FibRe

Design for Circularity: Lignocellulose-based Thermoplastics

A VINNOVA Competence Centre

International Conference, Gothenburg, Sweden

September 10–12, 2024

www.fibre2024.treesearch.se

Chalmers Conference centre
Chalmersplatsen 4, Gothenburg

Listing of all contributions

CHALMERS
UNIVERSITY OF TECHNOLOGY

FibRe

updated Sep 5, 2024

FibRe International Conference, Chalmers, Sep 10-12, 2024

Number refer to abstract number. *Titles are shortened in this schedule for the sake of space

	Tueday, Sep 10	Wednesday, Sep 11		Thursday, Sep 12
08.30		Wood nanoscience and nanotechnologies Liangbing (Bing) Hu (9)		Bio and Material Recycling for a Circular Economy Society Hiroyuki Yano (36)
08.40				
08.50				
09.00				
09.10		Future applications for lignin and LCCs Monika Österberg (10)		Hemicellulose and cellulose interactions as a bioinspired approach Tuuli Virkkala (37)
09.20				
09.30				DNP-NMR as a tool to determine degree of modification in dialcohol cellulose Lars Evenäs (38)
09.40		New routes for functionalization of cellulose-rich fibres Lars Wågberg (11)		
09.50				**Refreshments**
10.00		**Refreshments**		
10.10				
10.20				Recent developments of all-cellulose composites from cellulose fibers Mikael Skrifvars (39)
10.30		By- or -Co-Products: Manure, hop straw, black liquor as source for fibres and polymers Alexander Bismarck (12)		
10.40				The unseen magic of water molecules in wood Jan Carmeliet (40)
10.50				
11.00				
11.10		Nanostructured lignocellulosic composites with multiple functions Lars A Berglund (13)		Challenges to process nanocellulose for new fiber based materials Julien Bras (41)
11.20				
11.30				
11.40		Moisture induced activity of lignified cells and tissues Michaela Eder (14)		Concluding remarks
11.50				**Lunch**
12.00				
12.10		**Lunch**		
12.20				
12.30				
12.40				
12.50				
13.00	Welcome adress Maria Abrahamsson and Anette Larsson Chalmers			**FIbRe Annual Days (Internal meeting)**
13.10		Synchrotron imaging with x-ray scattering or spectroscopy contrast for the characterization of thermoplastics Marianne Liebi (15)		
13.20	The Role of Forests in the Transition to a Circular Society Maria Wetterstrand (1)			
13.30				
13.40				
13.50		Deciphering wood cell wall nanostructure and moisture behavior via x-ray scattering and modelling Paavo Penttilä (16)		
14.00	Degradation of lignocellulose-derived materials Minna Hakkarainen (2)			
14.10				
14.20				
14.30	Novel cellulose derivatives for microplastic flocculation* Bruno Medronho (3)		Mira Viljanen (26)	
14.40		Viney Ghai (42)	Marko Bek (27)	
14.50	Thermoplastic and Thermoset Biocomposites* Sergejs Gaidukovs (4)	Dharu Smaradhana (19)	Sara Florisson (28)	
15.00		Vaibhav Modi (20)	Korneliya Gordeyeva (29)	
15.10	**Refreshments**	**Refreshments**		
15.20				
15.30				
15.40	Water transfers in cellulose: bound water comes first! Philippe Coussot (5)	Nissa Nurfajrin Solihat (21)	Feryal Guerroudj (30)	
15.50		Rana Alimohammadzadeh (22)	Sajjad Pashazadeh (31)	
16.00		withdrawn	A.Vahid Movahedi-Rad (32)	
16.10	Hemicelluloses as the Janus “two-faced” components* Francisco Vilaplana (6)	Maria Morits (24)	Sophie Marie Koch (33)	
16.20		Joanne Li (25)	Zeinab Qazanfarzadeh (34)	
16.30	Cellulose carbonization* Antti Paajanen (7)			
16.40		The mysterious glassy state and its transitions – a brief overview Ulf Gedde (35)		
16.50	Lignin and swelling properties of wood: hierarchical multiscale modeling* Malin Wohlert (8)			
17.00				
17.10	Poster session P1-49	Poster session P1-49		
17.20				
17.30				
17.40				
17.50		Conference Dinner		
18.00				
18.10				
18.20				
18.30	Dinner (by invitation only)			

Oral contributions

1	Maria Wetterstrand	Miltton	The Role of Forests in the Transition to a Circular Society
2	Minna Hakkarainen	KTH Royal Institute of Technology, Sweden	Degradation of lignocellulose-derived materials
3	Bruno Medronho	Algarve University, Portugal & Mid Sweden University, Sweden	On the development of novel cellulose derivatives for microplastic flocculation
4	Sergejs Gaidukovs	Riga Technical University, Latvia	Thermoplastic and Thermoset Biocomposites from Several Biopolymer Resins and Cellulose, Hemicellulose, and Lignin Additives
5	Philippe Coussot	Univ. Gustave Eiffel, France	Water transfers in cellulose: bound water comes first!
6	Francisco Vilaplana	KTH Royal Institute of Technology, Sweden	Hemicelluloses as the Janus “two-faced” components in wood modulating interactions with cellulose and lignin
7	Antti Paajanen	VTT Technical Research Centre of Finland Ltd	Exploring cellulose carbonization pathways using reactive force field methods
8	Malin Wohlert	Uppsala University; Swden	The role of lignin structure for swelling properties of wood: hierarchical multiscale modeling
9	Liangbing (Bing) Hu	Yale University, USA	Wood Nanoscience and Nanotechnologies
10	Monika Österberg	Aalto University, Finland	Future applications for lignin and LCCs
11	Lars Wågberg	KTH Royal Institute of Technology, Sweden	New routes for functionalization of cellulose-rich fibres
12	Alexander Bismarck	University of Vienna, Austria & Imperial College London, UK	By- or - Co-Products: Manure, hop straw, black liquor as source for fibres and polymers
13	Lars Berglund	KTH Royal Institute of Technology, Sweden	Nanostructured lignocellulosic composites with multiple functions
14	Michael Eder	Max-Planck-Institute of Colloids and Interfaces, Potsdam, Germany	Moisture induced activity of lignified cells and tissues
15	Marianne Liebi	Paul Scherrer Institute (PSI) & Ecole polytechnique fédérale de Lausanne (EPFL), Switzerland	Synchrotron imaging with x-ray scattering or spectroscopy contrast for the characterization of thermoplastics
16	Paavo Penttilä	Aalto University, Finland	Deciphering wood cell wall nanostructure and moisture behavior via x-ray scattering and modelling

19	Dharu Smaradhana	Imperial College London, UK	Synthetic Polymer-Free Fibreboards Derived from Oil Palm Waste
20	Vaibhav Modi	VTT Technical Research Centre of Finland Ltd, Finland	Wettability of fatty acid esterified cellulose surfaces from molecular simulations
21	Nissa Nurfajrin Solihat	Aalto University, Finland	Air-dried rigid bio-foam prepared by the Pickering emulsion approach
22	Rana Alimohammadzadeh	Mid Sweden University, Sweden	Fabrication of Hydrophobic Cellulosic Foam Using Sustainable Technology
23	Withdrawn		
24	Maria Morits	Aalto University, Finland and Kemira Oyj, Finland	Investigation of the effect of the interaction between main components of bio-based barrier dispersion coatings on its film formation
25	Joanne Li	Imperial College London, UK	Dispersion of bacterial cellulose in organic solvents and its assembly as an ultra-low grammage coating on woven fabric
26	Mira Viljanen	MAX IV, Lund University, Sweden	Combined full-field tomography and SWAXS imaging at ForMAX
27	Marko Bek	Chalmers University of Technology, Sweden	Enhanced Material Analysis through the Integration of Rheological and Scattering Methods
28	Sara Florisson	Uppsala University, Sweden	X-ray Computed Tomography aided Finite Element Modelling to Analyse the Hygromechanical Behaviour of Wood
29	Korneliya Gordeyeva	KTH Royal Institute of Technology, Sweden	Synchrotron techniques as a new way to look into the fundamentals of the pulping process and wood fibre properties
30	Feryal Guerroudj	Chalmers University of Technology, Sweden	Understanding the impact of lignin types on the yield and morphology of cellulose-lignin based fibers: advanced characterization of lignin leaching with magnetic resonance methods
31	Sajjad Pashazadeh	Chalmers University of Technology, Sweden	Effect of fiber aspect ratio on the extrusion instabilities in wood polymer biocomposites

32	A.Vahid Movahedi-Rad	ETH Zurich, Switzerland	Transforming Poplar Wood to high performance bio composites
33	Sophie Marie Koch	ETH Zurich, Switzerland	Biodegradable and Flexible Wood-Gelatin Composites for Soft Actuators
34	Zeinab Qazanfarzadeh	Chalmers University of Technology, Sweden	Development of active polylactic acid (PLA)-based packaging film containing artichoke (*Cynara scolymus*) leaf extract and enzyme
35	Ulf W. Gedde	KTH Royal Institute of Technology, Sweden	The mysterious glassy state and its transitions – a brief overview
36	Hiroyuki Yano	Kyoto University, Japan	Bio and Material Recycling for a Circular Economy Society
37	Tuuli Virkkala	VTT Technical Research Centre of Finland Ltd	Hemicellulose and cellulose interactions as a bioinspired approach for tuning water interactions and viscoelastic properties of cellulose networks
38	Lars Evenäs	Chalmers University of Technology, Sweden	DNP-NMR as a tool to determine degree of modification in dialcohol cellulose
39	Mikael Skrifvars	University of Borås, Sweden	Recent developments of all-cellulose composites from cellulose fibers – concepts, properties, and applications
40	Jan Carmeliet	ETH Zurich, Switzerland	The unseen magic of water molecules in wood
41	Julien Bras	University Grenoble Alpes, CNRS, France	Challenges to process nanocellulose for new fiber based materials
42	Sajjad Pashazadeh	Chalmers University of Technology, Sweden	Highly thermal conductive bio nano composite with anisotropic properties

Poster contributions

P1	Celine Aarsen	KTH Royal Institute of Technology, Sweden	Cellulose derived Diels-Alder covalent adaptable networks: a route towards recyclable thermosets
P2	Chloe Rantzos	Chalmers University of Technology, Sweden	Mycelium based composites and mycozymes production from agro-waste biomass valorization
P3	Meera Christopher	Chalmers University of Technology, Sweden	Enzymatic de-esterification of bark to aid thermoplasticization
P4	Katarina Jonasson	Tetra Pak Packaging Solutions AB, Sweden	Effect of moisture on processing and finished parts of dialcohol cellulose affecting design of process equipment
P5	Emilia Heinonen	KTH Royal Institute of Technology, Sweden	Pattern of substitution affects the extractability of xylan from Eucalyptus Globulus
P6	Lucas Kurth de Azambuja	Chalmers University of Technology, Sweden	Lignocellulose biomass sodium periodate modification: an outcome from the possibilities uses for extraction
P7	Marita Afandika	Chalmers University of Technology, Sweden	Cellulose-based materials as a separator for zinc metal batteries (ZMB)
P8	Nivedhitha Venkatraman	Chalmers University of Technology, Sweden	Morphological and structural properties of water-swollen cellulose fibres of different degrees of modification
P9	Sajjad Pashazadeh	Chalmers University of Technology, Sweden	A study on orientation of wood fiber in extruded biocomposites
P10	Jelka Feldhusen	Chalmers University of Technology, Sweden	Azetidinium salt Functionalized Pulp
P11	E. R. Kanishka B. Wijayarathna	University of Borås, Sweden	Development of cellulose base aerogels for air filtration using juice industry solid residues
P13	Patric Elf	KTH Royal Institute of Technology, Sweden	Effects of Ring Opening and Chemical Modification on the Properties of Dry and Moist Cellulose - Predictions with Molecular Dynamics Simulations

P14	Matilda Johansson	University of Borås, Sweden	Lignin-polylactic acid biopolymer blends for advanced applications – Effect of impact modifier
P15	Robin Storm	Mission 0 House - Chalmers, Sweden	Recycling and bio-based aspects for EV interior design
P16	Shao-His Lu	Chalmers University of Technology, Sweden	Enzymatic processing of steam-pretreated spruce
P19	Dharu Smaradhana	Imperial College London, UK	Synthetic Polymer-Free Fibreboards Derived from Oil Palm Waste
P20	Vaibhav Modi	VTT Technical Research Centre of Finland Ltd, Finland	Wettability of fatty acid esterified cellulose surfaces from molecular simulations
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P35	Guillaume Rivière	KTH Royal Institute of Technology, Sweden	Utilizing wheat straw as a lignocellulosic feedstock for thermoplastic materials: pulping, upscaling and modifications
P36	Åke Henrik-Klemens	Chalmers University of Technology, Sweden	Dynamical mechanical analysis of isolated and plasticized native, residual, and technical lignin: molecular structure, phase morphology, and glass transition
P37	Weitong Wang	Aalto University, Finland	Refined industrial tannins via sequential fractionation: exploiting well defined molecular structures for controlled performance in Pickering emulsions co-stabilized with chitin nanofibrils
P38	Yuge Yao	Chalmers University of Technology, Sweden	Transparent and water-resistant cellulose nanocrystals (CNC) films with conductivity organic polymers
P39	Leandro Cid Gomes	Chalmers University of Technology, Sweden & TreeToTextile AB, Sweden	Refining cellulose and lignin from de-juiced grass-clover side-stream
P40	Ratchawit Janewithayapun	Chalmers University of Technology, Sweden	Changes in conformation and dynamics of arabinoxylan after modification via periodate oxidation, reduction and etherification
P41	Najmeh Mousavi	University of Borås, Sweden	Myceilum-bound material from carrot waste for packaging application

P42	Pamela F. M. Pereira	Chalmers University of Technology, Sweden	Extraction, structural characterization and bioactivity of polysaccharides from agro-industrial by-products towards functional packaging
P43	Zahra Madani	Aalto University, Finland	White photothermal textile by incorporating pectin, a fruit-waste compound
P44	Adrian Eliasson	KTH Royal Institute of Technology, Sweden	Effect of fines on cellulose-rich materials modified by a combination of glycerol and ultrasonication
P45	Luigi Galluccio	Chalmers University of Technology, Sweden	Ionic liquids and penetration pathways in wood: methodologies development for mass transport analysis
P46	Veerababu Polisetti	KTH Royal Institute of Technology, Sweden	Transforming Lignocellulosic Materials into Melt-Processable Plastics Using Microcompounding and Compression Molding Processes
P47	Sajjad Pashazadeh	Chalmers University of Technology, Sweden	Effect of fiber aspect ratio on the extrusion instabilities in wood polymer biocomposites
P48	Valentina Matovic	Chalmers University of Technology, Sweden	Detection of extrusion instabilities using machine learning
P49	Alex George Leman	Chalmers University of Technology, Sweden	Fungal Valorisation of Recalcitrant Forestry Side-Streams