang  
 Proc. Of CICC-1, pp. 104-109, eds. D.S. Yan and Z.D. Guan, Tsinghua University Press, Beijing, China, 2000.
78. "Numerical Simulations of Subcritical Crack Growth by Stress Corrosion in an Elastic Solid"  
 Z. Tang, A. F. Bower and T.-J. Chuang  
 in *Multi-Scale Deformation and Fracture in Materials and Structures*, Eds. T.-J. Chuang and J. W. Rudnicki, pp. 331-348, Kluwer Academic Publishers, Dordrecht, The Netherlands, 2000.
79. "A Model for Predicting the Fatigue Life of Fiber-Reinforced Polymeric Composites in Offshore Applications"  
 T. Nguyen, H. Tang, T.-J. Chuang, J. Chin, F. Wu and J. Lesko  
 NIST Technical Note No. 1434, September, 2000.
80. "Temperature Effects on Fatigue of Polymeric Composites"  
 J. Lesko, H. F. Wu, T.-J. Chuang, J. Chin, T. Nguyen and H. Tang  
 Composite Engineering (2000).
81. "Steady-state Crack Growth along a Grain Boundary in Interconnects with a High Electric Field Intensity"  
 W. L. Wang, S. Lee and T.-J. Chuang  
**Phil. Mag. A** Vol. 82, No. 5, pp. 955-970 (2002)
82. "Constrained Sintering of Glass, Glass-ceramic and Ceramic Coatings on Metal Substrates"  
 J. N. Calata, G.-Q. Lu and T.-J. Chuang  
**Surface and Interface Analysis**, Vol. 31, pp. 673-681 (2001)
83. "An Alternative Method of Solving Multilayer Bending Problems"  
 C. H. Hseuh, S. Lee and T.-J. Chuang  
**ASME Trans. Journal of Applied Mechanics**, Vol. 70, pp. 151-154 (2003)
84. "On the Integral Equation associated with Diffusive Crack Growth Theory"  
 Y. Antipov, T.-J. Chuang and H. Gao  
 To appear in **Quarterly Journal of Applied Math. And Mechanics**
85. "Numerical Simulations of the Growth and Deflection of a Stress-Corrosion Crack on the Interface between Two Brittle Solid"  
 Z. Tang, A. F. Bower and T.-J. Chuang  
 Submitted to **International Journal of fracture**

86. "Dynamic Analysis of Nanoasperity Impacts at Head Disk Interface"  
T.-J. Chuang and S. M. Hsu  
Submitted to **ASME Trans. Journal of Tribology**
87. "Tribological Performance due to nanoasperity Impacts at Head-Disk Interface"  
T.-J. Chuang and S. M. Hsu  
Submitted to **IEEE Trans. Journal of Magnetics**

#### **Books Authored or Edited**

1. "Multiscale Fracture and Deformation in Materials and StructuresB The James R. Rice 60<sup>th</sup> Anniversary Volume"  
T.-J. Chuang and J. W. Rudnicki  
Kluwer Academic Publishers, Dordrecht, The Netherlands (2000).