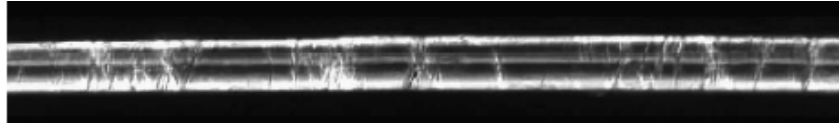
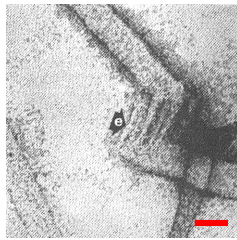


## Organisations supramoléculaires



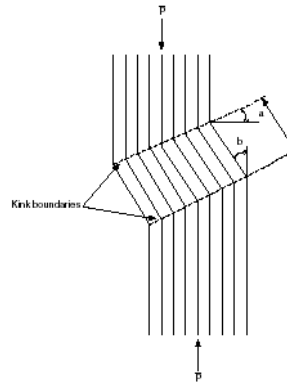
Échelle **macroscopique** (*lin, chanvre*)

*L.G. Thygesen, B. Hoffmeyer / Industrial Crops and Products 21 (2005) 173-184*

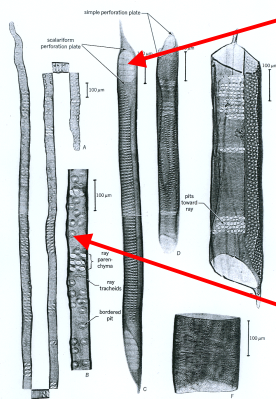


3 nm

Échelle **nanoscopique**  
(*valonia*)



## Défauts induits – zones fragiles



**Figure 8.3** Tracheary elements: A, early wood tracheid of sugar pine (*Pinus lambertiana*); B, enlarged part of A; C-F, vessel members of tulip tree, *Liriodendron tulipifera* (C); beech, *Fagus grandifolia* (D); black cottonwood, *Populus trichocarpa* (E); *Impatiens*; *Alnus incana* (F). (from C. H. Carpenter and L. Lohay, *SP Papermaking Fibers*, Tech. Paper 74, College of Forestry at Syracuse, 1952.)

