

NEAR INFRARED HYPERSPECTRAL IMAGING – BACKGROUND AND APPLICATION FOR WOOD CHARACTERIZATION

A. Zitek¹, K. Böhm¹, F. Firtha², V. Parrag², J. B. Hinterstoisser¹

¹ Institute of Wood Technology and Renewable Materials, Department of Material Sciences and Process Engineering, University of Natural Resources and Life Sciences Vienna BOKU, Peter Jordan Str.82, A-1190 Vienna, Austria

² Physics-Control Department, Faculty of Food Science, Szent István University, Budapest Somlói út 14-16, H-1118, Hungary

Hyperspectral imaging (HSI) in the near infrared has been recognized as a powerful technique for inspecting material surfaces, including wood, providing spatially resolved spectral information on chemical constituents. Especially to classify the quality of wood hyperspectral imaging in the near infrared has gained significant attention.

Resin pockets in spruce represent an important characteristic of wood, impairing the wood quality according to the existing European grading norms. New approaches taking into account the full spatial dimension of a wood log like hyperspectral imaging are able to quantify the area and amount of resin pockets on wood logs. Especially the NIR spectra are promising for the detection of resin pockets in spruce. However, NIR spectra of spruce resin have not been studied in detail so far.

This presentation will give a general introduction into hyperspectral imaging, and highlight the relevant mechanical and technical features of a NIR hyperspectral pushbroom imaging system and describes the preliminary results of the application of NIR hyperspectral push-broom system imaging system (900 - 1700 nm) for the detection and classification of resin pockets on freshly cut wood logs.