Nano Conference: Registration OPEN!

TAPPI Nano Student Committee

NANO 360°

Save the date! 19th April Coffee Break!

June 12 - 16, 2023 | Westin Bayshore, Vancouver BC

Nano Conference 2023

WELCOME

A message from your Student Committee

Welcome new and old readers alike.

Since, the **TAPPI Nano Conference** in Vancouver is coming up, we decided it was about time to introduce the new Student Committee team, highlight more **outreach events** and share some exciting recent advances in nanocellulose research.

- We hope you enjoy -

STUDENT UPDATES

The TAPPI Student Committee is dedicated to connecting students and young professionals around the world.
Check out our activities at the Nano Conference 2023

PG. 2-3

STUDENT OP-ED

Emilien Freville
Research: A Quest for Equilibrium

PG. 4

NANOCELLULOSE, A REVOLUTION

Emerge in the fascinating research of our committee members regarding nanocellulose.

PG. 5-6

Student Committee Updates

Mission and Vision

The Nano Division Student Committee is dedicated to providing a global network that connects students and young professionals around the world, facilitating knowledge exchange, providing useful tools, advice, and encouragement, so that students pursue careers that advance the use of renewable and sustainable nanomaterials.

Emilien Fréville
Co-Chair

Robyn Hill
Co-Chair

Eupídio Scopel
Vice Co-Chair

Yufei Nan
Vice Co-Chair

Gili Bar
Engagement Co-Chair

Julia Pescheux-Sergienko
Engagement Co-Chair

Javier Rodriguez
Secretary

Anderson Veiga
Secretary

Ariane Fernandes
Member at Large

Xia Sun
Member at large

Yuhang Ye
Member at large

STUDENT COMMITEE ACTIVITIES

Mentorship Coffee Breaks: It is meant to provide open doors for professional development and mentorship opportunities. This hour-long online session gives students and young professionals insight into the diverse career paths available to them after graduation. The coffee break speakers discuss their career paths and what inspired them towards the work they are doing with nanocellulose. In the April session, We will welcome Valentyn Frechka (co-founder and CTO of RELEAP PAPER FRANCE SAS) and Dr. Haishun Du (Auburn University, USA). Participation is free and open for every student and young professional.

Join us on Zoom for this exciting event on April 19th (17:30 UTC+1).
SAVE THE DATE!

STUDENT COMMITTEE AND NANO CONFERENCE 2023

Newcomers Lunch is one of the first events of the conference! The committee leadership provides an overview of the student activities and serves as the primary place for meeting other new conference attendees. Meet other students and make connections at the start of the conference!

MORE DIVISION ACTIVITIES

The Mentor-Mentee Program is the cornerstone of the committee's dedication to improve networking and career development of nanotechnology students. The program is meant to provide students with a mentor in the industry/academia/government that can help them make the most of their time at the conference and sever as an advisor throughout their studies/career. **Sign up when you register!!**

Get involved in our mentor-mentee program!

Student Poster Session offers students the opportunity to display their research work in poster format. A great opportunity to view and discuss your work in an informal and conversational setting. Enter the Poster competition and you may win a prize!

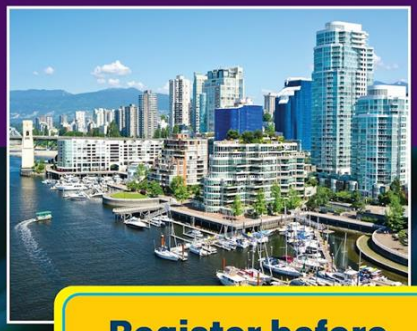
The Career Panel allows students and young professionals to learn from experienced professionals in the field. The speakers give a short presentation on their professional development and are available to answer questions from the audience.

The annual **TAPPI Nano Conference** is being held on 12-16 June, 2023 in Westin Bayshore, Vancouver BC, Canada.

Visit the **Student Committee Booth** when you arrive to get updated on all student-related events.

REGISTER NOW!

2023 TAPPI International Conference on Nanotechnology for Renewable Materials



12-16 June 2023

Westin Bayshore · **Vancouver, BC Canada**

- Join the global nanomaterials community to discuss the latest advances in production and uses of cellulose nanomaterials in a variety of industries
- Expand your network with some of the brightest international minds in nanotechnology
- Gain insights into the latest advancements in research and applications in today's newest products

Register before 12 May 2023 to take advantage of Early Bird rates!

Conference.tappinano.org

TAPPI NANO DIVISION

STUDENT OP-ED

Research: A Quest for Equilibrium

"Science is done by
Feeling good
And
Getting ideas"

By Emilien Freville

I have to admit that I discovered the existence of Op-Ed which stands for page "opposite the editorial page" during the first meeting of student committee meeting gathering the future members. So, I browsed "op-ed" on the net, and I found the origin of an op-ed. I found that Herbert Bayard Swope invented it 1921 (please notice that TAPPI is older than the op-ed because it was created in 1915, but it's not our matter of interest here).

Herbert remarked that the page opposite the editorial was a *catchall for book reviews, society boilerplate, and obituaries*. And so he wrote "*It occurred to me that nothing is more interesting than opinion when opinion is interesting, so I devised a method of cleaning off the page opposite the editorial, which became the most important in America ... and thereon I decided to print opinions, ignoring facts*"[2]. With that in mind, it's my turn to try writing my first Op-Ed.

Today I want to wonder about the right equilibrium of a researcher. More specifically, how to do good research by combining lab work, team management, conferences, private life or ethical opinions. That's a current question I am wondering being at the very beginning of my career. As many other PhD students, I see professors or researchers at large scale performing good research at an intense level. I mean many projects to manage, many people, several meetings a day one after the other.

Lab research

Everyday life in the lab goes well when the week is organized and planned. Sometimes there are bad days, where nothing is working! Accept the bad day and take a break if needed. Being social and saying hello with a smile will help to communicate about your technical issues with technician, PhD students or professors. Ideas can immerse from informal discussion.

Conferences

It is often energy intensive to participate in a conference and to be aware during the socials, presentations, network during the breaks and in the events. In TAPPI Nano conference it is super easy to network, everybody knows each other and it looks like a big family.

Ethical opinion

"*This is the most common way of defining ethics: norms for conduct that distinguish between acceptable and unacceptable behavior*"[3]. Of course, everybody knows about common ethics rules in research about falsification for example. But some lines are more blurred. For example: what is the issue with consuming so much energy to obtain CNF, do amazing properties justify the use of toxic chemicals? Is it acceptable if just at lab scale? Why take the plane to go on the other side of world? In the current society those questions are often environmentally oriented. In the end, it's always better to discuss about these doubts with others and keep wondering than being close minded.

Private life

"*How can hobbies or soft skills keep the scientific curiosity alive and contribute to science in indirect ways*?" was a question asked by Julia Downing PhD candidate to Didier Queloz, Nobel prize in physics in 2019. Its answer was totally complete. Being in research means being curious but at one moment your brain will be totally saturated and it's important to recognize those moments and act properly, by doing something you like. For Didier Queloz it was sleeping at least its 8h, and so you have to stop your brain working one or two hours before sleeping. He concludes saying "*Science is done by feeling good and getting ideas"*[4].

[1] Meyer, K. (1990).Pundits, poets, and wits. New York: Oxford University Press.
[2] Swope, H. B. as quoted in Meyer, K. (1990).Pundits, poets, and wits. New York: Oxford University Press, p. xxxvii.
[3] National Institute of Environmental Health Sciences.
[4] https://www.instagram.com/reel/CpCSlidJw8W/?igshid=YmMyMTA2M2Y%3D

ADVANCES IN NANOCELLULOSE RESEARCH

Learn more about the current research in nanocellulose science from Xia Sun, Ariane Fernandes and Anderson Veiga, members from the TAPPI Nano Student Committee

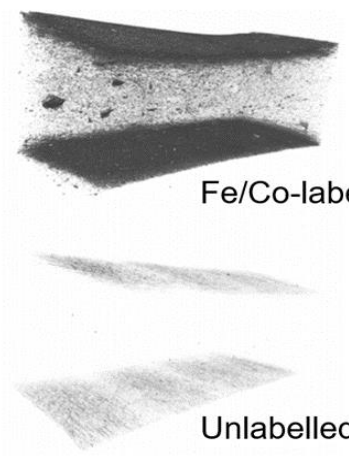
Chemical Pre-treatment for Nanocelluloses by Xia Sun (PhD Student at The University of British Columbia)

Recently, the continuous advancements in the field of nanotechnology have stimulated interest in nanocelluloses.[1] Current studies have mainly focused on the preparation and applications of nanocelluloses. To improve nano-fibrillation efficiency and decrease the energy consumption as well as further expand the application field of nanocelluloses, chemical pre-treatments of cellulose fibers are highly demanded and extensively explored. Different chemical pre-treatments[2] (e.g., oxidation, enzymatic treatment, cationization, sulfoethylation) will generate different nanocelluloses with various functional groups. Among them, periodate oxidation[3] has drawn a lot of attention in the past few years, since the fabricated dialdehyde nanocelluloses are highly potential for modification with other groups and show great potential for various applications. Therefore, although the industrialization is still out of reach, periodate oxidized nanocelluloses are highly promising candidates for novel nanocelluloses preparation.

Labelled Cellulosic Fibers for Advanced Microscopy by Anderson Veiga (PhD Student at The University of British Columbia)

The development of paper products depends on the development of advanced and reliable characterization techniques. X-ray micro-computed tomography (micro-CT) is a well-known imaging method that has the potential to analyze the 3D microstructures of materials.[4]

To obtain high-resolution and meaningful insights into carbon-based structures, staining or labelling samples with contrast agents is required. Labelling cellulose nanofibrils (CNF) with iron and cobalt showed promising results to identify the location of fine fibres in a paper structure after the papermaking process[5]. Micro-CT analysis of labelled fibres has the potential to understand the processing of paper products through fibre segmentation[4], distinguish different pulp fibres[6], and understand the microstructure of paper products[7].



CNC as Emulsion Stabilizers by Ariane Fernandez (PhD Student at The University of British Columbia)

Cellulose nanocrystals (CNCs) are highly crystalline and rigid nanoparticles that can be extracted from natural sources such as wood pulp, cotton, and other plant materials. Due to their unique physicochemical properties, CNCs have emerged as promising candidates for various industrial applications, including as emulsion stabilizers. Regarding the physicochemical properties of CNC, they have been known as hydrophilic rod-shaped particles, however, the crystalline organization allows the formation of hydrophobic edges providing amphiphilic properties to the CNC.[9] The partial wettability of CNC has been explored for it is applied as an emulsion stabilizer. Small particles are thought to be irreversibly adsorbed at the interface because the energy needed to remove them is many orders of magnitude more than the thermal energy, which improves emulsion stability.[8,9] Small particles can be irreversibly adsorbed at the interface of oil-water systems since the energy required to remove the particle from the surface is greater than the thermal energy, which improves the emulsion stability.[9]

REFERENCES
[1] Dufresne, A. (2013). Nanocellulose: a new ageless bionanomaterial. Materials today, 16(6), 220-227
[2] Poulose, Aiswarya, et al. "Nanocellulose: A Fundamental Material for Science and Technology Applications." Molecules 27.22 (2022): 8032.
[3] Yang, Han, Md Nur Alam, and Theo GM van de Ven. "Highly charged nanocrystalline cellulose and dicarboxylated cellulose from periodate and chlorite oxidized cellulose fibers." Cellulose 20 (2013): 1865-1875.
[4] Journal of Microscopy, Vol. 260, Issue 3 2015, pp. 400–410.
[5] Nordic Pulp & Paper Research Journal 2018; 33(4): 610–617.
[6] Holzforschung 2018; 72(5): 397–403.
[7] Journal of Microscopy, Vol. 272, Issue 1 2018, pp. 35–46/
[8] Kalashnikova, I., Bizot, H., Cathala, B. & Capron, I. Modulation of cellulose nanocrystals amphiphilic properties to stabilize oil/water interface. Biomacromolecules 13, 267–275 (2012).
[9] Kedzior, S. A., Dubé, M. A. & Cranston, E. D. Cellulose Nanocrystals and Methyl Cellulose as Costabilizers for Nanocomposite Latexes with Double Morphology. ACS Sustain. Chem. Eng. 5, 10509–10517 (2017).

Information and Recap About Future Events!

- The next **TAPPI Nano Conference 2023** is taking place on **12-16 June**, in Westin Bayshore, Vancouver BC, Canada. The early bird **registration deadline is 12th May!**
- The next **Mentorship Coffee Break** is taking place on **19th April, 2023**. You are welcome to come and learn from academia experts and ask them all the questions that you may have on the career path or any advice to succeed in X.
- **Do not forget you can join our committee. Rach us and we will give you information!**

REACH US!

We hope to meet you soon!
but in the meantime, follow us on social media to get the latest information!

www.linkedin.com/in/TAPPINANOSTUDENTCOMMITTEE
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tappinanostudents@gmail.com