

# The Fibril Angle

The Newsletter of the Cellulose and Renewable Materials  
Division

Fall 2019 Edition



Chair: Gordon Selling

## Letter from the Chair

There is much that the membership of the CELL Division can take be thankful for as we look at this year. At the upcoming fall 2019 ACS meeting, we will have almost 60 presentations, and at the spring 2019 meeting we had well over 500 presentations. If you see our Programming Chairperson Wim Thielemans or our Vice Program Chair Glenn Larkin, give them a big “Thank You”. Also, at the spring 2019 meeting, we celebrated the career of Prof. Orlando Rojas when he received the CELL Division’s highest honor the Anselme Payen Award. At the same celebration, we announced the next Anselme Payen Award winner, Prof Ann-Christine Albertsson. Her career will be celebrated at the Spring 2020 ACS meeting in Philadelphia.

Speaking of celebrations, we will be celebrating the birth of our division at the Spring 2020 ACS meeting. Most of the activities will be occurring on that first Sunday of the ACS meeting. So please examine your calendars and insure that you can come early and take part in this event. Thanks to Prof. Maria Soledad Peresin for her efforts in organizing the events of the 2020 meeting.

In addition to joining us in the festivities, there will always be opportunities to present your research, learn more about your colleagues’ research and develop research collaborations to advance your area of research. The portal for submitting an Abstract typically occurs right around the Fall meeting time. Please review the sessions which CELL will be organizing and consider submitting an abstract.

As always, the Executive Committee is doing all that it can do service the needs of the Division Members and the entire Society. Recently we were informed that the CELL Division’s web site would no longer be serviced by National ACS, and CELL had to find an alternative. After significant effort our Publicity Chair, Prof. Koon-Yang Lee, found an alternative means to carry our Division’s news, activities and announcements to our membership. This new site will be up soon (Thanks Koon-Yang). You will be able to access the site through the National ACS site, however, if you have saved a Bookmark for the old site, this will need to be changed.

As always, we are seeking new volunteers to help CELL. If you have an interest in serving, please contact me. I look forward to seeing you next Spring in Philadelphia.

### How can you get involved in CELL Division?

We are a volunteer organization and we need YOU to be successful. Attend or submit an abstract to present at CELL sessions at ACS National Meetings. Submit a symposium proposal for CELL session at an ACS National Meeting or an ACS Regional Meeting. Request financial support for conferences and symposia that you are planning to organize within or outside the ACS. Nominate someone for a CELL professional, student and postdoc for an award (See Awards & Fellowships on the CELL website). Volunteer to run for an elected or nominated position on the CELL Executive Committee. Ask me or any Executive Committee member to implement your idea(s) to continually shape CELL for the future.

## Letter from the Chair-Elect

Greetings from Vancouver, Canada! I extremely excited to volunteer in the capacity of Chair-Elect for the Division. Over 15 years ago I attended my first CELL symposium at the Spring meeting in the fabulous city of New Orleans and I was truly amazed and inspired by the scientific content of the meeting and the welcoming culture of the CELL group. Since that time, our Division has grown considerably and it is great that our vision, “Inspiring bio-based solutions for a sustainable future” is at the core of the materials and chemistry community. In the coming spring ACS meeting, we will be celebrating the 100-year birthday of the Cellulose Division under thematic programming of “Macromolecular Chemistry: The Second Century”.



Chair-Elect: Scott Rennekar

This alignment is quite fitting as cellulose chemistry helped to usher in the first 100 years; the next century of polymer chemistry will most certainly be centered on renewable materials as we battle global warming, plastic pollution, and work towards elimination of synthetic compounds that persist in the environment. So please mark your calendars to attend this once in a 100-year event in Philadelphia. I look forward to meeting and connecting with everyone and discussing creative ideas to ensure the Division remains welcoming and open for the next 100 years.

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## 2019 Anselme Payen Award

The 2019 Anselme Payen Award winner is Dr Ann-Christine Albertsson, Emeritus Professor at the Department of Fibre and Polymer Technology, KTH Royal Institute of Technology Sweden. Dr Albertsson's scientific contributions have provided us with a new paradigm in the design of degradable and renewable polymeric materials, where the macroscopic performance is translated to all levels of order.



The width and scope of her achievements have contributed not only to the field of biopolymers but to the greater community of polymer science. Her scientific accomplishments include:

- The development of sustainable materials based on hemicelluloses - demonstrating utility and advantages of these renewable materials as barrier films for food packaging;
- The isolation and utilisation of upgraded dry materials from wood hydrolysates for the formulation of polymer products;
- Demonstrated the conversion of hemicelluloses to macroinitiator systems for controlled radical polymerisation;
- Developed the concept of indicator products as a new tool for the prediction of lifetimes of polymeric materials; Introduced novel monomers, created new initiator and catalyst systems for ring-opening polymerisation;
- Pioneered the use of hydrophilic monomer (1,5-dioxepan-2-one) in polyester synthesis;
- Developed bioresorbable polymeric scaffolds as artificial tissue implants;
- Designed and developed functional and nano-structured surfaces for tissue engineering.

Dr Albertsson has published more than 380 peer-reviewed publications in various international scientific journals, with more than 16,000 citations. She has also edited 5 books. Dr Albertsson is also the founding editor-in-chief of the journal *Biomacromolecules*.

# 100th Birthday Celebration of CELL Division

The year 2020 is the CELL division's 100th birthday and our celebratory events will occur on Sunday March 22, 2020 at the spring National Meeting & Exposition, Philadelphia, PA. To celebrate this momentous occasions, the division has reached out to our talented members to help us celebrate in style to create a centennial logo for the division.

We have received nine entries and the winning logo will be judged by a panel consisting of 3 CELL division members. The results will be announced by November 15, 2019. The top three submissions will be recognized on the CELL website and in the CELL Newsletter, Fibril Angle (Spring 2020 edition). The winner will receive \$100 and a certificate containing the winning logo, and the logo will be used throughout 2020 on all CELL division business.

## Outstanding student contributions and fighting microplastics at Orlando 2019 meeting

Katarzyna Mystek (KTH Royal Institute of Technology, Sweden) and Leo Tse (The Hong Kong Polytechnic University) achieved the shared first place and 250 Euro recognition for their outstanding student presentations in symposium Wood-based polymers: from functional structures to applications in Orlando 2019. The award was supported by fiber manufacturer Lenzing AG. Katarzyna presented her work on wet-expandable cellulose-based capsules. The work of Leo has been on synthesis of lignin-porphyrin nano-particles for photoluminescence enhancement at high water fraction and heavy metal sensor applications. The jury was impressed by the quality and extent of the work of both students, who are in the beginning of their PhD studies. They set the bar high!



(on the left) Symposium co-organizers Tiina Nypelö (left) and Stefan Spirk (right) supporting the CELL division program chair Wim Thielemans (second left) in acknowledging PhD students Katarzyna Mystek (second from right) and Leo Tse (Photo on right) for their outstanding performance.



In the technical program, Michaela Kogler from Lenzing highlighted the importance of controlling fiber material degradation to control accumulation of microplastics leading to marine pollution. The various fiber materials end up in oceans dominantly through washing of clothes. She is working on quantifying accumulation and qualifying the contribution of various fiber grades. LENZING™ fibers have proven to be compostable and biodegradable in every environment (marine, fresh water and soil). The work is a great opening for relating experimental data to the materials challenges related to accumulation and consumption, and potentially, guiding our material choices consequently.

Figure left: Michaela Kogler (middle) was representing Lenzing AG in the symposium co-organized by Stefan Spirk (left), Tiina Nypelö (right), Justin Zoppe, Monica Ek and Ilari Filpponen.

## Meeting-at-a-glance: Symposiums of CELL Division at the 2019 ACS Fall National Meeting & Exposition

This year's program of the CELL Division at the Fall ACS National Meeting in San Diego, CA, to be held between August 25th - 29th 2019, comprises of 8 symposiums with 103 oral and 18 poster presentations. The full schedule of the symposiums organised by CELL Division can be found on the CELL Division website or the ACS Spring National Meeting & Exposition website.

CELL Division Program Chairs - Glenn Larkin, Wim Thielemans					
	Sun	Mon	Tue	Wed	Thu
Lignin Based Bioproducts	AM/ PM	AM			
General posters	EVE				
Future of Biomacromolecules at a Crossroads of Polymer Science & Biology - Synthetic Cells (POLY)		AM			
Future of Biomacromolecules at a Crossroads of Polymer Science & Biology - Tissue Engineering (POLY)		PM			
Sci-Mix		EVE			
Advances in Characterizing Modified & Degraded Wood			AM		
Future of Biomacromolecules at a Crossroads of Polymer Science & Biology (POLY)			EVE		
Materials Advances in Nanocellulose Research for Engineered Functionality (co-sponsored by PMSE & POLY)				AM	AM
Future of Biomacromolecules at a Crossroads of Polymer Science & Biology - Delivery System (POLY)				AM	
Future of Biomacromolecules at a Crossroads of Polymer Science & Biology - Biomaterials (POLY)				PM	

# Obituary

Dr. Noelle Rita Bertoniere passed away on April 3, 2019 in The Villages, Florida. Coincidentally, it was during the ACS National Meeting in neighboring Orlando. In its one hundred-year history, Noelle was the only recipient of the Lifetime Achievement Award from the Division of Cellulose, Paper, and Textiles, the former name of the Cellulose and Renewable Materials Division. Dr. Bertoniere served as Chair of the Cellulose Division in 1991 at the time of Cellulose '91, an international meeting of the Division, the Syracuse Cellulose Conferences, and Cellucon. It was held at SRRC during its 50th Anniversary. Based in part on the excellence of these national and international technical programming activities, the ACS awarded the Cellulose Paper and Textile the Best Small Division Award in 1992. Her impact on the Division is reflected in her Cellulose Division Fellow Award in 1996. She was also active in the American Association of Textile Chemists and Colorists.



Dr. Bertoniere was a Research Chemist at the United States Department of Agriculture's Southern Regional Research Center (SRRC) in New Orleans, Louisiana for 41 years prior to her retirement in 2001. She joined ARS shortly after getting her bachelor degree from Dominican College in New Orleans, and her first work was published in 1964 on the processing of sweet potato flakes. She participated in a special ARS program for the advancement of ARS scientists and obtained a PhD in Organic Chemistry from University of New Orleans in 1971 while working on cotton chemistry.

Her signature research work concerned the pore sizes in cotton fiber and the improved performances of durable press cotton. She made a major contribution to "Cotton Fibers" in Handbook of Fiber Chemistry. That chapter was such an outstanding effort that it was later published as a separate book entitled, Cotton Fiber Chemistry and Technology. She also contributed to a major effort on the main molecule in cotton, "Cellulose" in the Kirk-Othmer Encyclopedia of Chemical Technology. That work is still current and is included in the most recent 2018 version of "Cellulose" in the Encyclopedia of Polymer Science and Technology. Her research on the chemical modification of cotton fabric and the structure of cotton cellulose resulted in over 90 publications and a US patent, and has had significant commercial and scientific impact in the US cotton industry.

Beyond her scientific contributions, Dr. Bertoniere served as Research Leader of the Cotton Chemistry Research Unit. She is credited with managing this large and productive research group and sharing resources with other research groups for the overall success of the cotton programs and the Center. She made major contributions to the SRRC computer, information technology and telephone systems, and the SRRC computer room is dedicated to her.

Noelle's mentorship extended well beyond the SRRC to the Cellulose Division and her leadership inspired professional women from SRRC and other laboratories, academia, and industry to participate in its activities. Helena Chum from the National Renewable Energy Laboratory was one of them, and served as Program Chair in the Division, and developed a decades long friendship with Noelle, whose advice to increase participation in programming activities was to "feed programming participants and they would come". This writer also benefited greatly from her mentorship. In particular, she organized numerous programs that had a spot to present my work.

She also mentored Bill Marmer of the USDA's Eastern Regional Research Center. Noelie introduced him and his group to CELL, and encouraged them to join the Division. That helped expand the scope of CELL beyond cellulose to include proteinaceous and fermentation-produced materials and hence the change of the Division name in 2002. Noelie helped him expand his stakeholder base from wool (and hides and fats & oils) by introducing him to the cotton industry, which resulted in collaborative research between ERRC and SRRC in the facile dyeing of cotton-wool blends, political support of his program by the National Cotton Council, and industry and military trials of the blended products. The three of us went on to become Division Chairs, as did Vince Edwards, a member of her group.

She also had a national profile in ARS, serving on a detail in the National Program Leader Office in Beltsville. She served as Acting Associate Area Director in Stoneville, MS. and as Acting Center Director at SRRC in 1994. She represented ARS on official trips (PL-480) to England and India; neither trip made a favorable impression on her. Her participation in the Industrial Agriproduct Technologies Workshop between ARS and the Agrotechnological Research Institute-(Netherlands) Agricultural Research Service (ATO-DLO), Wageningen, The Netherlands, was more to her liking. She organized numerous meetings of stakeholders at SRRC to get input on developing project plans for cotton research.

She easily made friends with some of the top women leaders in ARS including Jane Giles and Dr. Judy St. John, Deputy Administrators, and moved to Florida to be near them in 2006 after Hurricane Katrina extensively damaged her lifelong home in New Orleans. Ironically, her Florida home was destroyed by a tornado with her in it in 2007, but it was quickly rebuilt. That double disaster resulted in a CNN interview by Anderson Cooper who observed that she must be the unluckiest woman alive. To which Noelie replied in her typical straightforward and honest style, "I'm alive, aren't I?"

Her hobbies included woodworking to the extent that she made her own kitchen cabinets. The arrival of a multipurpose tool, a Shopsmith, was an important event for her. She could give a virtuoso performance on her accordion. One of her favorite things was to organize "directed dish" ethnic dinners where a dozen or so SRRC staff were invited to bring a particular dish that was a specialty of the country being celebrated.

She was indeed a delightful and accomplished personality. She will be missed, but her legacy remains with us.

written by: Al French

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