Special Issue

Modelling of Viscoelastic Materials and Mechanical Behavior

Message from the Guest Editor

This Special Issue is devoted to recent advances in the modeling of viscoelastic materials, possibly interacting with electromagnetic fields and temperature fields, along with mathematical properties of the solution to associated evolution problems. The following are some topics to be investigated in this issue: The modeling of viscoelastic materials is developed within the domain of materials with fading memory. The model is based on the classical linear functional for the stress-strain constitutive relation; to account for aging properties the kernel is allowed to depend explicitly on time. The thermodynamic analysis yields a set of properties characterizing the functional for both aging and non-aging materials. Likewise, a rate-type (Maxwell) model is shown to account for hysteresis effects in viscoelasticity. Interaction of deformation with the temperature field is investigated for a nonlinear viscoelastic beam with different conditions at the boundary; existence and uniqueness of the solution are proved along with an exponential decay property. More involved models of viscoelastic materials are considered by accounting for the effects of magnetic or electric fields.

Guest Editor

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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