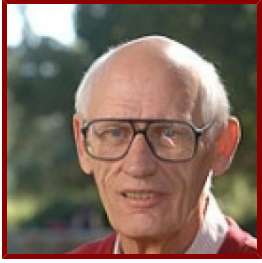


Stanford



Richard Christensen

Professor (Research) of Aeronautics and Astronautics and of Mechanical Engineering, Emeritus

CONTACT INFORMATION

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Bio

BIO

Professor Christensen's research is concerned with the mechanics of materials. The behavior of polymers and polymeric fiber composites are areas of specialization. Of particular interest is the field of micro-mechanics that focuses on materials' functionality at intermediate-length scales between atomic and the usual macro scale. Applicable techniques involve the methods of homogenization for all types of composite materials. The intended outcomes of his research are useful means of characterizing the yielding, damage accumulation, and failure behavior of modern materials. A related website has been developed to provide critical evaluations for the mathematical failure criteria used with the various classes of engineering materials. Most of these materials types are employed in aerospace structures and products.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Aeronautics and Astronautics

HONORS AND AWARDS

- Nadai Medal, American Society of Mechanical Engineers (2006)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- member, National Academy of Engineering (2013 - present)

PROFESSIONAL EDUCATION

- DEng, Yale (1961)

LINKS

- <http://www.FailureCriteria.com>: <http://www.FailureCriteria.com>

Publications

PUBLICATIONS

- **An evaluation of the failure modes transition and the Christensen ductile/brittle failure theory using molecular dynamics** *PROCEEDINGS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
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- **Why progress on the failure of fiber composite materials has been so retarded** *JOURNAL OF REINFORCED PLASTICS AND COMPOSITES*
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- **Failure Theory/Failure Criteria for Fiber Composite Laminates** *JOURNAL OF APPLIED MECHANICS-TRANSACTIONS OF THE ASME*
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- **Perspective on Materials Failure Theory and Applications** *JOURNAL OF APPLIED MECHANICS-TRANSACTIONS OF THE ASME*
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- **Evaluation of Ductile/Brittle Failure Theory and Derivation of the Ductile/Brittle Transition Temperature** *JOURNAL OF APPLIED MECHANICS-TRANSACTIONS OF THE ASME*
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- **Failure Mechanics-Part I: The Coordination Between Elasticity Theory and Failure Theory for all Isotropic Materials** *JOURNAL OF APPLIED MECHANICS-TRANSACTIONS OF THE ASME*
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2014; 81 (8)
- **2013 Timoshenko Medal Award Paper-Completion and Closure on Failure Criteria for Unidirectional Fiber Composite Materials** *JOURNAL OF APPLIED MECHANICS-TRANSACTIONS OF THE ASME*
Christensen, R. M.
2014; 81 (1)

- **The World Wide Failure Exercise II Examination of Results** *JOURNAL OF REINFORCED PLASTICS AND COMPOSITES*
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2013; 32 (21): 1668-1672
- **A physically based cumulative damage formalism** *INTERNATIONAL JOURNAL OF FATIGUE*
Christensen, R. M.
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- **Observations on the definition of yield stress** *ACTA MECHANICA*
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- **A comparison of open cell and closed cell properties for low-density materials** *JOURNAL OF MECHANICS OF MATERIALS AND STRUCTURES*
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- **A comprehensive theory of yielding and failure for isotropic materials** *JOURNAL OF ENGINEERING MATERIALS AND TECHNOLOGY-TRANSACTIONS OF THE ASME*
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- **A comparative evaluation of three isotropic, two property failure theories** *Symposium on Current Trends in Mechanics*
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- **YIELD FUNCTIONS AND PLASTIC POTENTIALS FOR BCC METALS AND POSSIBLY OTHER MATERIALS** *JOURNAL OF MECHANICS OF MATERIALS AND STRUCTURES*
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- **Stress intensity controlled kinetic crack growth and stress history dependent life prediction with statistical variability** *INTERNATIONAL JOURNAL OF FRACTURE*
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- **Exploration of ductile, brittle failure characteristics through a two-parameter yield/failure criterion** *MATERIALS SCIENCE AND ENGINEERING A-STRUCTURAL MATERIALS PROPERTIES MICROSTRUCTURE AND PROCESSING*
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- **The three-dimensional analog of the classical two-dimensional truss system** *JOURNAL OF APPLIED MECHANICS-TRANSACTIONS OF THE ASME*
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- **A two-property yield, failure (fracture) criterion for homogeneous, isotropic materials** *JOURNAL OF ENGINEERING MATERIALS AND TECHNOLOGY-TRANSACTIONS OF THE ASME*
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