Stanford



Drew Nelson

Professor of Mechanical Engineering, Emeritus

Bio

BIO

Research involves development of improved methods for predicting the fatigue life of engineering materials, incuding the effects of manufacturing processes, and investigation of new approaches in the field of experimental mechanics, such as determination of residual stresses using optical methods.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Mechanical Engineering
- Member, Bio-X
- Member, Cardiovascular Institute

HONORS AND AWARDS

- Hetenyi award, Society for Experimental Mechanics (1994)
- Spergel Memorial Award, 32nd IWC Symposium (1984)

PROFESSIONAL EDUCATION

- PhD, Stanford , Mechanical Engineering (1978)

Publications

PUBLICATIONS

- **Experimental Methods for Determining Residual Stresses and Strains in Various Biological Structures.** *Exp Mech*
  Nelson, D.
  2013
- **Review of Methods for Determining Residual Stresses in Biological Materials.** *In: Exp Appl Mech, Springer*
  Nelson, D.
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- **Optical Methods** *Practical Residual Stress Measurement Methods*
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- **Method for efficient computation of stress intensity factors from weight functions by singular point elimination** *ENGINEERING FRACTURE MECHANICS*
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- **Hole-Within-a-Hole Method for Determining Residual Stresses** *JOURNAL OF ENGINEERING MATERIALS AND TECHNOLOGY-TRANSACTIONS OF THE ASME*
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- **Residual Stress Determination by Hole Drilling Combined with Optical Methods** *EXPERIMENTAL MECHANICS*
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- **Validated High Speed Pull and Shear Test Methodologies to Evaluate Pb-Free BGA Mechanical Strength.** *In: 43d International Symposium on Microelectronics, International Microelectronics & Packaging Society*
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- **A multi-parameter Bragg grating fiber optic sensor and triaxial strain measurement** *SMART MATERIALS AND STRUCTURES*
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- **Techniques for predicting the lifetimes of wave-swept macroalgae: a primer on fracture mechanics and crack growth** *JOURNAL OF EXPERIMENTAL BIOLOGY*
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- **Residual stress determination using hole drilling and 3D image correlation** *EXPERIMENTAL MECHANICS*
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- **Residual Stress Determination Using Digital Image Correlation** *Exp Mech*
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- **Stable crack growth and instability prediction in thin plates and cylinders** *Workshop on Fundamentals and Applications of the Crack-Tip-Opening-Angle (CTOA)*
  Hampton, R. W., Nelson, D.
  PERGAMON-ELSEVIER SCIENCE LTD.2003: 469–91
- **A study of small crack growth in aluminum alloy 7075-T6** *INTERNATIONAL JOURNAL OF FATIGUE*
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- **Small crack growth in combined bending-torsion fatigue of A533B steel** *FATIGUE & FRACTURE OF ENGINEERING MATERIALS & STRUCTURES*
  Park, J., Nelson, D., Rostami, A.
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- **Evaluation of an energy-based approach and a critical plane approach for predicting constant amplitude multiaxial fatigue life (vol 22, pg 23, 2000)** *INTERNATIONAL JOURNAL OF FATIGUE*
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- **In-Phase and Out-of-Phase Combined Bending-Torsion Fatigue of a Notched Specimen** *In: Multiaxial Fatigue and Deformation: Testing and Prediction, ASTM STP*
  Park, J., Nelson, D.
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- **A fiber optic sensor for transverse strain measurement** *EXPERIMENTAL MECHANICS*
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- **Residual Stress Determination by a Holographic-Hole Drilling Technique** *In: Multiaxial Fatigue of an Induction Hardened Shaft, SAE AE28*
  Nelson, D., Makino, A., Foss, S.
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- **An embedded fiber optic sensor method for determining residual stresses in fiber-reinforced composite materials** *JOURNAL OF INTELLIGENT MATERIAL SYSTEMS AND STRUCTURES*
  Lawrence, C. M., Nelson, D. V., Bennett, T. E., Spingarn, J. R.
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- **Biaxial fatigue of A533B pressure vessel steel** *JOURNAL OF PRESSURE VESSEL TECHNOLOGY-TRANSACTIONS OF THE ASME*
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