

Huang, Z. P.; Wang, J.

A theory of hyperelasticity of multi-phase media with surface/interface energy effect. (English) [Zbl 1121.74007](#)
Acta Mech. 182, No. 3-4, 195-210 (2006).

The authors elaborate on a rather general theory of hyperelasticity of multi-phase media with a surface/interface energy effect. Their efforts are concentrated on the construction of a variational formulation of equilibrium equations. The price to pay for this project is the introduction of a fictitious stress-free configuration. The authors motivate this new concept and the related new ideas. By standard stationary techniques applied to the proposed functional, the authors deduce both equilibrium equations and certain (generalized) Young-Laplace equations. Some examples are given in details.

Reviewer: [Franco Cardin \(Padova\)](#)

MSC:

[74B20](#) Nonlinear elasticity
[74A50](#) Structured surfaces and interfaces, coexistent phases

Cited in **1** Review
Cited in **42** Documents

Keywords:

variational formulation; equilibrium equations; generalized Young-Laplace equations

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References:

- [1] Cuenot, S., Frétiqny, C., Demoustier-Champagne, S., Nysten, B.: Surface tension effect on the mechanical properties of nanomaterials measured by atomic force microscopy. *Phys. Rev. B* 69, 165410-1-5 (2004).

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