We are a leading research organization in the area wood and wood-related renewable resources in Europe. Our core competences are materials research and process technology along the complete value chain – from raw material to finished products. We develop methods and basics and perform applied research on the economy-science interface, in order to enable resource-efficient management in the circular bioeconomy. Research results from Wood K plus are used wherever innovation and sustainability are important. Creative and bright minds are needed for implementation.

For support in the research project i³Sense we are looking for

Internship on various levels eg: Master student, Ph.D. Student or Post-Doc

The details about the project can be found on www.wood-kplus.at and are mentioned below.

Your responsibility:

- Data acquisition from printed sensors (Mainly resistance, capacitance and impedance measurements for the factors Temperature, strain, humidity inside the composites)
- Data transmission or signal conditioners for optimizing the signals (The signals might also be weak to a point where the data acquisition system cannot measure them. Hence additional circuitry has to be made for optimizing the signals).
- Analog to digital conversion (using converters, microcontrollers)
- You will plan and coordinate the project together with industrial/scientific partner who will provide technical support
- You will check and validate the results from the theoretical and lab scale experiments up to industrial verification trials
- You plan and carry out experiments independently, evaluate them and document your results.

Your qualification:

- Related to the relevant internship
- High level of commitment and initiative
- Independent, structured, responsible and accurate way of working
- Interest in sustainable solutions
- Ability to work in a team
- Communication skills in English and/or German

Benefits:

- Flexible and family friendly working hours (flexitime, time off)
- An international, motivated team and a highly active scientific environment
- Modern laboratories and pilot plants
- Internship can be turned into a permanent job with further career possibilities
- Opportunities to work in a dynamic team
- Gross monthly salary based on 40h/week depend on qualification

Place of employment:

St Veit

Contact:

Arunjunai Raj Mahendran Tel.: +43 4212 494 8001
Please send your application via e-mail to: E-Mail: a.mahendran@wood-kplus.at

About Project i³ Sense:

i³ Sense – Intelligent, integrated and impregnated cellulose-based sensors for reliable bio-based structures
In this project , comprehensive approach is to integrate sensor technology into wood-based composites, and fibre composites with tailored performance and functionality.

- One objective is to use bulk wood and the surface of bulk wood as sensor. Piezoresistive changes and acoustic signals of wood will be studied according to their origin from bulk wood and their usefulness for structural health monitoring.
- Conductive traces (lines, bands) and patches will be applied to the wood surface by printing, spraying or engraving. The effect of changing wood moisture and corresponding hygroexpansion on the electrical conductivity, percolation-threshold and capacitance of such conductive coatings will be established at a fundamental level.
- sensors based on renewable cellulose non-wovens or fabrics and to integrate them into the composite structure.
- In the wood composites, glue joint itself will be used as sensor for monitoring different physical and chemical phenomena and as a flexible sensor network. The aims are to detect humidity in engineered wood products destined for construction.
- To optimize the design of the sensors in terms of the signal to noise ratio, to find ways of measuring and evaluating the signals using resistive, conductive, acoustic and piezoelectric methods, and to enable the bulk-integration and coupling of the sensors to the measuring device.

In the Figure, one example of a resistance measured using printed paper sensors at isothermal temperature is shown. Similarly we are measuring the curing behavior of the resin (impedance principle) via printed interdigitated sensor.