

The Fibril Angle

The Newsletter of the Cellulose and Renewable Materials
Division

Spring 2023 Edition

Letter from the Chair



It feels great to be part of the Cellulose and Renewable Materials Division with the excitement building for the upcoming Spring Meeting in Indianapolis. It is one of those annual meetings in our community where people from all over the world come together and where we know we will meet most of our colleagues at one place. Everyone I've talked to over the last couple of weeks has mentioned Indianapolis with anticipation. We have all been made acutely aware of the value to meet in person to stimulate collaborations, discuss scientific breakthroughs, and to connect with colleagues socially. I know it will feel fantastic to be meet up with most of you. But if you cannot make it, the division is still there for you and do not hesitate to contact any of us if you need help or support.

Behind the scenes, there has frantic activity to make this year's meeting a complete success. I feel blessed, as the new division chair, to be able to work with such a great team. We will finally have a full program again with an Anselme Payen Awards Dinner and it is incredible to see how past and long-term division officers offer their support to new ones after several years of limited programming. It highlights the supportive nature of our division and has been a great help. Thank you. I also want to specifically thank our past chair, Scott Rennekar, for guiding our division successfully through the past difficult couple of years. I will do my best to fill his shoes over the coming years. I also want to thank all the division officers who put up their time and effort to serve our CELL community. Without you, we would not be able to operate and offer this experience to our members. Thank you also. I really look forward to working with all our current and future officers. And to our wide membership, I would like to reach out to stay or become active in our working by proposing symposia for future meetings, help out as a volunteer, or stand for any of our officer positions. Together, we shape our division and our community.

Letter from the Chair-elect



Hi everyone! After being Division secretary for four years, I am now excited continuing serving Cellulose and Renewable Materials Division as Chair-elect.

During the past four years, in addition to my duties as a secretary and as a member of Division Executive Committee, I actively participated in the preparation of the celebration of 100 years CELL anniversary (logo competition, organization of special sessions and round table discussion) which had to take place at ACS Spring 2020 meeting. Unfortunately, these events did not occur because of the pandemic.

Together with Kevin Edgar we launched a special issue devoted to 100-years CELL anniversary in Carbohydrate Polymers journal; about 40 articles from the leading scientists in the area of renewable materials have been published including historical essays and personal opinions. I was with CELL during the challenging times of pandemic helping running and promoting the division.

Difficult times are in the past. I hope that CELL division will continue growing and be active and energetic despite a “certain” age 😊, with increased participation of young generation. New CELL website (<https://acs-cell.org/>) provides information about job positions, upcoming conferences and award and grant applications. You are welcome to suggest organization of symposia at Fall and Spring ACS meetings, post announcements on CELL website and initiate new actions. Please do not hesitate to contact me by email (Tatiana.Budtova@minesparis.psl.eu) with your suggestions and ideas, future is in our hands.

See you soon at ACS Spring meeting in Indianapolis!

From our new ex-comm member - Nathalie Lavoine



Hi everyone!

My name is Nathalie Lavoine (she/her), and since 2018, I am an Assistant Professor in the Department of Forest Biomaterials at NC State University, Raleigh, North Carolina. I am very pleased to serve as the 2023 Secretary of the ACS CELL Division.

A little bit about myself...I originally come from France, and please, do not pronounce the “h” in my first name, which merely reflects the fanciness of the French spelling. Born and raised in Strasbourg, France, I got the opportunity to move to the southern part of the country, to Grenoble, in 2007, to complete a master’s degree of Science at the International School of Paper, Print Media, and Biomaterials (the so-called French Engineering degree or Diplôme d’Ingénieur) in 2010.

After which, I readily started a Ph.D. in materials science under the supervision and mentorship of Dr. Julien Bras and Dr. Isabelle Desloges at the Laboratory of Pulp and Paper Science and Graphic Arts (LGP2) in Grenoble (France). I just realize it now, being on the “other side of the desk”, but I have been given a great education platform, and the number of resources and tools necessary to be successful in my career and research endeavors – and for this, thank you, dear mentors! After my Ph.D. graduation in 2013 (yes, I am celebrating my 10 years in 2023), I moved to the University of Tokyo in Japan for a 2-year extraordinary postdoctoral experience under the mentorship and supervision of Prof. Akira Isogai and Prof. Tsuguyuki Saito. Once again, thank you for this amazing opportunity that I took with me to Sweden, for a second 2-year postdoc experience at Stockholm University under the supervision of Prof. Lennart Bergstrom.

With all this amazing, productive, and effective training, I have been very proud to get a Faculty position in 2018 at NC State University. Since then, I am literally fighting and working towards sharing and conveying my education, knowledge, and experience with my undergraduate and graduate students through a diversity of research, teaching and outreach activities. I have been working towards implementing a research-education integrated platform which not only relies on strong engineering and scientific skill sets in the field of biomass conversion and valorization across length scales, but also on an entrepreneurial mindset that aims to develop students’ curiosity and connections to the world & society for creating value.

As of February 2023, I am very proud to serve as (hopefully) a mentor and a supervisor of 3 Ph.D. graduate students, 1 postdoctoral researcher and a minimum of 15 undergraduate students.

Since my first ACS meeting in 2013, I have been following and supporting the CELL Community. I have found in there a supportive family composed of bright researchers who I admire because they demonstrate exemplary leadership and mentorship skills and convey and share inclusive, ethical core values. I am thus very honored to have been selected to serve as part of this community, and to be given the opportunity to give back to all my mentors and collaborators through ensuring succession of their values, academic standards, scientific knowledge, and leadership skills to the next generation of researchers and scientists.

2023 CELL Division Officials

Chair: Wim Thielemans

Chair-Elect: Tatiana Budtova

Immediate Past Chair: Scott Renneckar

Secretary: Nathalie Lavoine

Treasurer: World Nieh

Councilors: Sheila Murphy, Lucian Lucia & Kevin Edgar

Alternate Councilors: Soledad Peresin, Maren Roman & Paavo Penttila

Members-at-Large: Feng Jiang, Yu Ogawa & Maria Celeste Inglesias

Program Chair: Falk Liebner

Vice Program Chair: Glenn Larkin

Awards Chair: Alexander Bismarck

Membership Chair: Tik Sathitsuksanoh

Events Chair: Silvia Vignolini

Publicity Chair: Koon-Yang Lee

What does CELL Division provide its Members?

- An avenue to present your research and network with possible collaborators. CELL organizes and sponsors programming at ACS National Meetings and Exposition, including special symposia, award symposia, and poster sessions. On occasion, we participate in joint symposia with other divisions, including recent and popular joint symposia with CARB, POLY, PMSE. Please continue to submit abstracts for ACS CELL programming!
- Organize and sponsor symposia at international meetings dedicated to cellulose and renewable materials, such as the International Cellulose Conference (ICC) in Japan, International Carbohydrate Symposia, EPNOE (European Polysaccharide Network of Excellence);
- Support other ACS symposia relevant to cellulose chemistry and materials glycoscience, including those (co-)organized with the ACS Division of Professional Relations and symposia in ACS Regional Meetings;
- Provide opportunities for early career researchers, and undergraduate chemists, for example, travel awards and poster awards;
- Organize and support award programs, including the Anselme Payen Award, the KINGFA award, the Division Fellow Award, Graduate Student Award, Poster Awards, Student Travel Award.



ACS Technical Division
Cellulose and Renewable Materials (CELL)

2022 Anselme Payen Award

The 2022 Anselme Payen Award goes to Professor Christoph Weder from the Adolphe Merkle Institute (AMI) at the University of Fribourg (Switzerland). He is the Chair of Polymer Chemistry and Materials and also serves as the Director of the institute. Professor Weder received his first degrees from ETH Zürich, where he studied chemistry and in 1994 earned a doctorate degree in polymer science under the guidance of Professor Ueli Suter. After a post-doctoral fellowship at Massachusetts Institute of Technology with Professor Mark Wrighton and another five-year appointment at ETH, where he completed his habilitation, Professor Weder joined the Department of Macromolecular Science and Engineering at Case Western Reserve University, where he eventually became the F. Alex Nason Professorship of Engineering. In 2009, Professor Weder joined the University of Fribourg to assume his current position.



Professor Weder is known as an imaginative scientist whose research is situated at the interface of chemistry and materials science and engineering. His main research interests are the design, synthesis and investigation of novel functional polymers, in particular stimuli-responsive polymers, bio-inspired materials, supramolecular systems, and polymer nanocomposites. Cellulose nanocrystals constitute one of the most important building blocks that his group uses to create such materials. Professor Weder is the co-author of more than 300 peer-reviewed scientific articles and 18 book chapters. He has mentored over hundred graduate students and postdoctoral researchers. More than 20 patents, several commercialized technologies, and continuous collaborations with industry document his interest to translate research findings into new technologies.

Professor Weder serves as an associate editor of ACS Macro Letters and is an advisory board member of numerous journals and scientific centers. He is the recipient of several prestigious awards, including an ERC Advanced Grant, a National Science Foundation Special Creativity Award, the DuPont Young Professor and DuPont Aid to Education Awards, and the 3M Non-Tenured Faculty Award. He held numerous named lectureships in academia and industry, is a member of the Swiss Academy of Technical Sciences, and a Fellow of the American Chemical Society's Division of Polymer Chemistry.

Congratulations to Professor Weder!

2022 KINGFA Young Investigator Award



The 2022 KINGFA Young Investigator Award winner is Dr Koon-Yang Lee, Professor in Polymer Engineering at Imperial College London. Koon-Yang leads the Future Materials Group at Imperial College London, a group focussing on the development of chemical engineering-driven nanocellulose composite innovations. His work is highly multi-disciplinary, with an emphasis on the development and manufacturing of nanocellulose materials with a focus on tailoring the interface between two (or more) phases to bridge the gap between chemistry, chemical engineering, physics, materials science and engineering, underpinned by the core research principles of (i) simple design, (ii) manufacturability and (iii) radical effects.

The specific focus of his research group is to develop cellulose nanocomposite innovations that will target engineering applications that cannot be achieved by conventional polymers alone and could serve as alternative to traditional glass fibre-reinforced polymers. His research has successfully demonstrated that dried and well-consolidated network of cellulose nanofibrils, i.e., cellulose nanopaper, can be used as efficient two-dimensional reinforcement for polymers.

As the recipient of this award, Koon-Yang will receive \$1,500 and a plaque.

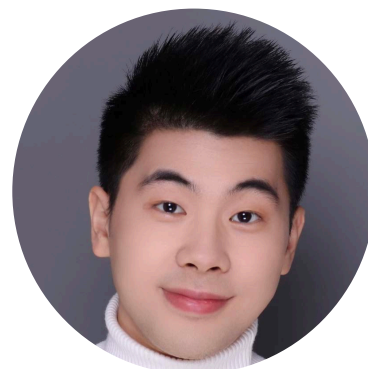
Congratulations to Koon-Yang!

2022 Graduate Student Award

We have an amazing pool of candidates for the 2023 CELL Division Graduate Student Award this year and the selection was tough. Our panel of judges have narrowed down two candidates for the Graduate Student Award this year. The first place goes to Thomas Parton from the University of Cambridge and the first runner up goes to Zheyuan Ding from Tianjin University.



Thomas studies the chiral self-assembly of cellulose nanocrystals for photonic films. The aim of his PhD is to answer fundamentally how does the chirality of the CNC mesophase arise and how does kinetic arrest of CNC suspensions influence the visual appearance of photonic films. In his award-winning publication “Chiral self-assembly of cellulose nanocrystals is driven by crystallite bundles” (Nature Comm. 2022, 13, 2657), he showed that the sub-population of cellulose nanocrystals (CNCs) act as chiral dopants, analogous to those used for molecular liquid crystals, while the other CNCs are functionally achiral. More generally, it suggests a new paradigm for chiral self-assembly of colloidal particles, in which a small quantity of chiral dopant particles can be used to drive the self-organization of a larger particle ensemble.

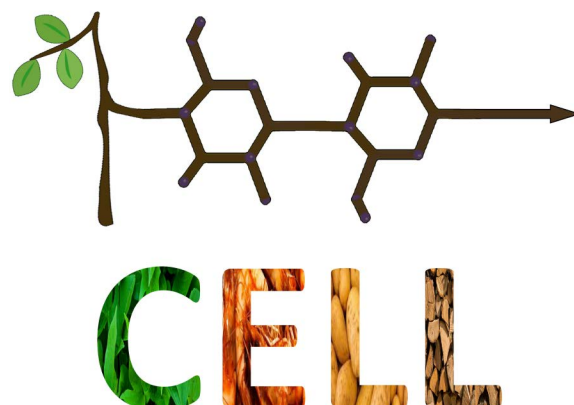


Zheyuan’s research focuses on the synthesis of lignin derived advanced carbon materials including graphene quantum dots, graphene and VdW junction for advanced application. His work aimed at revealing the aromatic fusion mechanism via in-situ or operando technique including STEM, AFM, XAFS and NMR, etc. for highly controllable synthesis of advanced low-dimensional carbon materials. His award-winning publication “Gram-scale synthesis of single-crystalline graphene quantum dots derived from lignin biomass” (Green Chem. 2018, 20, 1383) showed the possibility of producing gram-scale single-crystalline graphene quantum dots from from lignin. The utilisation of renewable biomass resources paves the way for green, low-cost and large-scale production of high quality graphene quantum dots and allows for the development of sustainable applications.

We will see their award winning talks in ACS Spring 2023 meeting in Indianapolis, in the New Horizons in Renewable Materials: Young Investigators Symposium. Congratulations to both of them!

Meeting-at-a-glance: Symposia of CELL Division at the 2023 ACS Spring National Meeting & Exposition

This year's Spring ACS National Meeting will be held between March 26th - 30th 2023 and the CELL Division will be running 14 symposia, with 278 oral presentations and 45 poster presentations scheduled during this meeting. The full schedule of the symposia organised by CELL Division can be found on the ACS Spring National Meeting & Exposition website.



- **Graduate student Awardee - New Horizons in Renewable materials - Monday, March 27th, 8:55 to 09:20AM (Eastern Time), Grand 3, The Westin Indianapolis**

Our other Graduate Student awardee, Thomas Parton, will be presenting the “Morphological analysis of cellulose nanocrystals: Insights into chiral self-assembly” in this symposium.

- **Graduate student Awardee - New Horizons in Renewable materials - Sunday, March 26th, 3:20 to 3:45PM (Eastern Time), Grand 5, The Westin Indianapolis**

Our Graduate Student awardee, Zheyuan Ding, will be presenting the “Lignin aromatic refusion strategy: Lignin to multi-dimensional graphene”.

- **KINGFA Young Investigator Award Lecture - Monday, March 27th, 10:30 to 11:20AM (Eastern time), Grand 3, The Westin Indianapolis**

Dr Lee, our KINGFA Young Investigator Awardee, will be delivering his award lecture titled “Stopping bullets with nanocellulose: High value nanocellulose composites for impact protection”.

- **Anselme Payen Award Lecture - Tuesday, March 28th, 3:40 to 4:25PM (Eastern Time), Grand 3, The Westin Indianapolis**

Dr Weder's Anselme Payen Award lecture is titled “Functional materials based on cellulose nanocrystals”.

- **CELL Division Business meeting - Wednesday, March 29th 4:00 to 7:00PM (Eastern time), Capitol III, The Westin Indianapolis**

Come along to find out what the CELL Division can do for you!

Anselme Payen Award



The Anselme Payen Award, which includes a bronze medal and an honorarium of \$3,000, is given by the CELL Division of the ACS to honor and encourage outstanding professional contributions to the science and chemical technology of cellulose and its allied products.

KINGFA Young Investigator Award

Sponsored by Kingfa Scientific and Technology Co.,

the KINGFA Young Investigator Award recognizes outstanding contributions by young investigators to the science and chemical technology of cellulose and renewable materials. This is an annual award administered by the ACS CELL Division Awards Chair. The winner of the Award shall receive an invitation to give a presentation in recognition of the recipient at the ACS Annual meeting, \$1,500 cash, a plaque, up to \$500 in travel expenses and a complimentary Division Awards Banquet ticket.