



Johan Gadolin
Process Chemistry Centre



Advanced Courses at
Johan Gadolin Process Chemistry Centre,
Åbo Akademi University

Modern Analytical Tools for Pulp and Paper

November 25-29, 2019
Turku / Åbo

In cooperation with



and



Graduate School in Chemical Engineering

Modern Analytical Tools for Pulp and Paper

This course will present recent analytical techniques for pulp and paper. It is a combined course for PhD students and researchers from industry and research institutes. For students, who want to earn 5 credits (ECTS) for the course, there will be lectures and workshops starting on Monday the 25th of November and ending at noon on Friday the 29th of November. We strongly recommend that students should have at least a basic knowledge of wood/biomass chemistry and analytical methods before registering.

For industry representatives, that want to learn about the top-of-the-art analytical tools but do not need credits, the course begins at Tuesday the 26th and ends at noon on Thursday the 28th.

Course leaders:

Docent Chunlin Xu, Docent Anna Sundberg,
Laboratory of Natural Materials Technology, research group of Wood and Paper Chemistry

Contact information:

Docent Chunlin Xu
Åbo Akademi
Laboratory of Natural Materials Technology, research group of Wood and Paper Chemistry
Porthansgatan 3, FIN-20500 Turku
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Course venue:

Åbo Akademi University, Gadolinia, Porthaninkatu 3.

Course fee:

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|---|------|
| -PhD students from GSCE and other Finnish Universities with JOO-agreement | Free |
| -PhD students from other countries | 200€ |
| -Representatives from industry and research institutes | 500€ |
| -Others, please contact Docent Chunlin Xu | |

The course fee includes lectures, course material, coffee & tea during the breaks, and course get-together (on Tuesday evening).

Registration:

- Representatives from industry and research institutes, register by *November 15th* by e-mail to Chunlin.Xu@abo.fi
- Students at Åbo Akademi register through Peppi and by sending an e-mail to Chunlin.xu@abo.fi
- PhD students from Finnish universities with the JOO-agreement: Register to the course by *November 15th* by e-mail to Chunlin.Xu@abo.fi and by filling in the *electronic* JOO-application at www.joopas.fi and then send the *signed and recommended* form to Chunlin Xu. If you come from a university that does not yet use the *electronic* JOO-application, fill in the application in *paper* form (can also be found at www.joopas.fi), get your own university to recommend you, and then send the *signed, recommended* form to Chunlin Xu.
- Others, register by *November 15th* by e-mail to Chunlin.Xu@abo.fi

Accommodation:

Moderate-price hotels at walking distance are:

Centro Hotel, <http://www.centrohotel.com/en/>

Hotel Helmi, <http://www.hotellihelmi.fi/en>

Omena Hotel, <http://www.omenahotels.com/our-hotels/finland/turku/>

Scandic Julia, www.scandichotels.com/Hotels/Finland/Turku/Scandic-Julia/

Scandic Plaza, www.scandichotels.com/Hotels/Finland/Turku/Scandic-Plaza-Turku/

Links:

- o Homepage of the university:
<http://www.abo.fi/fakultet/traochpapperskemi>
- o Information about Turku/Åbo can be found at <http://www.turku.fi/> and <http://www.visitturku.fi/>

Questions? Do not hesitate to contact Docent **Chunlin Xu**! See you in November!

Preliminary Course Programme

Tuesday, 26.11.

- 9.00 Registration (participants from industry) and coffee
- 9.45- Presentation of attendees
- 10.00- Sampling, pre-treatment and extraction of different samples
(wood, pulp, paper, waters, deposits),
Chunlin Xu, ÅA
- 12.00 Lunch
- 13.30-
17:30 Lipophilic and hydrophilic extractives – a mess without
appropriate analyses,
Anna Sundberg, ÅA
- “Analysis methods for industry from a chemical company’s
point of view”,
Jonas Konn, Kemira (Confirmed)
- ICP-OES, ICP-MS and microwave digestion in elemental
analysis,
Sten Lindholm, ÅA
- 17:30 Course get-together

Wednesday, 27.11.

- 9.00- Analysis of cellulose, hemicelluloses and pectins: cleaving and
chromatography,
Anna Sundberg, ÅA
- Molar mass determinations,
Chunlin Xu, ÅA
- 12.00 Lunch
- 13.30-
17.30

Sensor technology for on-line analysis,
Johan Bobacka, ÅA

Polymerized extractives,
Anna Sundberg, ÅA

Analysis of DisCo in papermaking,
Anna Sundberg, ÅA

SPME – A versatile technique for methanol, volatile terpenes,
odorous compounds, cognac aroma etc,
Andrey Pranovich, ÅA

Thursday, 28.11.

8:30 Fiber properties -standard and advanced analysis of fibers, pulp
and paper,
Jan Gustafsson, ÅA

Barrier and packaging – classifications and analytical methods,
Kumar Vinay, VTT

11.30 Lunch

13.00-
15:00 Analysis of dissolving pulp,
Frida Sjögren, CH Bioforce

Flow cytometry,
Lari Vähäsalo, CH Bioforce

PhD STUDENTS' PART INCLUDES ALSO

Monday, 25.11.

10.00- Welcome
Introduction,
Chunlin Xu, ÅA

Lignin analysis and some microanalytical techniques,
Andrey Pranovich, ÅA

Pyrolysis and thermal chemolysis combined with GC and GC-
MS,
Andrey Pranovich, ÅA

12.30 Lunch

13.45- NMR spectroscopy,
Patrik Eklund, ÅA

15.15- Initialization of workshops

Thursday, 28.11.

15- Workshops

Friday, 29.11.

9-12 Presentation of assignment done at the workshops, dates for
exam