



Heterogeneous Media in Finite Elasticity

*Intensive Ph.D. Course
Organized by the Solid and Structural Mechanics Group*

- Lecturers:** Prof. **Massimiliano Gei** (Univ. of Trento),
Prof. **Gal deBotton** (Ben-Gurion Univ., Israel; visiting prof., Univ. of Trento).
- Where:** Room H1, Dept. of Civil, Environmental and Mechanical Engineering (DICAM),
via Mesiano 77, 38123 Trento
- When:** Wed. **February 12**, 2014, h. 14.30-18.30,
Thur. **February 13**, 2014, h. 9-13; 14.30-18.30,
Fri. **February 14**, 2014, h. 9-13.
- Syllabus:** **I part: Introduction to large-strain elasticity** (M. Gei), 8 hours.
Introduction; Kinematics; Balance principles (mass, momentum, energy) and stress;
Constitutive relations; Boundary value problems; Hyperelasticity.
- II part: Advanced soft composite materials** (G. deBotton), 8 hours.
Anisotropy and heterogeneity; Micro and Macro variables; Effective properties;
Exact solutions; Estimates; Bounds.
- References:** D. Bigoni. Nonlinear Solid Mechanics. Cambridge University Press, 2012.
M.A. Gurtin. An Introduction to Continuum Mechanics. Academic Press, 1981.
G.A. Holzapfel. Nonlinear Solid Mechanics. John Wiley & Sons, 2000.
J.D. Humphrey and S.L. DeLange. An Introduction to Biomechanics: Solids and
Fluids, Analysis and Design. Springer Science Business Media, Inc., 2004.
R.W. Ogden. Non-Linear Elastic Deformations. Dover Publications, 1997.
L.A. Taber. Nonlinear theory of elasticity. World Scientific Publ. Co., 2004.
- Application:** There is no fee. Those who are interested and are not enrolled in the Doctoral School
in Civil, Environmental and Mechanical Engineering of the University of Trento are
kindly requested to write an email to
irena.jatro@unitn.it (cc: massimiliano.gei@unitn.it).
- Contacts:** Irena Jatro, tel: 0461 281927, email: irena.jatro@ing.unitn.it.
Massimiliano Gei, tel: 0461 282523, email: massimiliano.gei@unitn.it.

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