

Editorial

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This new journal – The International Journal of Structural Changes in Solids – *Mechanics and Applications* (IJSCS) is a wonderful prospective partnership between an elite editorial board (that includes an advisory board of renowned names), the authors, the referees and the readers.

The aim of this journal is to bring together researchers and engineers whose interest lie in the mechanics and applications of micro and macro structural changes that occur (or can be induced) in a wide range of solids. Such changes would relate to phenomena in metals, ceramics, polymers and biomaterials such as inelasticity, solid to solid phase transformations, buckling and similar instabilities that can be usefully exploited, growth, properties of multiconstituent materials, ageing, damage and time dependent effects.

The journal is currently a peer reviewed OPEN ACCESS journal published online quarterly.

We are proud to bring out the inaugural issue of the journal in honor of Professor Alan Wineman, Arthur F. Thurnau Professor of Mechanical Engineering, Professor- Macromolecular Science and Engineering, Professor- Biomedical engineering, University of Michigan, who is a member of our Editorial Advisory Board. We take this opportunity to honor his years of commitment to the growth of mechanics on the occasion of his 75th birthday. In a career spanning over 4 decades, he has worked extensively in wide range of topics from the general development of symmetry groups for history dependent materials, nonlinear viscoelastic solids, electrorheological fluids, diffusion and swelling of polymers, multinetwork theories to model the degradation of polymers, internal clock models etc. A brief bio-data of Prof. Wineman is given separately.

We are very sure that the issues will go a long way towards making this journal a great place for students and researchers to begin their search. There are three types of publications possible in the journal:

- *Standard research article of relevance to the scope of the journal*
- *Review/Survey articles*
- *Notes/Short communications (3-5 pages or less)/work in progress etc. that will be processed and published very rapidly (say within 15 days to a month of submission)*

We are planning to include at least one review or survey type article in every issue. There are also special issues that will be brought out from time to time on current topics of interest.

The range of subjects include (but are not limited to) materials processing (of metals and polymers) to tailor the microstructure of a material for desirable characteristics, Modeling and development of components and devices (such as shape memory alloys and polymers) that utilize field induced structural changes to provide a "smart" response, especially focused towards practical guidance for scientists and engineers working in this area.

The following are some of the topics of research and development that are covered by this journal – theoretical, applied, experimental, developmental or computational:

- *Inelastic deformations in solids – plasticity and solid-solid phase transformations.*
- *Mechanics and applications of Multifunctional /Smart /active materials*
- *Mechanics of Materials for Structural health monitoring*
- *Materials for adaptive, self monitoring and healing, biomimetic and nastic structures*
- *Material instability – modeling and applications*
- *Modeling and development of components and devices using materials with microstructural evolution*
- *Tuning of material properties via processing for structural changes*
- *Structural growth in materials*
- *Time dependent effects in materials – ageing, damage, etc.*
- *Mechanics of materials such as polymers, ceramics, amorphous /glassy materials, composite materials, biological materials, micro/nano structured materials, porous, and optical materials.*

As readers of this journal, we solicit your suggestions and ideas to make this effort of running an international journal even better.

Arun R. Srinivasa and Srivakumar M. Srinivasan

Editors-in-chief

IJSCS

A short biographical sketch of **Alan S. Wineman**



Alan S. Wineman, Professor of Mechanical Engineering at the University of Michigan, received a B.S. E. in Engineering Mechanics and Mathematics from the University of Michigan in 1959. He received the Ph. D. in Applied Mathematics from Brown University in 1964. Prof. Wineman joined the Department of Engineering Mechanics at the University of Michigan in 1964 as an Assistant Professor. He was promoted to Associate Professor in 1969 and Professor in 1975. He is now Professor in the Department of Mechanical Engineering, Professor of Macromolecular Science and Engineering and Arthur F. Thurnau Professor, the latter in recognition of his excellence in teaching. His research interests include mechanics of polymeric solid and fluid materials; interaction of deformation with diffusion, electric or magnetic fields in polymeric materials; mechanics of polymers undergoing microstructural change due to high temperature, curing, diffusion of fluids and large deformation; growth and mechanical property evolution in biomaterials

Professor Wineman's research has been in the development and application of mathematical models for the mechanical response of polymeric solid and fluid materials. He has published over 140 papers in roughly three categories, (1) nonlinear elastic and viscoelastic response, (2) the interaction of this response with diffusion, electric and magnetic fields, and (3) scission and healing of the macromolecular structure resulting from large deformations or high temperatures and the implications of these changes on mechanical response.

His recent research is in the development of mathematical models that account for changes in the performance of rubber due to scission and healing of its macromolecular structure. His work combines the concepts and methods of continuum mechanics with polymer science, and involves both mathematical modeling and experimental work. His studies explore the implications for component performance when multiple molecular networks develop as a result of molecular scission and healing. Specifically, specific examples have been developed that show how the interaction of this process with transient heat conduction results in evolving non-homogeneous properties, anisotropy, permanent set, residual stresses and modified susceptibility to structural instabilities and other failure mechanisms.

Prof. Wineman was a Guest Scientist in the Polymers Division of NIST in August 1994, was a Visiting Scientist at the Institute for Mechanics and Materials in 1996. He is an Associate Editor of Mathematics and Mechanics of Solids, and a Fellow of the ASME, the American Academy of Mechanics and the Society of Engineering Science. He is co-author with K. R. Rajagopal of the *Mechanical Response of Polymers: An Introduction*, published by Cambridge University Press. He has received the Distinguished Achievement Award from the University of Michigan and the Prager Medal of the Society of Engineering Science.