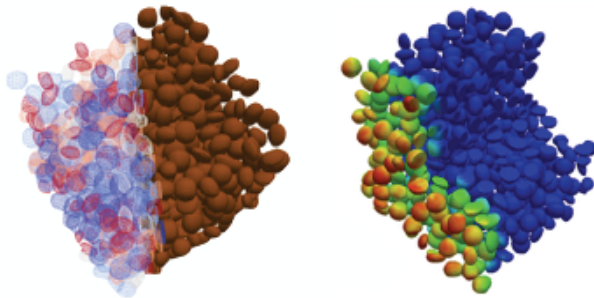


Università degli Studi di Brescia
PhD Course 2015

Mechanics and multi-physics of materials

Prof. A. Salvadori

Multiscale Mechanics and
Multiphysics of Materials Lab
DICATAM – UniBS



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The course focuses on advanced and consistent modeling of the mechanics of materials during multi-physics processes. Materials behavior and mechanical failure challenge major scientific applications and their industrial deployment. Swelling and fracturing in energy storage materials and embrittlement of metals due to diffusion of species will be considered in the course.

Content:

- Fundamental assumptions
- Balance equations, principle of virtual power
- Thermodynamics of materials
- Constitutive assumptions
- Governing equations
- Weak forms, computational algorithms
- Applications

Lectures schedule:

- 18/06 ore 10:00 - 12:00, 15:00 - 17:00
- 19/06 ore 10:00 - 12:00, 15:00 - 17:00
- 29/06 ore 10:00 - 12:00
- 5 further lectures will be offered in July.

Essential bibliography:

- Gurtin, Fried, Anand, *The Mechanics and Thermodynamics of Continua*, Cambridge University Press
- Tadmor, Miller, Elliott, *Continuum Mechanics and Thermodynamics*, Cambridge University Press
- De Groot, Mazur, *Non equilibrium thermodynamics*, Dover