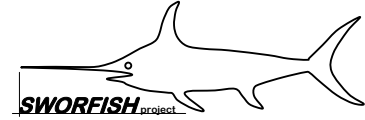




Wetability #2; sessile drop



Technical details



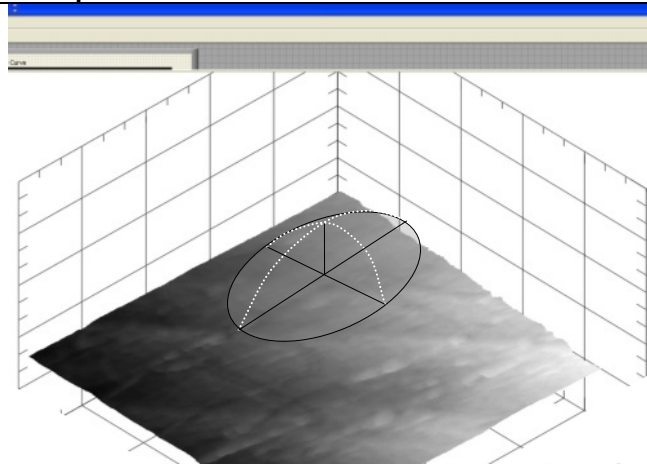
Tensionmeter; 3D sessile drop scanner

Type: custom

Producer: IVALSA/CNR (Jakub Sandak)

- a multipurpose tensiometer equipped with three video cameras, automatic drop applicator, roughness scanner
- optional integration of microbalance
- optimized for a different range of applications

Example of results



The raw result of measurement is a series of images including:

- contour of the drop along fibers
- contour of the drop perpendicular to fibers
- top contour of the drop
- 3D surface topography

The further interpretation allows estimation of:

- “apparent” contact angles along the contact of the drop and wood surface
- volume of the drop
- volume of absorbed liquid
- pattern of wetting fibrous surface

Technique description

Wetability is very important indicator of physical-chemical properties of surface, especially wood. The measurement of the sessile drop immersing the surface is one of the most common techniques for determination of the contact angle. It possesses however several important limitations, especially when evaluating wood surfaces (chemical heterogeneity, excessive surface roughness, porosity, among others). The solution of IVALSA/CNR is to measure the overall shape of the drop (instead of only one contour) and, on this base, to compute the range of contact angles. Moreover additional sensors are employed in order to measure the surface topography. It is also possible to include a precise balance for measurement of the combined weight of sample and liquid (in order to estimate the evaporation ratio and/or liquid absorption).

Comments

The instrument is a prototype, under continuous development at IVALSA/CNR.

Contact person: Jakub Sandak (Sworfish)