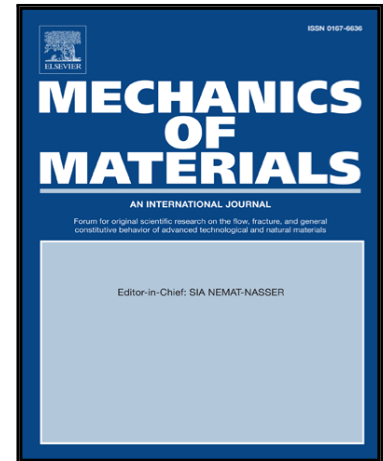


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A finite-deformation-based constitutive model for high-temperature shape-memory alloys

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Highlights

- A thermo-mechanically-coupled, finite-deformation, isotropic-plasticity-based constitutive model to describe the austenite-martensite phase transformations, viscoplasticity and transformation-induced plasticity in high-temperature shape-memory alloys has been developed in a thermodynamically-consistent manner.
- The constitutive model has been implemented into the commercially-available Abaqus/Explicit (2016) finite-element program through the user-material (VUMAT) subroutine interface.
- The finite-deformation-version of the constitutive model is able to predict the effect of geometric stiffening effects unlike small-strain-based models for structural applications which exhibit large deformations.

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