

Research Article:

**EVIDENȚIEREA DEFORMAȚIILOR LA
NIVEL ATOMIC UTILIZÂND FT- IR PENTRU
DETERMINAREA GRUPELOR
FUNCȚIONALE DIN LEMN CARE PREIAU
SOLICITARILE**

**ATOMIC- LEVEL STRAIN SENSING
USING FT- IR TO DETERMINE THE
LOAD-CARRYING GROUPS OF WOOD**

Yukie SAITO

Associate Professor, Ph.D. - University of Tokyo - Graduate School of Agricultural and Life Sciences
Adresa/Address 113-8657 Tokyo, Japan
E-mail: aysaito@mail.ecc.u-tokyo.ac.jp

BIBLIOGRAFIE / REFERENCES

- BOWDEN, M., GARDINER, D.J., SOUTHALL, J.M. (1993). Determination of bandshifts as a function of strain in carbon-fibers using Raman-microlin-focus-spectrometry (MIFS). *Carbon*, 31, 1993, 1057-1060.
- FENGEL, D. (1993). Influence of water on the OH valency range in deconvoluted FTIR spectra of cellulose. *Holzforschung*, 47, 1993, 103-108.
- HOFSTETTER, K., HINTERSOISSER, B., SALMEN, L. (2006). Moisture uptake in native cellulose – the roles of different hydrogen bonds:a dynamic FT- IR study using deuterium exchange, *Cellulose*, 13, 2006, 131 –145.
- LIANG, C.Y., MARCHESSAULT, R.H. (1959). Infrared spectra of crystalline polysaccharides. 1. Hydrogen bonds in native celluloses. *J. Polym. Sci.*, 37, 1959, 385-395.
- LIANG, C.Y., MARCHESSAULT, R.H. (1959). Infrared spectra of crystalline polysaccharides. 2. Native cellulose in the region from 640 to 1700 cm⁻¹. *J. Polym. Sci.*, 39, 1959, 269-278.
- MICHEL, A.J. (1988). Infrared-spectroscopy transformed – new applications in wood and pulping chemistry. *Appita J.*, 41, 1988, 375-380.
- RDRIGUEZ-CABELLO, J.C., MERION, J.C., JAWHARI, T., PASTOR, J.M. (1995). Rheo-optical Raman-study of chain deformation in uniaxially stretched bulk polyethylene. *Polymer*, 36, 1995, 4233-4238.
- TASHIRO, K., KOBAYASHI, M. (1991). Theoretical evaluation of three - dimensional elastic constants of native and regenerated cellulose: role of hydrogen bonds, *Polymer*, 32, 1991, 1516-1526.
- TSUBOI, M. (1957). Infrared spectrum and crystal structure of cellulose, *J. Polym. Sci.*, 25, 1957, 159-171.
- SAITO, Y., IWATA, T. (2011). Characterization of hydroxyl groups of highly crystalline β-chitin under static tension detected by FT- IR, *Carbohydrate polymers*, accepted.
- WU, G., TASHIRO, K., KOBAYASHI, M. (1989). A study on mechanical deformation of highly oriented poly(methylene) by vibrational spectroscopy and X-ray-diffraction - stress and temperature dependence of young modulus. *Macromolecules*, 22, 1989, 188-196.