Sustainable production of Cellulose-based products and additives to be used in SMEs and rural areas
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Kick-off meeting
University presentation - SGGW

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Warsaw University of Life Sciences - SGGW

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About SGGW

- Established 1816, now one of largest in life sciences in Poland
- Offers 40 fields of study (including 9 in English)
- Educates nearly 18,000 people; students in full-time, part-time, doctoral and postgraduate studies, also runs the Open University
- Employs 1,200 academic teachers

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About SGGW

- Over 70 ha campus

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Institute of Wood Sciences and Furniture

- Department of Mechanical Processing of Wood
- Department of Wood Science and Wood Preservation
- Department of Technology and Entrepreneurship in Wood Industry

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Capacity of Institute of Wood Sciences and Furniture

Technological equipment

- Hydraulic presses, including press with full automatic control

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Capacity of Institute of Wood Sciences and Furniture

Technological equipment

- Laboratory equipment for gluing wood particles

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Capacity of Institute of Wood Sciences and Furniture

Technological equipment

- Wood shredding equipment
- Panel forming stations
- Fibre grinding test device
- Allgaier screener
- Climate chamber for the determination of formaldehyde emissions
- Perforator for the determination of formaldehyde content
- Spectrophotometer UV/VIS
- Modern measuring equipment (moisture scale-dryers, greenhouses, shakers, dryers, vacuum dryers, humidity meters of lignocellulose materials, etc.)

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Capacity of Institute of Wood Sciences and Furniture

Technological equipment

- Industrial scale machines

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Capacity of Institute of Wood Sciences and Furniture

Testing and laboratory equipment

- Equipment for the pretreatment of lignocellulosic biomass (possible treatment methods: SE - steam explosion, LHW - liquid hot water, SE-CO_2 - steam explosion with CO_2, SAA - soaking aqueous ammonium)
- Alpha 1-4 LD plus CHRIST freeze dryer

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Capacity of Institute of Wood Sciences and Furniture

Testing and laboratory equipment

- Chamber for thermal and chemical modification of wood on a semi-technical scale with a working volume of 0.25 m^3 and a length of 1.1 m; the device is equipped with a control program; the chamber can carry out the process in water vapor, inert gas (CO_2, N_2), in liquids (oil) and under vacuum; maximum working temperature 250°C, the chamber has thermo-circulation

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Capacity of Institute of Wood Sciences and Furniture

Testing and laboratory equipment

- Shimadzu LC20 liquid chromatograph with two refractometric detectors, spectrophotometric UV-Vis and conductometric detectors
- Shimadzu GC-2010 Plus gas chromatograph coupled with MS-QP2010 mass spectrometer, optionally equipped with FRONTIER LAB Pyrolizer EGA / PY-3030D using carrier gas (helium 5.0). The chromatograph is equipped with the NIST11, NIST11b spectra library.
- Midex M X-ray fluorescence (XRF) spectrometer from Spectro. The measuring chamber has a table positioning accuracy of 2.5 µm. The dimensions of the chamber are 540 x 600 x 2500 mm^3. Measurement possible in the atmosphere of air and inert gas (helium 5.0)

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Capacity of Institute of Wood Sciences and Furniture

Testing and laboratory equipment

- 5 universal strength testing machines for complex mechanical characteristics of wood-based materials
- 1 m^3 climate chamber for air conditioning and aging testing of wood-based materials
- ISOMET 2104 for the analysis of the thermal properties of wood-based materials
- DA-X GreCon to analyse the density profile of wood-based materials

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Capacity of Institute of Wood Sciences and Furniture

Testing and laboratory equipment

- Goniometr PHOENIX 300 to test wettability of the surface of materials and to determine the value of free surface energy
- Solarbox 1500e UV chamber for UV emission up to 1000 W/m^2 and conducting studies of aging of wood and wood-based materials
- Taber Abraser for determining the resistance of finishing coatings
- Pendulum type AWS – 9, coatings hardness tester
- Nikon SMZ 1500 optical microspcope
- Spherical spectrophotometer X-Rite, m. SP 60, for color determination;
- Gloss tester Picoglos, m. 503, for gloss-testing of finishing coatings
- Hardness testers for Volf-Wilburn, and Buchholz methods
- Roughness tester MarSurf PS1

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CELISE interest

- One experienced researcher, 2 early stage reserahcers
- fibre production and the use of alternative additives and adhesives and the characterisation of lignin,
- to study energy demand and biomass energy production possibilities in rural areas