

The Fibril Angle

The Newsletter of the Cellulose and Renewable Materials
Division

Spring 2020 Edition

Letter from the Chair



Division Chair: Gordon Selling

Hi again! I hope this newsletter finds you and yours doing well. I am now in my 2nd year of being the Chair of the ACS Division of Cellulose and Renewable Materials (CELL). I have certainly learned that we are lucky that we have a great group of dedicated volunteers.

I am looking forward to the Spring ACS Meeting in Philadelphia this March. We will be celebrating the CELL Division's 100th Anniversary. For well over a decade, the CELL Division has been the best place to present your research concerning new uses for cellulose or other biobased materials. CELL will have 5 tracks of symposia running Sunday through Thursday. There will be many opportunities to learn from your colleagues and develop partnerships which can accelerate your own research.

On the first day of the conference, Sunday (3/22) morning and afternoon, there will be a singular event. We will be having sessions where past Anselme Payen speakers will be presenting some of their research which led them to receiving the CELL Division's highest award for research. At the end of each ½ day session, there will be a panel discussion where these distinguished researchers will be answering questions posed by the audience. These inspiring scientists represent the very best in our area of research and their thoughts and views will help you in your career.

On Tuesday (3/24), we will be having the CELL Award's Banquet where the main event will be the celebration of our 2019 Anselme Payen winner Dr Ann-Christine Albertsson at the Cescaphe Ballroom. Dr. Albertsson is an 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. The width and scope of her achievements have contributed not only to the field of biopolymers but to the greater community of polymer science. Besides her own prolific research efforts, she was also the founder of the ACS journal Biomacromolecules.

At this same event, we will also be awarding the 2019 KINGFA Young Investigator Award winner to Dr Johan Foster and the 2020 CELL Division Graduate Student Awards (sponsored by Eastman Chemical) to Liyang Liu (University of British Columbia) and Valerie Garcia-Negron (University of Tennessee). In addition, we will be giving awards to the top 3 posters which are presented by graduate students at the CELL Poster session (must be CELL members; sponsored by Springer). Finally, we will recognize those CELL members who have been leaders in the division. Details of our awards can be found on our website <https://acscell.org/>.

Speaking of websites – have you checked out our new website? The efforts to create this fantastic new web site were led by Dr. Koon-Yang Lee. As with the old web site, you can find a list of those elected or appointed volunteers who work to ensure that there is a place to present research in the fields of interest to you.

We will also conduct CELL business at the Spring ACS meeting. Our Executive Committee (ExComm members only) meeting will be Saturday, 3/21 in the Convention Center 105B. During the ExComm meeting we define the current status of CELL and address issues which effect how CELL meets the needs of the membership. The open CELL governance meeting will be held on Wednesday in the Convention Center 126A, everyone is invited. This is your chance to learn about ongoing activities within the division, share your viewpoints, and influence the future of the division – I look forward to seeing a full room! Immediately following this meeting, we will be having our annual open Technical Programming meeting (126A) where we will be discussing symposia for future ACS Meetings – if you have an area of research in which you are interested, please consider organizing a symposium.

Letter from Chair-Elect

Participating in the ACS Leadership Institute this past January provided me with a sense of both excitement and urgency. The excitement comes about when anticipating our national meeting programming which is nearly a week of incredible science and engineering combined with a warm and friendly network of researchers. I look forward to this meeting every year seeing familiar faces, as well as meeting new students and seeing fantastic posters. However, I know I am spoiled to have access to funds that support travel to this annual meeting for dissemination of research findings. As such, there is also an urgency to ensure that Division members feel value from CELL, regardless of the ability to travel annually to our spring meetings. On our last page of the newsletter, we highlight the activities that the CELL Division provides our members; the list ranged from sponsoring symposia at other international meetings to opportunities for early career researchers. These activities are at the core of our mission of “Leading and supporting innovation in cellulose & renewable materials by providing a forum for our members to excel in the chemical sciences and technology.” With highly motivated volunteers in our Division and scientific content that appeals to nearly everyone in science, our Division has opportunity to enhance our value proposition by expanding our platform. We need your ideas to do this; please send me a note to discuss what you value about CELL by email (scott.rennekar@ubc.ca) or on twitter (@RenewMaterials) and hopefully we can continue to ensure value for our membership. #proudACSCCELLmember



Chair-elect: Scott Rennekar

2020 CELL Division Officials

Chair: Gordon Selling

Chair-Elect: Scott Rennekar

Immediate Past Chair: Stephen Eichhorn

Secretary: Tatiana Budtova

Treasurer: World Nieh

Councilors: Sheila Murphy, Lucian Lucia & Kevin Edgar

Alternate Councilors: Orlando Rojas, Nouredine Abidi & Nicole Labbe

Members-at-Large: Ulrica Edlund, Casey Elkins & Silvia Vignolini

Program Chair: Wim Thielemans

Vice Program Chair: Glenn Larkin

Awards Chair: Alexander Bismarck

Membership Chair: Michael Bortner

Events Chair: Maria Soledad Peresin

Publicity Chair: Koon-Yang Lee

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 will be presented with the award at the ACS Cellulose and Renewable Materials Division Awards Banquet following a symposium in her honour during the 2020 ACS Spring National Meeting in Philadelphia, PA



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*.

2019 KINGFA Young Investigator Award



The 2019 KINGFA Young Investigator Award winner is Dr Johan Foster, Associate Professor in the Materials Science and Engineering Department at Virginia Tech. Johan's work has encompassed a number of fundamental contributions to the field of fibers and cellulose nanomaterials, including chemical modification, surface chemistry, and fundamental interactions. Specific examples that have had a large impact on application development include: phosphorylation for increased thermal resistance of cellulose nanomaterials in elevated temperature processing or applications; developing supramolecular chemistries that leverage surface hydrogen bonding for self-healing and reinforcement (of non-supramolecular polymers); understanding of nanofillers

into polymers, and the rheology, orientation and reinforcement mechanisms; use of structured materials for implants in the body, often utilizing cellulose as a scaffold; using cellulose nanocrystals as a catalyst for polymerization of polyethylene. As the recipient of this award, Dr. Foster will receive \$1,500 and a plaque, to be given at the 2020 CELL Division Awards Banquet in Philadelphia, PA.

2020 CELL Division Graduate Student Awards

The 1st place goes to Liyang Liu from University of British Columbia and the 2nd place goes to Valerie Garcia-Negron from University of Tennessee Knoxville.



Liyang's research focuses on developing a platform for the modification of lignin into a variety of polymeric materials with a focus on utilising green chemistry strategies. A major accomplishment is in the development of a lignin 'building block' with uniform chemical functionality as a robust precursor for green polymer materials. Based on this platform, Liyang showed how lignin properties can be engineered for specific applications, including hydrophobic coatings, polyurethane foams, and polyesters. His award winning paper is "A simple route to synthesize esterified lignin derivatives", published in *Green Chemistry* 2019, 21, 3682.

Valerie's research main focus is on the crystalline and amorphous components of carbon products as a function of processing conditions using a variety of characterization and modelling techniques. These approaches enable a holistic understanding of the atomic- and meso-scales of carbon materials and provide insights of their suitability for specific applications. Her award winning paper is "Processing-Structure-Property Relationships for Lignin-Based Carbonaceous Materials Used in Energy-Storage Applications", published in *Energy Technology* 2017, 5, 1311.



Division News

Sheila Murphy named as 2020 ACS Fellow



Sheila Murphy, a long time serving Executive committee member of the CELL division has been named ACS Fellow in 2019. She is recognized for her significant contributions to the cellulose chemistry for dissolving pulp manufacture and applications including research, manufacturing and customer support, as well as external technology support coordinating industrial research with academics. Sheila is also recognized for sustained service to the Division of Cellulose and Renewable Materials serving as Councilor, Division Chair, Alternate Councilor, Program Chair, Events Chair and Industrial Liaison.

Elected positions

Following the latest CELL Division election, the following people have been elected to serve on the CELL Division:

- Councilor: Kevin Edgar
- Alternate Councilor: Nicole Labbe
- Member-at-large: Silvia Vignolini

Their term in the CELL Division Executive Committee starts on the 1st January 2020.

Nominated positions

The following people have been nominated to serve on the CELL Division:

- Awards Chair: Alexander Bismarck
- Events Chair: Maria Auad
- Vice Program Chair: Falk Libner

The term for Awards Chair starts on the 1st January 2020. The term for Events Chair and Vice Program Chair will start after ACS Spring 2020 Meeting.

Orlando receives his missing Anselme Payen medal!

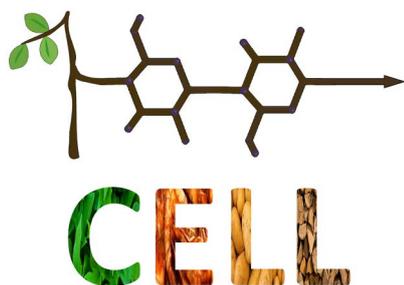
For those who have not attended the 2019 Awards banquet in Orlando FL, there had been an awkward moment during the awards ceremony. Orlando Rojas was supposed to receive his Anselme Payen medal. Prior to the awards ceremony, his medal was on the table due to be given out. During the actual awards ceremony however, his medal had curiously gone missing and nowhere to be found! We had to conclude the awards ceremony with Orlando missing his medal. A new medal had been made and it is with great pleasure to announce that Orlando has finally received his well-deserved Anselme Payen medal. Congrats to Orlando!



Centennial Logo of the ACS CELL Division

The CELL division is 100 years old! To commemorate this special event, a competition was launched for a new CELL logo to celebrate our 100th birthday. This logo will replace our normal logo from now until the end of 2020, our birthday year.

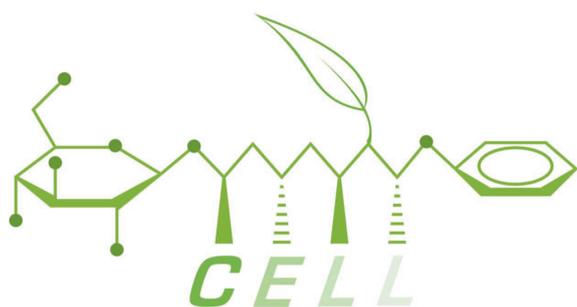
The winning logo goes to Francesco D’Acierno, a graduate student at the University of British Columbia.



The logo consists of two parts. In the upper part, the number “100” is stylized to celebrate the Centennial of the Division. The digit “1” is obtained through the representation of a vertical tree branch. A small secondary branch with three leaves is used as top serif of the digit “1”. The two digits “0” are represented through a cellobiose unit, where the two D-glucose units have the circular shape of the digit “0”. An arrow pointing towards right is connected to the glycosidic bond to represent the continuation of the cellulose chain and, metaphorically, the continuation and the growth of the Division in the future.

In the lower part of the Centennial Logo, the word “CELL”, which is the identification name of the Division among the other ACS branches, is written in capital letters and each letter has a different background. In the letter “C” has a background from a picture of green leaves (to represent the cellulose), the letter “E” has a background from a picture of shrimps (to represent the chitin), the first letter “L” has a background from a picture of potatoes (to represent the starch), and the second letter “L” has a background from a picture of chopped pieces of wood (to represent the lignin and the other renewable materials).

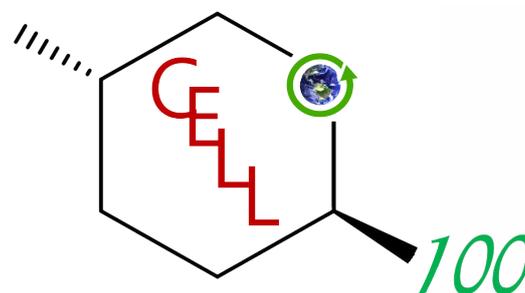
Second place goes to Youssef Habibi of Luxembourg Institute of Science and Technology.



Youssef's submission is inspired by the recent evolutions of our Division from a focus on cellulose to cellulose & renewable materials. The sugar ring refers to polysaccharides such as cellulose, the phenolic ring is for the phenolic structural motifs found in nature, and the aliphatic chain represents other naturally occurring molecules such as fatty acids. Lastly, the leaf represents "green" pathways with the green color chosen for the whole Logo. I believe that this logo depicts a holistic picture of the existing interests of the division that have evolved throughout the years.

Third place goes to Mehul Barde of Intel Corporation.

Mehul's logo is inspired by the monosaccharides which build up cellulose and hemicellulose that are building blocks of plant materials (and of the great "nanocellulose" which has been boon to the mankind). The "ether-earth" art in the monosaccharide skeleton in the logo signifies renewability and eco-friendliness of the bio-materials. Last but not the least, the logo is devoted to the ACS CELL division that has meticulously worked for 100 years for the development and education of lingo-cellulosic, renewable materials, green chemistry and sustainability.



"Banana CELL"

In addition to these 3 winning logos, the Division would also like to acknowledge the submission of Mira Trosien (daughter of our Division member Simon Trosien at TU Darmstadt), whose logos submission brought a smile to the panel of judges. Mira is 8 years old and she submitted 4 (very cute!) logos. For her effort, our panel of judges declared her Unicorn CELL a winner from within her collection of submissions. Mira will receive a certificate for this entry.



"Emoji CELL"



The winning "Unicorn CELL"

We asked Mira what inspired her to submit the logos. She said this was because she saw her daddy (Simon) drawing logos and wanted to take part.

When we asked Mira what she wanted to become in the future, her response in her own words was: "I am absolutely not sure. Maybe artist - I love sketching and drawing. But maybe also chemist. It sounds interesting what you do, but I am no expert yet."

The Division really likes Mira's enthusiasm and wish her all the best in the future.



"Mau CELL"

Meeting-at-a-glance: Symposia of CELL Division at the 2020 ACS Spring National Meeting & Exposition

This year's program of the CELL Division at the Spring ACS National Meeting in Philadelphia, PA, to be held March 22nd - 26th 2020, comprises of 19 symposia with 383 oral and 86 poster presentations. All CELL Division symposia will be held at the Pennsylvania Convention Center. The full schedule of the symposia organised by CELL Division can be found on the CELL Division website or the ACS Spring National Meeting & Exposition website. In conjunction with the publisher of the periodical CELLULOSE, the best three student posters presented at the ACS Spring National Meeting will be recognised during the general poster session and the winners of the Poster Award, sponsored by Springer-Cellulose will receive book tokens, certificates and complementary Awards Banquet ticket.

- **A Century of Cellulose: The Past, Present & Future of Cellulose & Renewable Materials - Sunday, March 22nd, 8:00AM**

The CELL Division is looking forward to the ACS Spring National Meeting in Philadelphia where it will celebrate its 100th birthday. Presenters at this symposium are both members of our CELL community, and recent Anselme Payen Awardees. The morning and afternoon sessions of this symposium will both kick off with presentations and end in panel sessions. This session will be held in Room 126B, Pennsylvania Convention Center.

- **KINGFA Young Investigator Award Lecture - Sunday, March 22nd, 4:15PM**

Dr Johan Foster's KINGFA Young Investigator Award lecture will be held at Broad Street Atrium - Theater 11, Pennsylvania Convention Center. The title of his lecture is "Modifying materials using rod shaped fillers".

- **Anselme Payen Award Lecture - Tuesday, March 24th, 3:50PM**

Prof Albertsson's Anselme Payen Award lecture will be held in Room 126A, Pennsylvania Convention Center. The title of her lecture is "New paradigm in the design of degradable and renewable polymeric materials".

- **CELL Division Awards Banquet - Tuesday, March 24th, 6:00PM**

The CELL Division Award Banquet will be held at Cescaphe Ballroom located at 925 N 2nd Street, Philadelphia PA 19123. The highlight of the evening will be the presentation of the 2019 Anselme Payen Award to Professor Ann-Christine Albertsson. Please join us on this joyful occasion as we celebrate with Professor Albertsson and our fellow CELL division members. This is a ticket-only event. Please bring the ticket for entry to the event.

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.

In memoriam

Professor William T. Winter (14 November 1944 – 30 June 2019)

William Thomas Winter, husband, friend, mentor, and Professor Emeritus of Chemistry died suddenly and unexpectedly of cardiac arrest on June 30, 2019. He was 74. Bill was a long-standing member of the American Chemical Society and the division and served as the division's Treasurer, then the Paper & Textile Division, from 1990 until 1992, and as the Awards Chair from 2006 until 2008.

Bill was born in Queens, NY on November 14, 1944, one of two children of Garret H. Winter, II and Dorothea Babcock. He spent his childhood years back and forth between Long Island and the Midwest and graduated from Palatine Township High School in Illinois in 1962. After earning a B.Sc. in Polymer Chemistry from the State University of New York – College of Environmental Science and Forestry (SUNY-ESF) in 1966, he served for two years in the U.S. Peace Corps as a Senior Subject Teacher in Physics at Sultan Ismail College in Kota Bharu, Kelatan, Malaysia. He acquired a working knowledge of Malay and later often referred to this time as one of the most formative and positive experiences in his life. In 1969, he returned to SUNY-ESF for his doctoral studies on the crystal and molecular structure of V-amylose complexes under the guidance of Anatole Sarko (1930–2018) and earned a Ph.D. in Physical Chemistry in 1974.



He began his career as an Arthritis Foundation Fellow (Research Associate) and later Visiting Assistant Professor at Purdue University, where he worked with Struther Arnott (1934–2013) in the Department of Biological Sciences on conformations of hyaluronic acid and other glycosaminoglycans in the solid (crystalline) state. In 1977, Bill accepted a position as Assistant Professor of Polymer Chemistry at Brooklyn Collegiate and Polytechnic Institute, where he rose to the level of Associate Professor in 1983 under the mentorship of Herman F. Mark (1895–1992). From 1984 to 1985, and again in 1995, he was a visiting scientist, jointly at the Université Joseph Fourier and the Centre de Recherches sur les Macromolécules Végétales (CERMAV-CNRS) in Grenoble, France, where he worked with Henri Chanzy and co-workers on refining the crystal structure of amylose inclusion complexes, mannan, galactomannan, inulin, cellulose, and chitosan. In 1988, Bill returned to his alma mater as an Associate Professor and taught polymer properties and technology and carbohydrate structure analysis, among other topics. In 1989, he spent the summer at the Xerox Research Center of Canada in Mississauga, Ontario, Canada to work with Robert H. Marchessault (1928–2015) on the analysis of mannan polymorphs by ^{13}C solid-state nuclear magnetic resonance spectroscopy. The following year, Bill spent some time as a Visiting Scientist in Norwich, UK at the Institute of Food Research of the Agricultural and Food Research Council and studied chitosan conformation in ungelled and gelled fibers. Bill rose to the level of full professor in 1995 and retired in the summer of 2015 after 27 years at SUNY-ESF.

Those who knew Bill, remember him fondly. He had a keen mind, quick wit, and cheerful literal sense of humor. He was a true intellectual of exceptionally wide learning, extremely well-read and erudite, with a deep knowledge of and appreciation for diverse fields including literature, art, and drama. No matter what the topic, he was always able to offer helpful insights or fun facts to cheer you up. He will be sorely missed by many.

He is survived by his wife of 17 years, Jeanna R. Swanson; stepson, William H. Storm and his wife, Michelle Pinti; a brother, Garrett H. Winter III and his wife, Evelyn Butler and two step grandchildren, Samantha A. and William D. Storm.

Maren Roman
Graduate Advisee, 1997-2002

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), etc.;
- Produce the ACS CELL Newsletter (Fibril Angle) that is distributed to members a month before the ACS National Meeting;
- Support other ACS symposia relevant to cellulose chemistry and glycosciences, including the ACS Division of Professional Relations, ACS Undergraduate Chemistry Students, ACS Regional Meetings, etc.;
- 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. With the ACS Sustainable Chemistry and Engineering journal we jointly award lectureships at our Spring Meeting.

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 (contact the Chair, Dr. Gordon Selling at the email gordon.selling@ars.usda.gov).