



**Cavitation on a thermoplastic matrix for a UD composite  
subject to transverse compression (Brazilian test)**

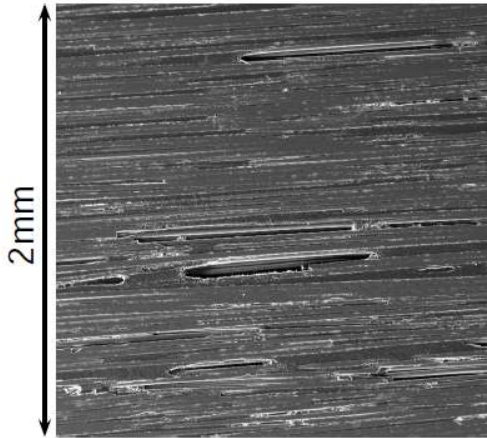
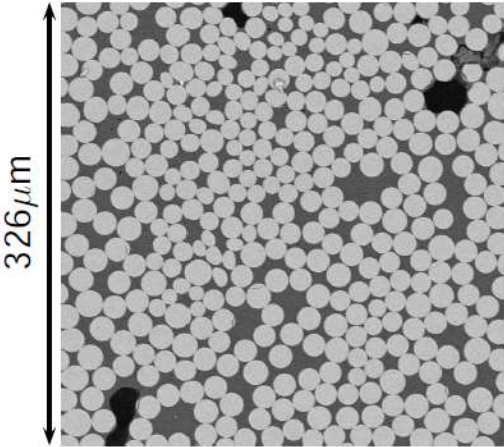
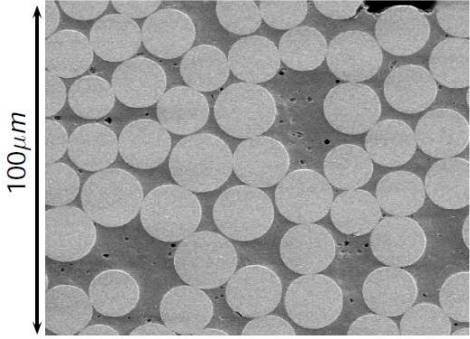
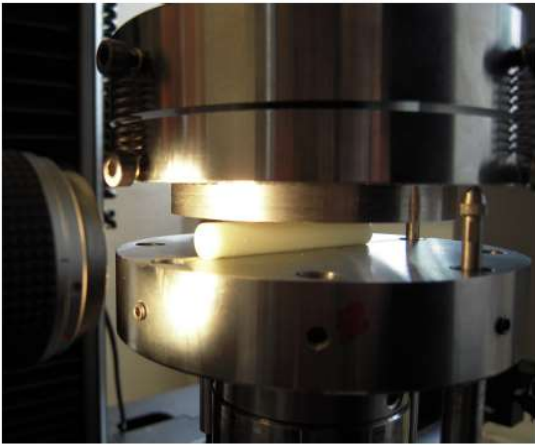
**L. Laiarinandrasana**

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Mines Paris, PSL University  
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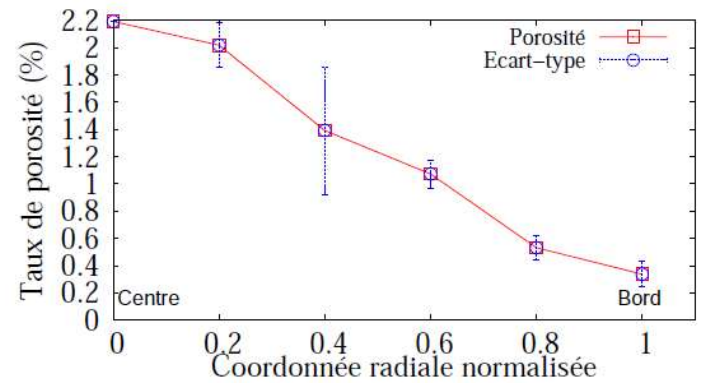
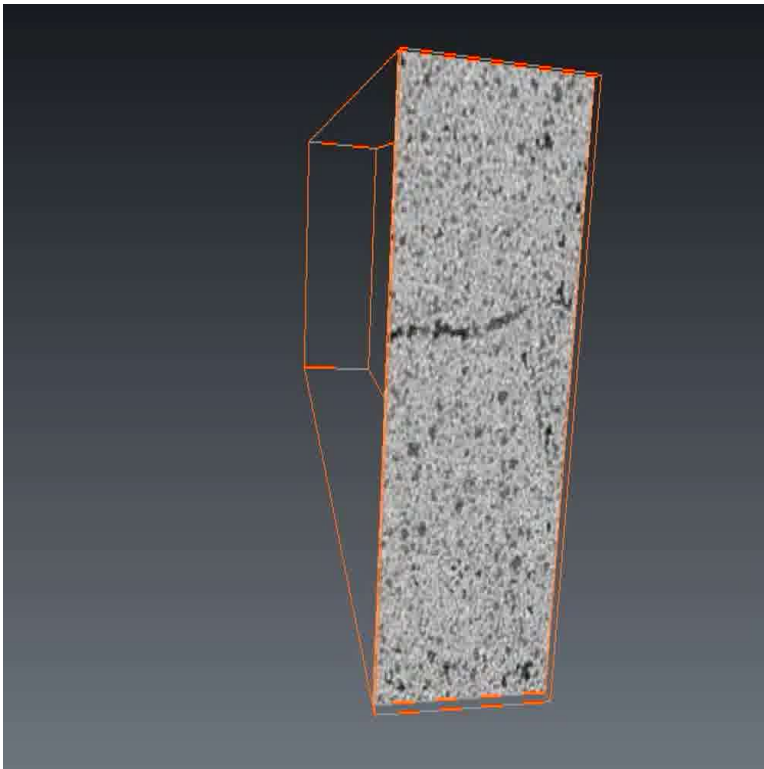


# PA6GF70 pultruded composite



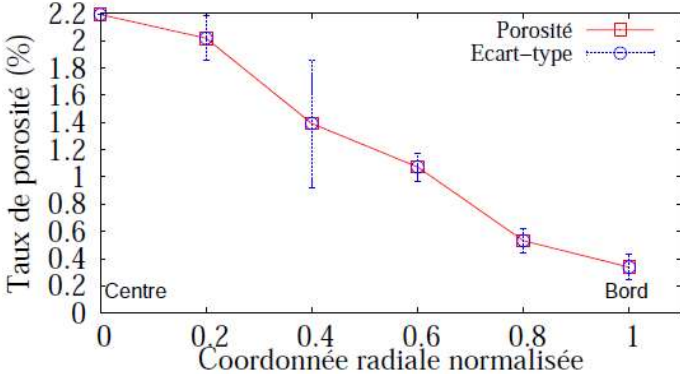
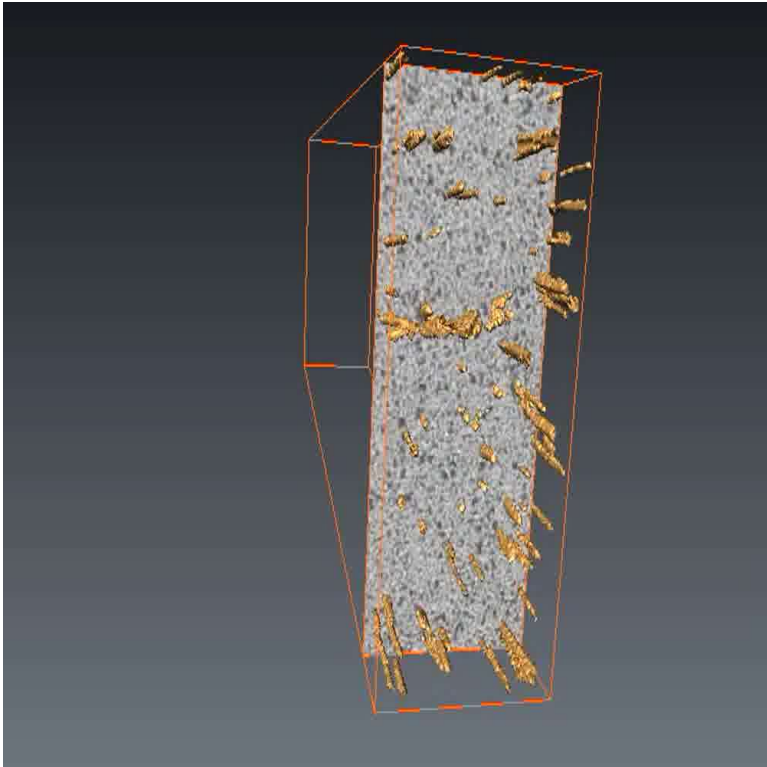
- Variability in local GF content
- Variability in GF diameter
- Two populations of void

# Morphology, size and distribution of initial macropores



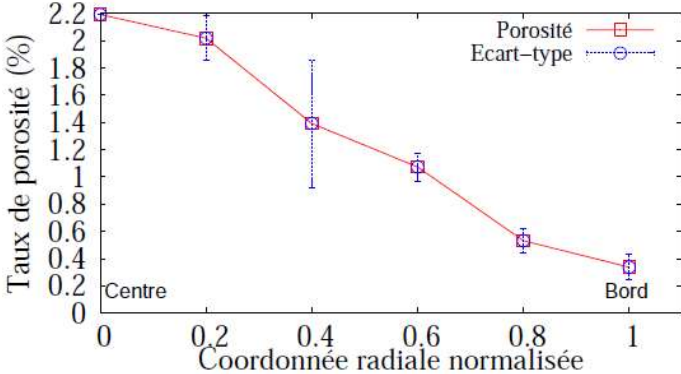
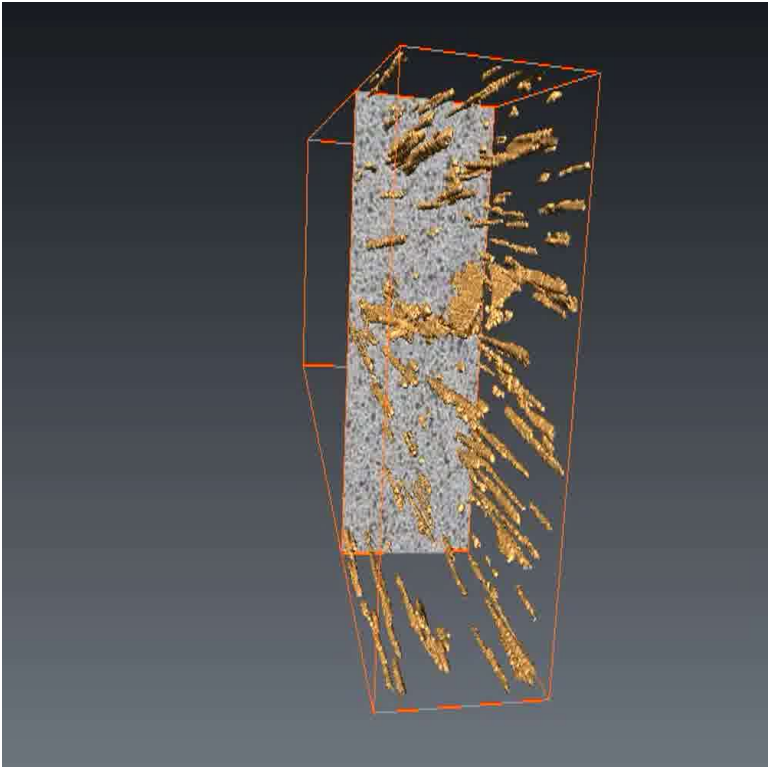
H.A. Cayzac, PhD Thesis PSL University  
Mines ParisTech (2014)

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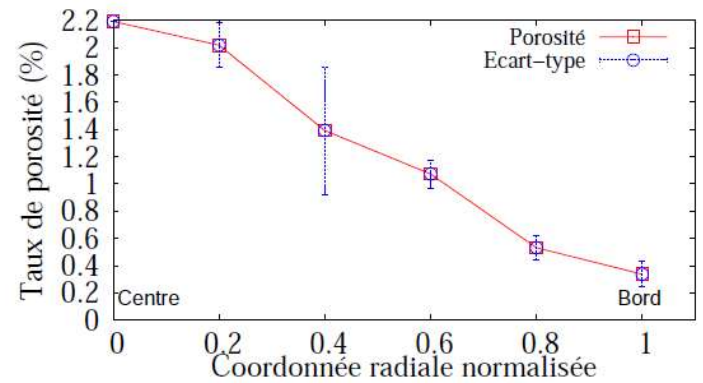
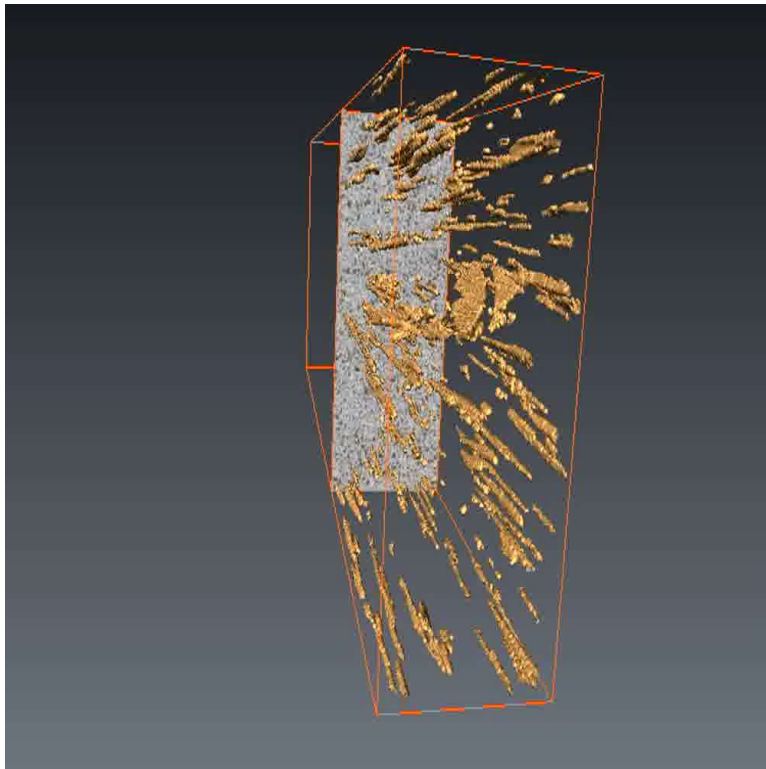
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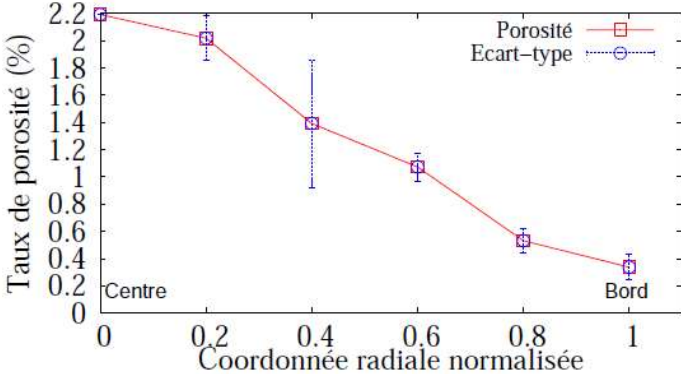
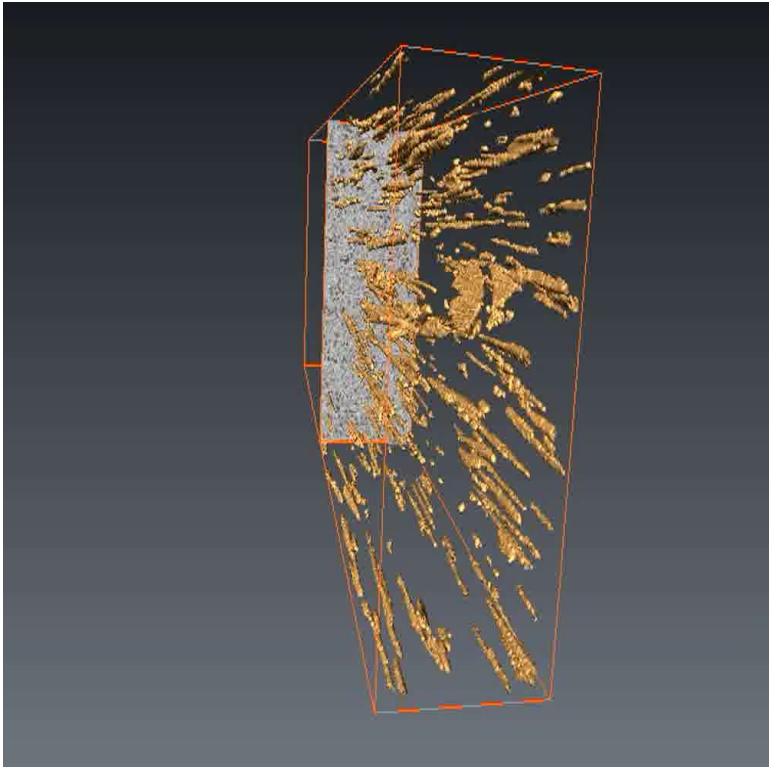
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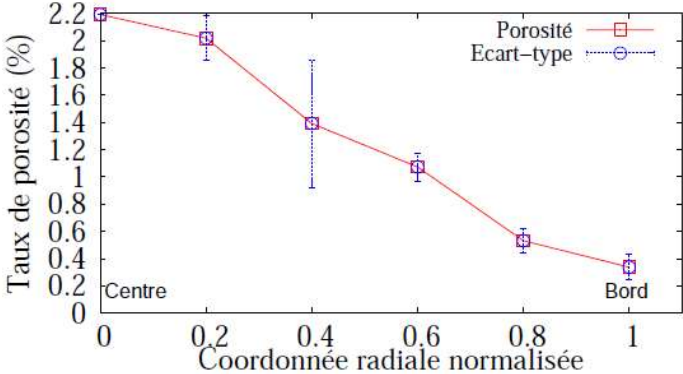
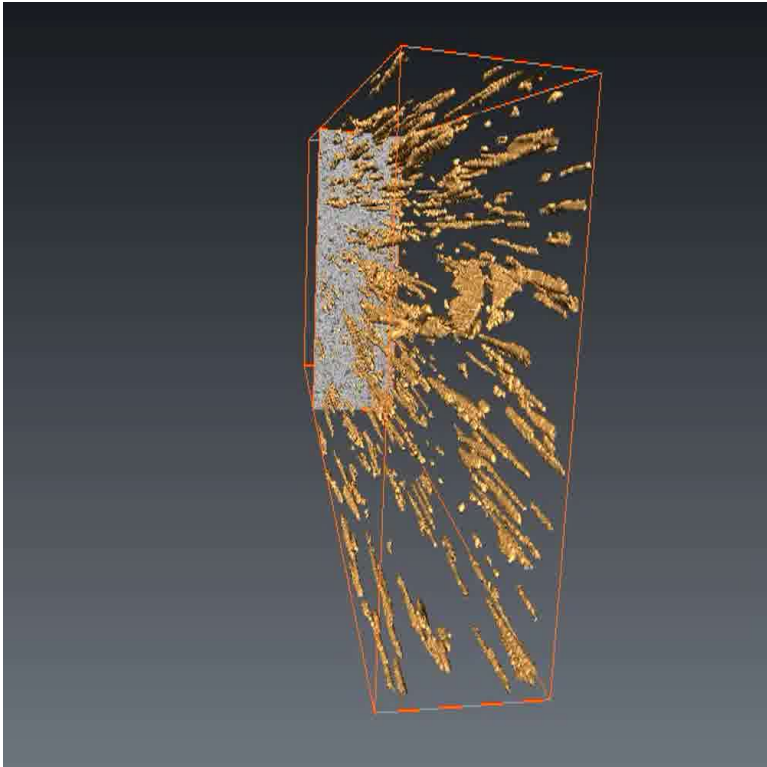
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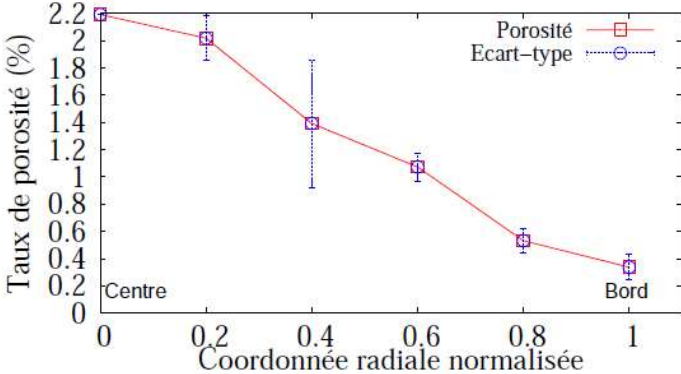
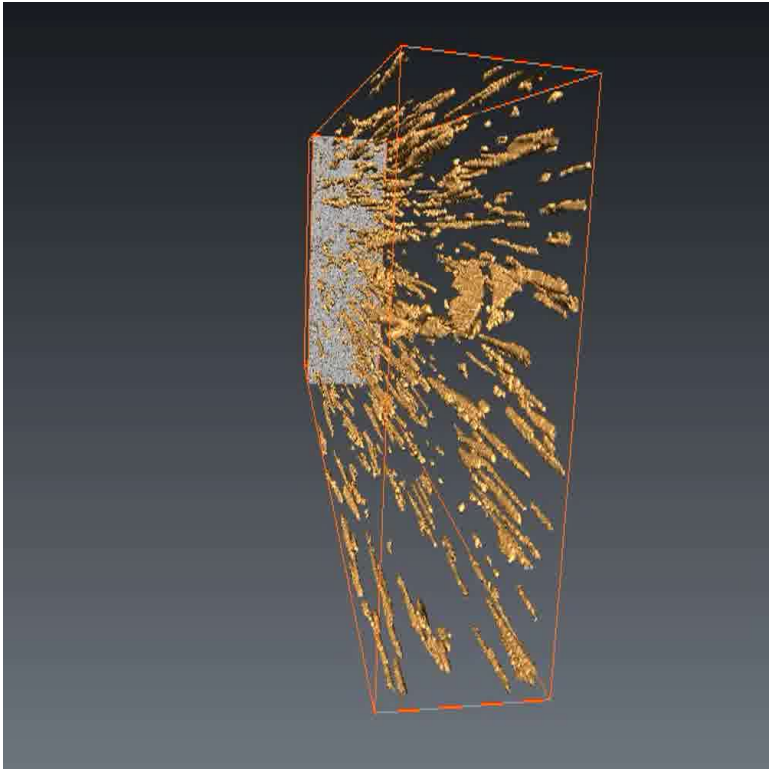
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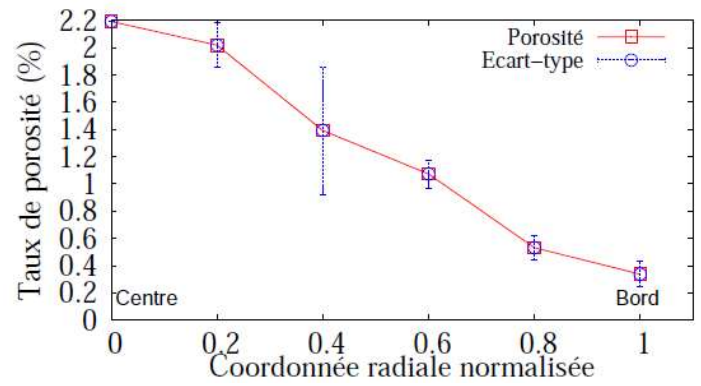
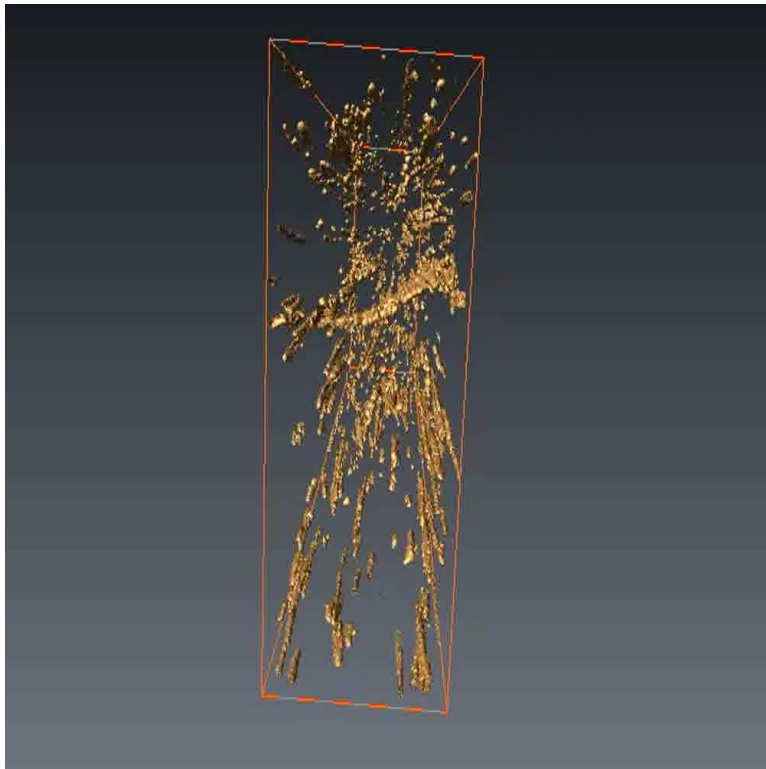


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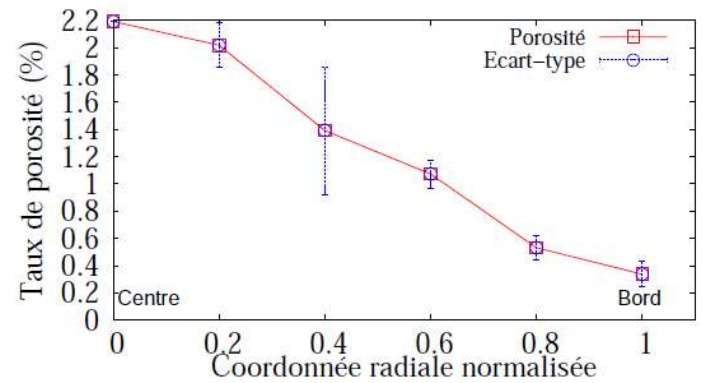
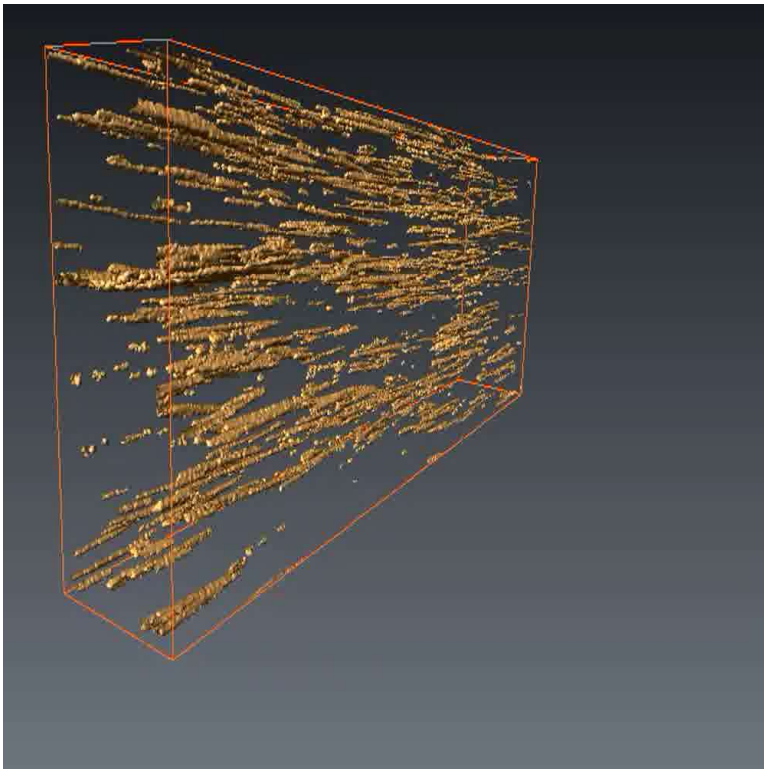
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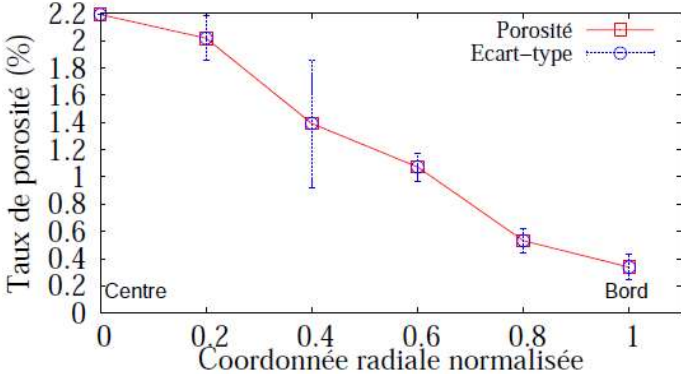
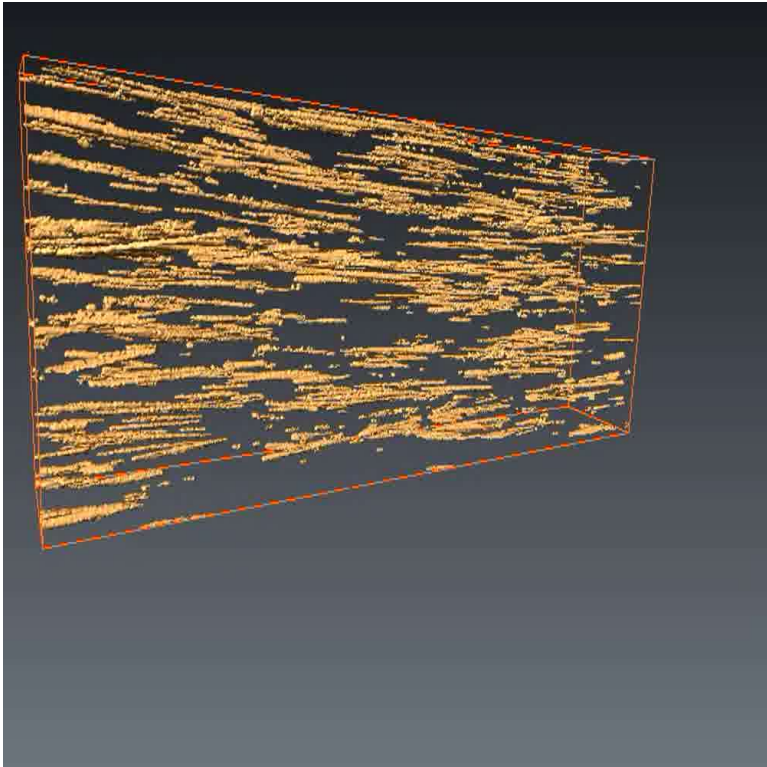
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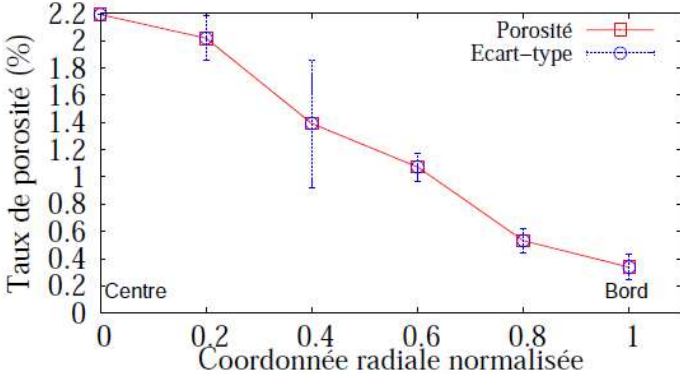
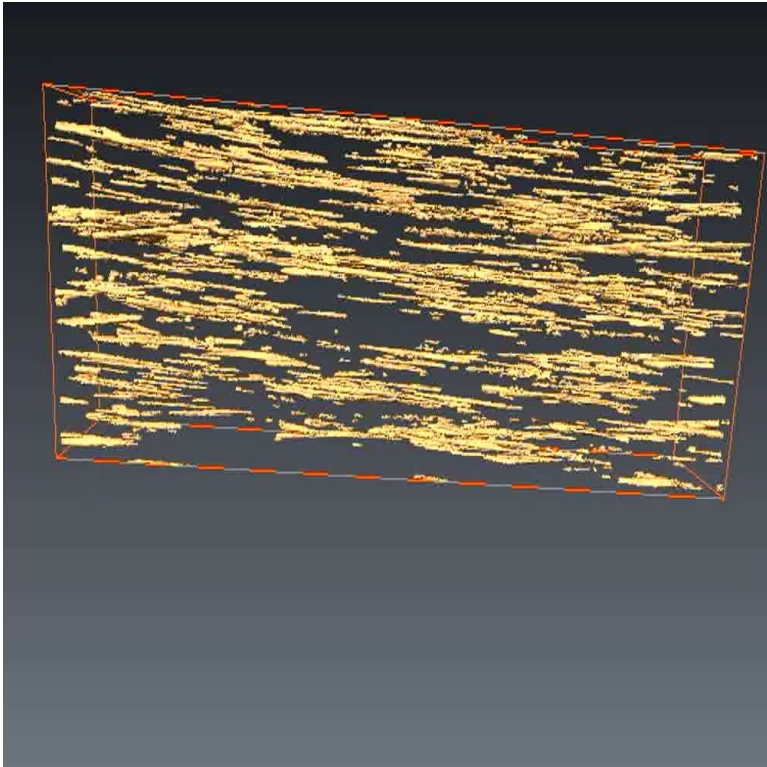
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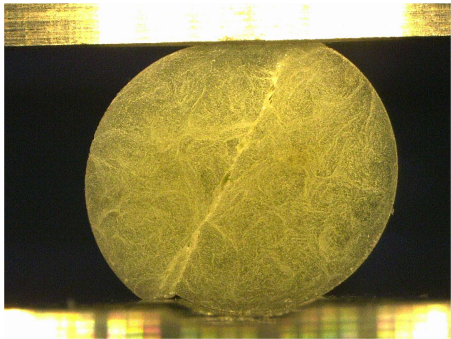
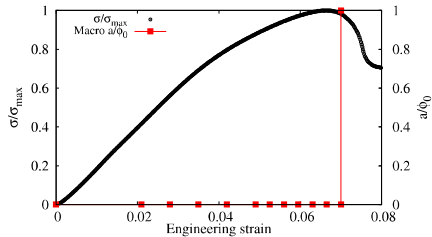
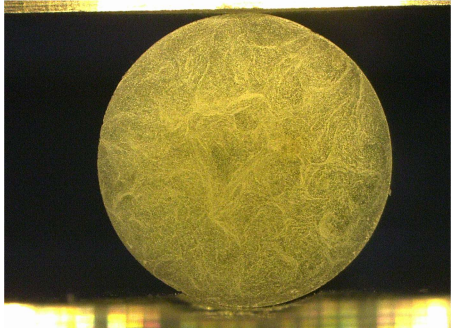
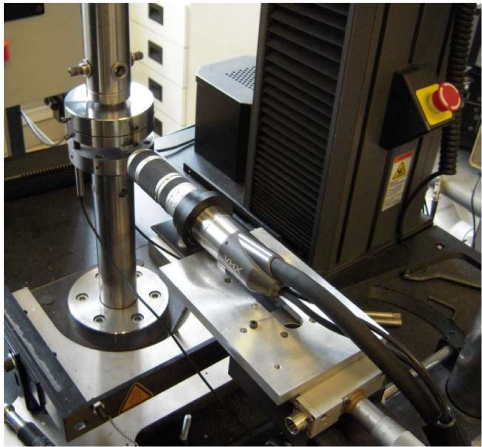
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# Brazilian tests on a rod

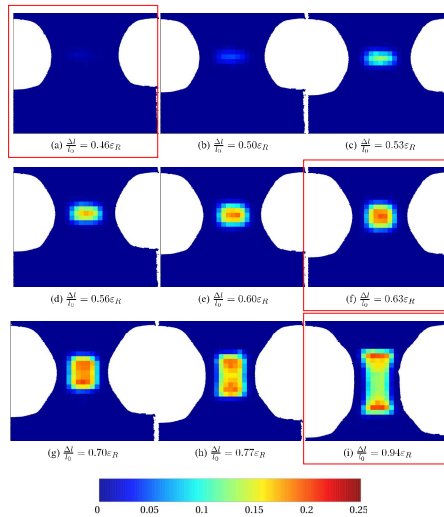
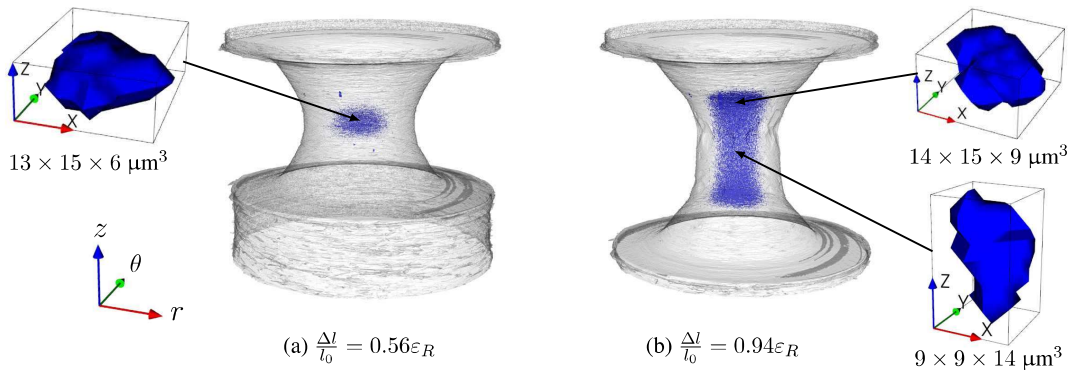


“Brittle” failure by transverse compression

# Voiding in the matrix : measurement and modelling

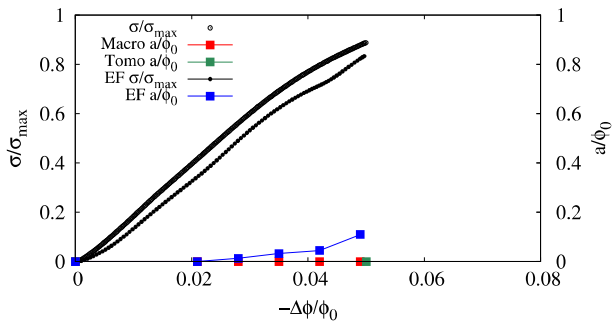
Void (blue dots) = Damage

Nucleation/Growth/Coalescence

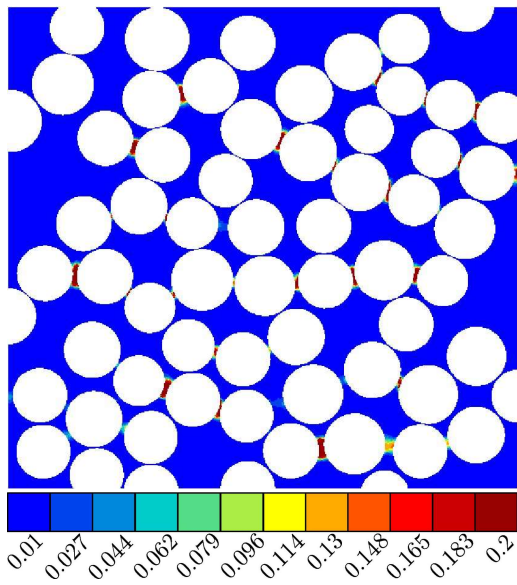
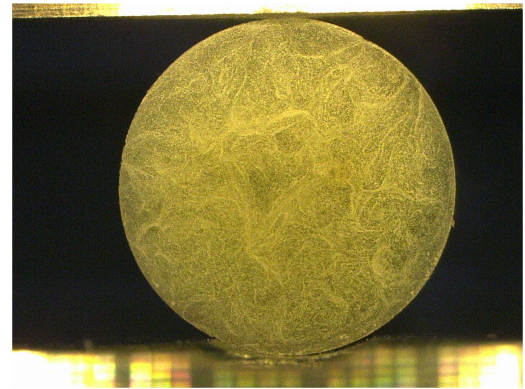


*Poulet et al., Polymer Testing (2016)*

# μCT and FE simulation of the Brazilian test



$a/\phi_0 \mapsto$  crack length/diameter



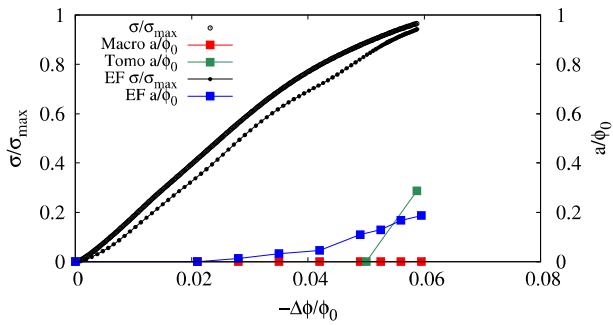
Macroscopic



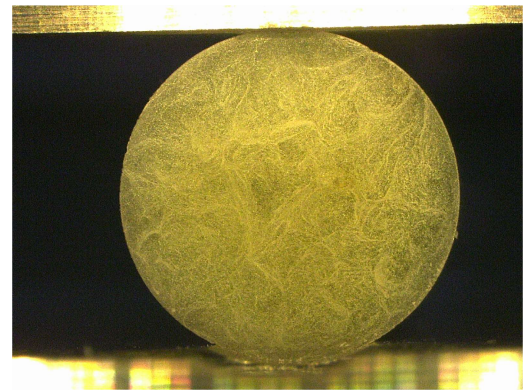
μCT resolution 1px = 5 μm



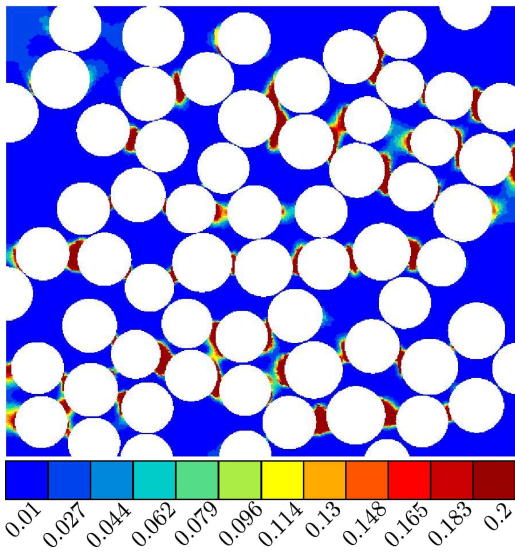
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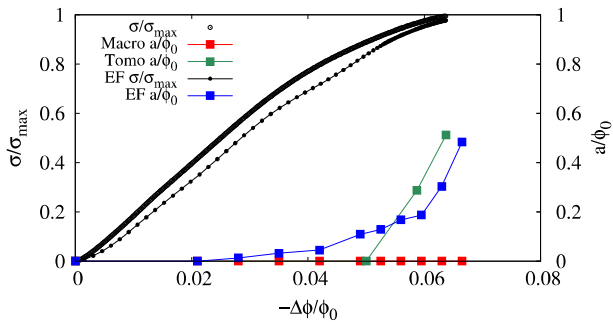


Macroscopic

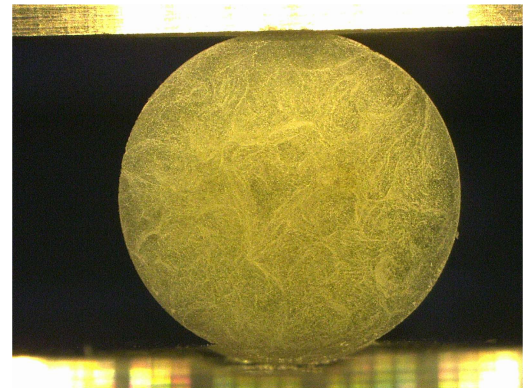


μCT resolution 1px = 5 μm

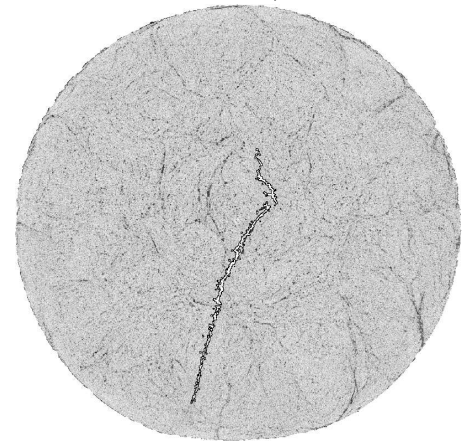
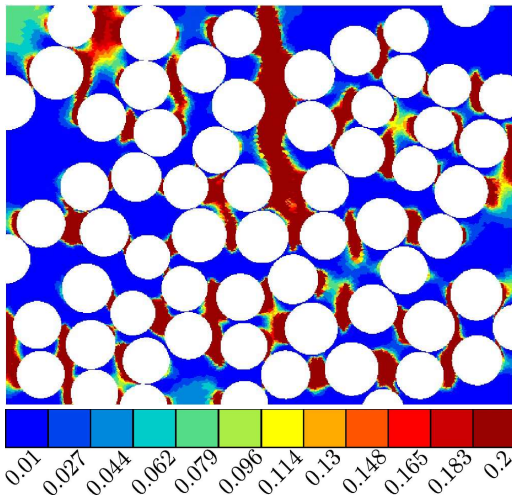
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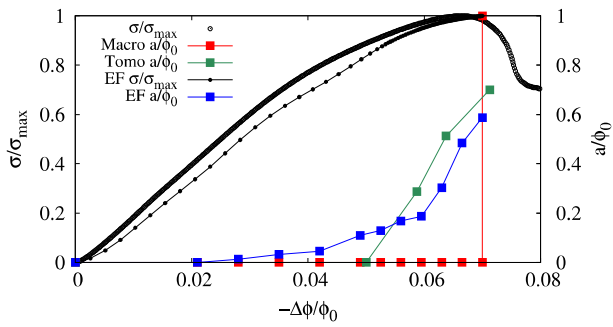


Macroscopic

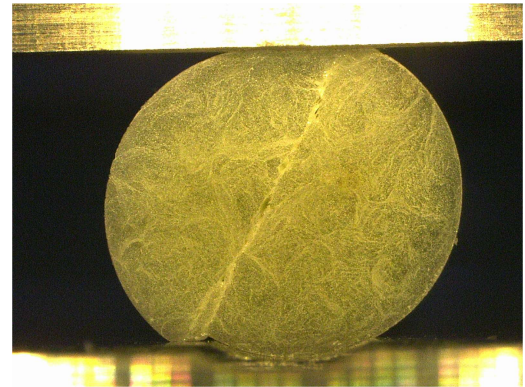


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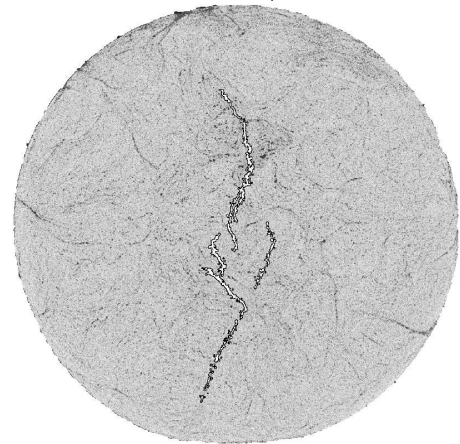
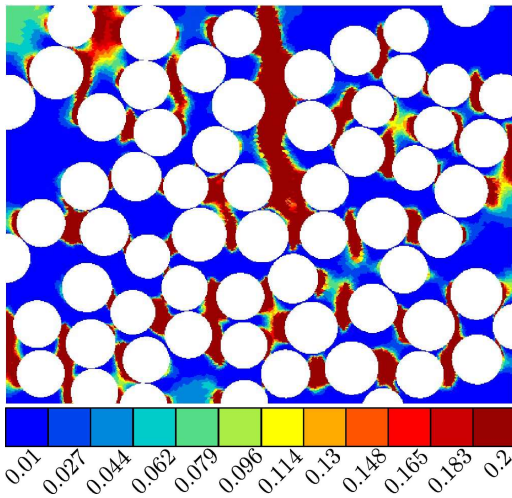
# μCT and FE simulation of the Brazilian test



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Macroscopic



μCT resolution 1px = 5 μm

Mid-height through the thickness



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[www.mat.mines-paristech.fr](http://www.mat.mines-paristech.fr)

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