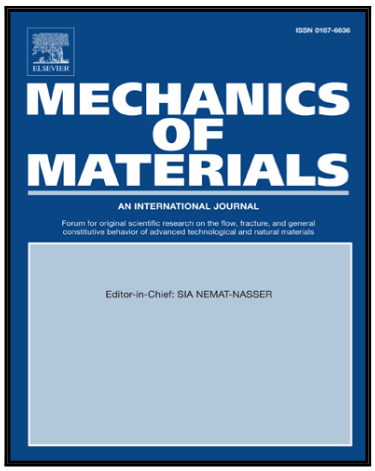

Mechanical modeling of coupled plasticity and phase transformation effects in a martensitic high strength bearing steel

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Highlihgts

- Both stress and strain induced phase change are taken into account in the definition of constitutive behavior of high strength steels.
- The phase transformation enhances and dominates the strength differential effect over plasticity effects.
- Strength differential effect simulated successfully by employing the phase transformation kinetics together with a pressure sensitive surface for plastic yielding.
- The nonlinearity of elastic strains are also taken into account in the material model.