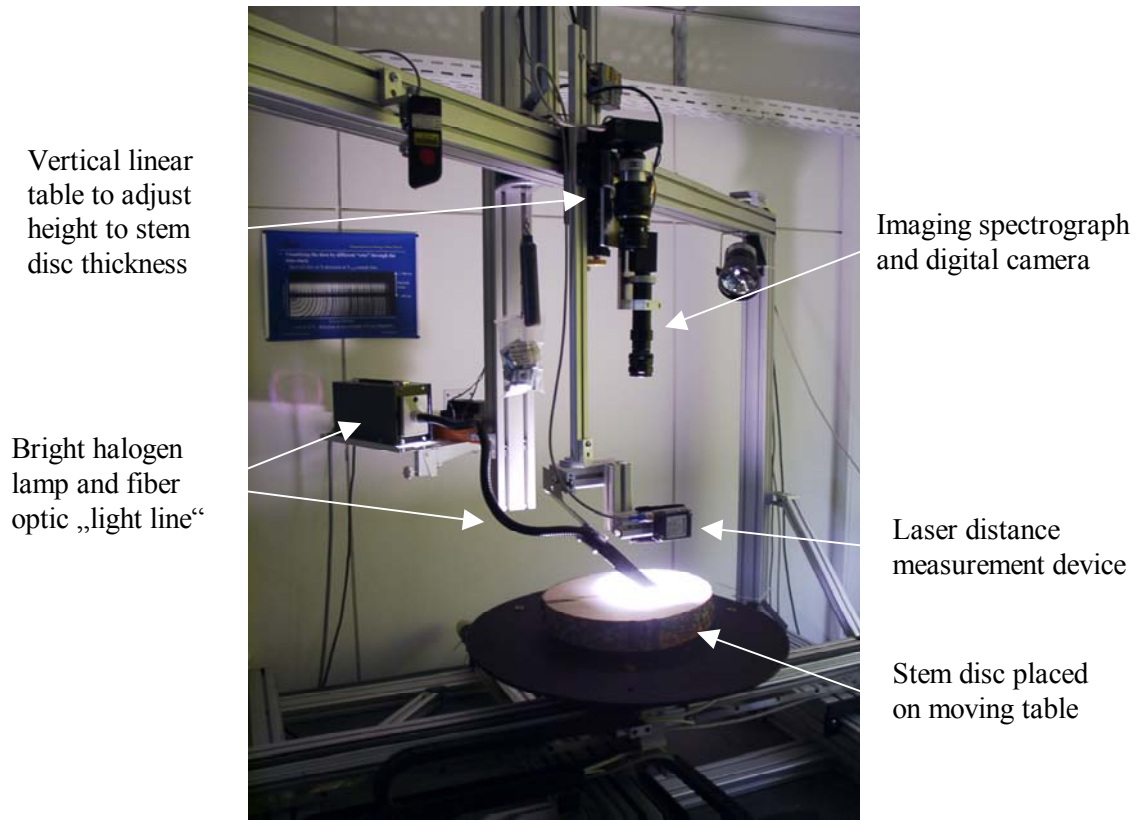


Hyperspectral Analysis – IWW, Freiburg

Image of the hyperspectral scanner established for compression wood detection

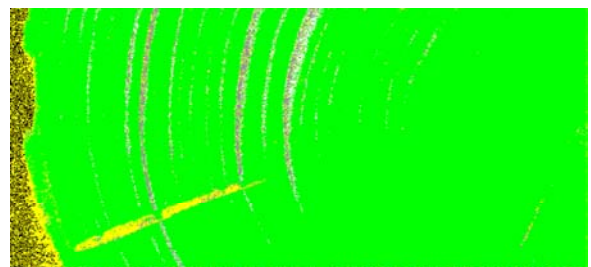


The image shows the hyperspectral image analysis system established to detect compression wood in reflected light. It consists of a bright halogen lamp illuminating the stem disc in an angle of 45° which is placed on a moving table, the imaging spectrograph mounted normally to the disc measuring the reflected light in the wavelength range of 400 – 1000 nm and the digital camera. Not shown is the computer reading out the information from the camera and controlling the moving table and thus completing the scanning system.

Images of randomly selected test radius used to validate new compression wood detection method.



x-axis (96,7 mm)



x-axis (96,7 mm)

■ Normal wood/ bark	 Compression wood int.
■ Background/ cracks	 Compression wood mod.
■ Unclassified	

a) RGB-image of randomly sampled test radius in a disc from Norway spruce hyperspectrally scanned with a spatial resolution of $0.1 \times 0.76 \text{ mm}^2/\text{pixel}$ ($R = 700 \text{ nm}$, $G = 545 \text{ nm}$ and $B = 435 \text{ nm}$).

b) Classification result of randomly selected test radius. For validation of detection method this classification image is compared to microscopically identified ROI's and a confusion matrix (table 2) has been calculated.