



Maxime TEIL

Thèse, 2016 – 2019

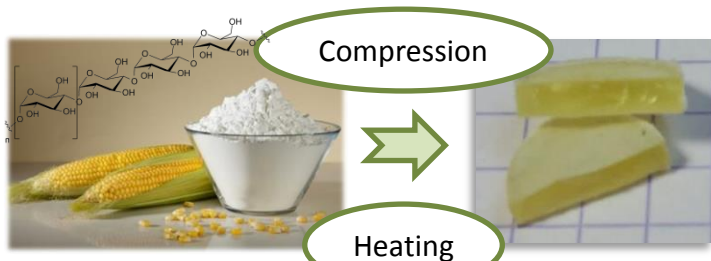
3SR Lab

(R. Peyroux, D. Imbault, B. Harthong)

Simulation numérique par méthodes discrètes de la mise en forme de poudres bio-sourcées à base d'amidon

Numerical simulation of starch based powder processing by discrete methods

Context



Starch processing – from the powder to the polymeric shape

Starch is a bio-based material which can be extracted from numerous elements of the plant biomass. It gives fine powders of semi-crystalline grains showing interesting mechanical properties.

Objectives

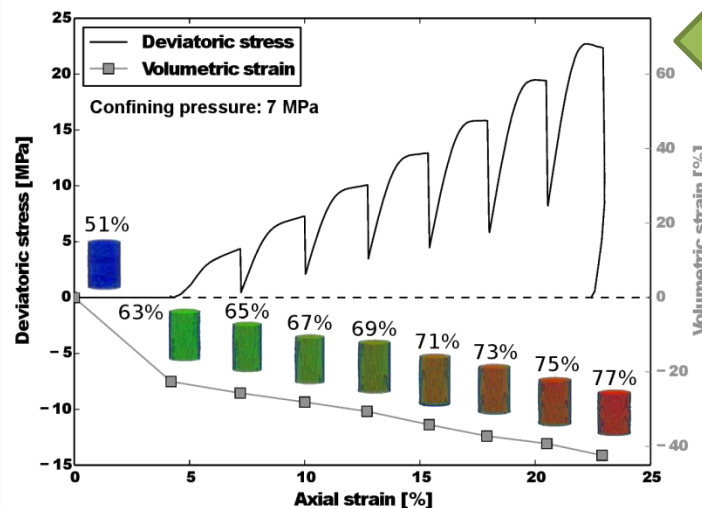
Use **experimental triaxial compression tests** and **multi-particle finite element** codes to:

- Well understand the mechanical behavior of the grains under compression
- Understand the processing parameters

Method

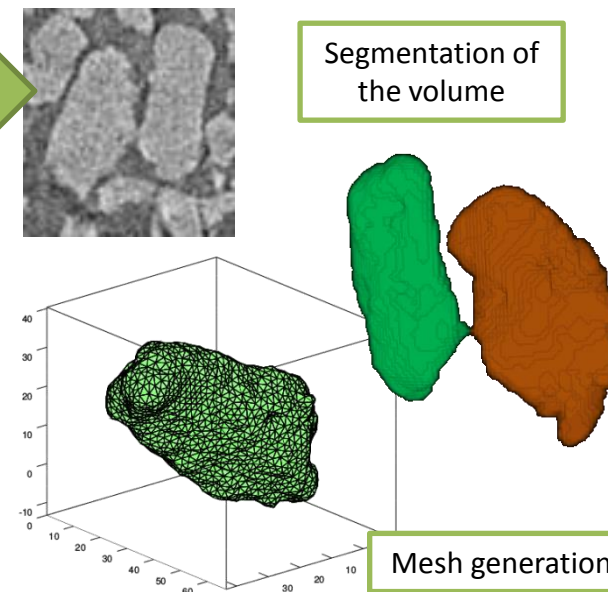
First year results

Triaxial compression tests



In situ

X-ray tomography and image processing

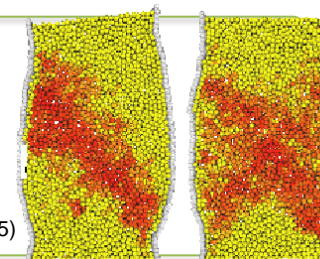


Perspectives

Numerical simulation

- **Multiparticle finite element** codes running in Abaqus
- **Viscoelastic-plastic** constitutive law
- **Coulomb friction** model

S. Fazekas, J. Torok, J. Kertesz, D. E. Wolf (2005)





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Title size (calibri, 14 pt)

Normal text size (calibri, 12 pt)

Legend of figures (calibri, 10 pt)

Method

