STRUCTURE DU PAPIER PAR MICROTOMOGRAPHIE À RAYONS X

Responsable : Jean-Francis Bloch

Disciplines couvertes : génie des procédés papetiers, physique des structures fibreuses, industries de la transformation et de l'impression des papiers et cartons, bio-matériaux issus de la biomasse végétale.

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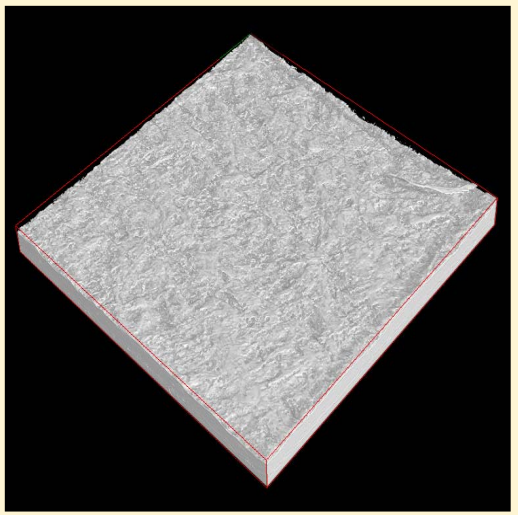
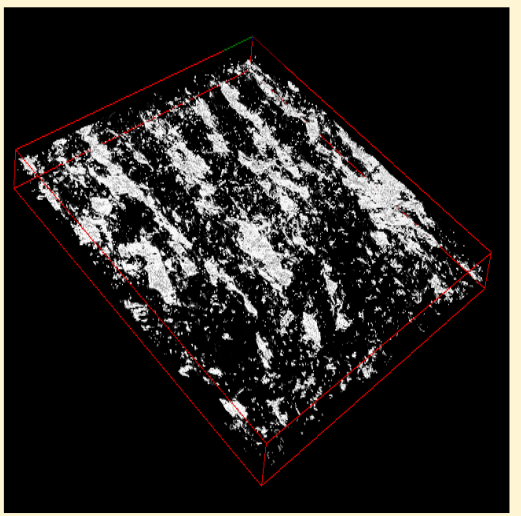
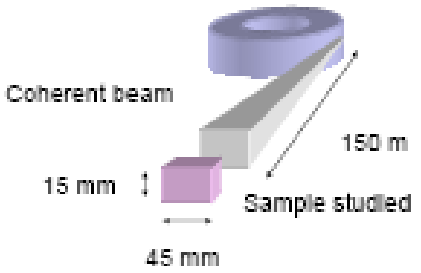




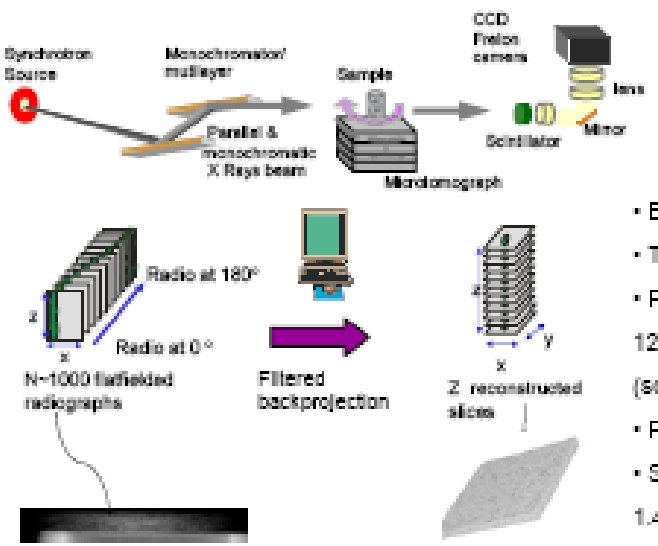
ESRF

• ID19 characteristics for microtomography



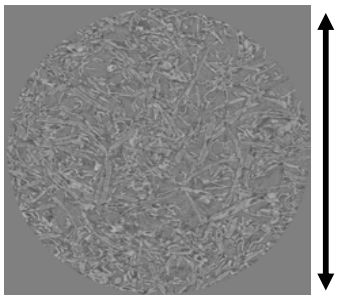
- Energy: 8-60 keV
  monochromatic beam
- Pixel size: 0.28 µm to 82 µm
- Field of view: 0.68 mm to 40 mm

• Experimental set up



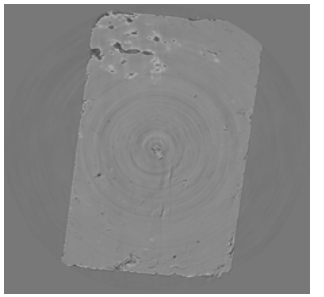
- Energy: 18 to 20.5 keV
- Time exposure: 1 s
- Projections number:
  1200 over 180 degrees
  (scan time ~40 minutes)
- Pixel size: 0.7 µm
- Size of the sample:
  1.4 x 1.4 x thickness mm³

EXEMPLES DE RÉSULTATS



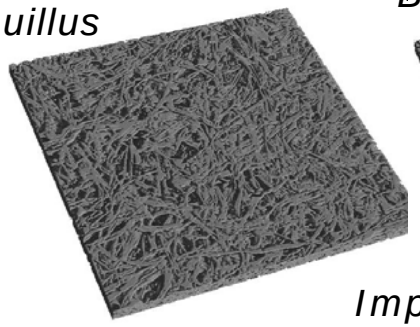
1.4 mm

buvard

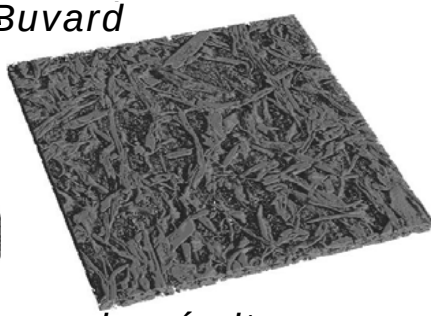


calque

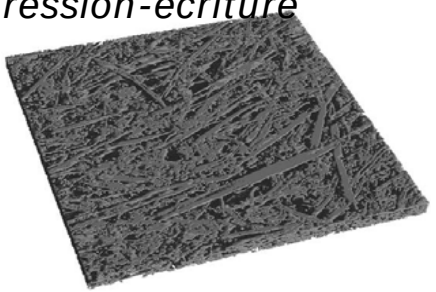
Formette feuillus



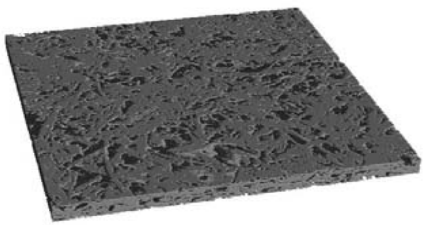
Buvard



Impression-écriture



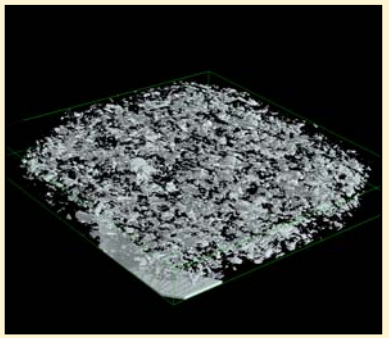
Décor

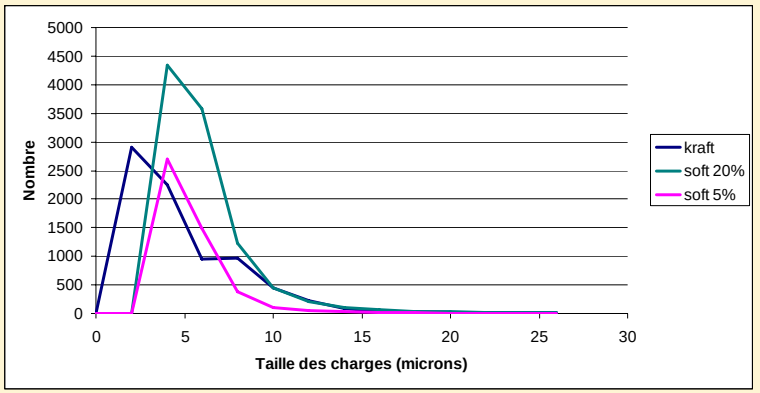


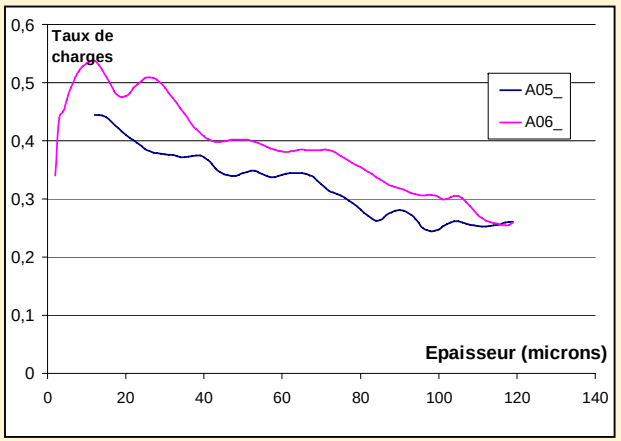
700 mm x 700 mm x 35 mm

S. Rolland du Roscoat (PhD, 2007)

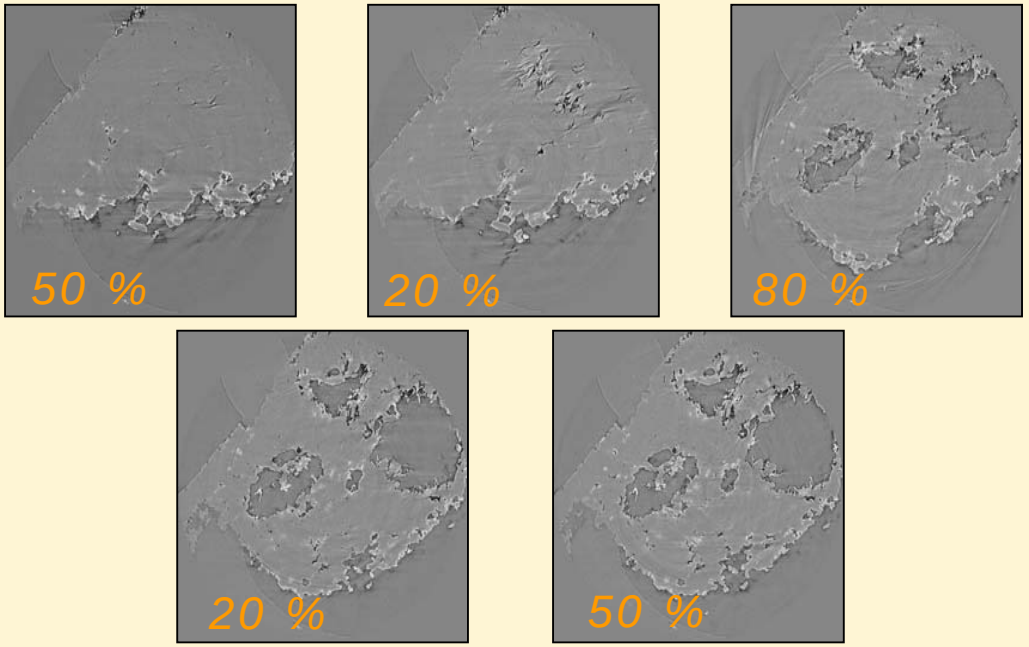
LOCALISATION DES CHARGES MINÉRALES







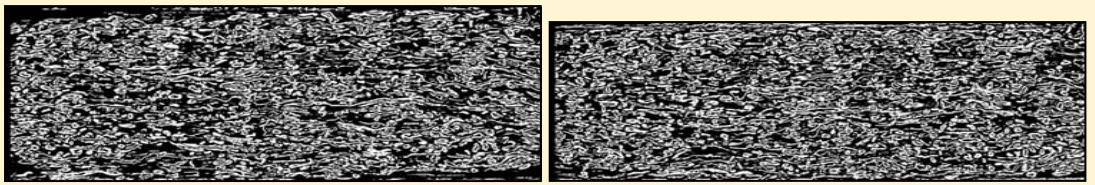
INFLUENCE DE L'HUMIDITÉ



INFLUENCE DE LA DÉFORMATION

Level 0 = état de référence : h0= 491 µm

Level 1 : h1= 442 µm, h1/h0 = 90%



Level 2 : h2= 392 µm, h2/h0 = 80%

Level 3 : h3= 272 µm, h3/h0 = 55%