

Rajagopal, K. R.; Wineman, A. S.

A constitutive equation for nonlinear solids which undergo deformation induced microstructural changes. (English) [Zbl 0765.73005](#)

Int. J. Plast. 8, No. 4, 385-395 (1992).

We consider the possibility that, as the material is deformed, an additional micromechanism might come into play and have a role in determining the Cauchy stress. We show that “inelastic” behavior of some materials can be explained within the context of such a theory. To illustrate our ideas, we use the ideas of scission and reforming of networks within the context of polymeric materials. The theory is of course much more general and can be used to describe the mechanics of materials in which microstructural changes are induced due to deformations.

MSC:

- [74A20](#) Theory of constitutive functions in solid mechanics
- [74B20](#) Nonlinear elasticity
- [74A60](#) Micromechanical theories
- [74M25](#) Micromechanics of solids
- [74C99](#) Plastic materials, materials of stress-rate and internal-variable type

Cited in **2** Reviews
Cited in **43** Documents

Keywords:

[additional micromechanism](#); [Cauchy stress](#); [polymeric materials](#)

Full Text: [DOI](#)