



# ACS NEWS

The biannual newsletter for the American Chemical Society Division of Fluorine Chemistry

## MESSAGE FROM THE CHAIR



MICHAEL  
GERKEN

Greetings from Lethbridge, Alberta, Canada! First, I would like to thank Andrej Matsnev for his excellent service as the Division Chair in 2020, having been

faced with a rapidly changing world.

What a year it has been. The global pandemic has impacted all of us in so many ways: in professional ways as our labs were closed down for some time and conferences were cancelled, preventing us to see colleagues and friends in-person; but also in a personal way as we had to change the way we live our lives; and, of course, some of us felt the impact on our health by Covid-19.

Beside the challenges that everyone of us faces at the current time, we should not forget to recognize the excellence of members of our fluorine chemistry community. I would like to congratulate **Dr. Robert (Bob) Syvret** (Fluorine Chemistry and Technology, LLC, USA) for the **2020 ACS Award for Creative Work in Fluorine Chemistry**, sponsored by the Division of Fluorine Chemistry, and **Prof. Beate Koks** (Freie Universität Berlin, Germany) for the **2021 ACS Award for Creative Work in Fluorine Chemistry**, sponsored by Arkema. I want to thank Arkema for the Sponsorship of this important

ACS Award. We have not had the opportunity to adequately celebrate their accomplishments and plan to do so at the 25th Winter Fluorine Conference in Jan 2022.

I also congratulate **Prof. Gary J. Schrobilgen** from McMaster University, the recipient of the **2021 Distinguished Service Award** of the Division of Fluorine Chemistry. The Division is indebted to him for his long-standing service.

**Prof. Neil Vasdev** (University of Toronto) named **2020 ACS Fellow**. Congratulations Neil for your well-deserved recognition of your service to the ACS and your scientific achievements.

Among the conference cancellations, the first one that was affected was the ACS meeting in Philadelphia at which the Division had planned a symposium honoring Bob Syvret's ACS Award for Creative Work in Fluorine Chemistry. Postponement of the 25th Winter Fluorine Conference and the Pacificchem 2020 with three fluorine-chemistry symposia by one year followed. In addition, the 23rd International Symposium on Fluorine Chemistry joint with the 9th International Symposium on Fluorous Technologies, which was scheduled for 2021 in Quebec City, Canada, as well as the 7th Fluorine Days in Poznan, Poland, originally scheduled for July 2020 have been postponed

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## VICE-CHAIR

### MEMBERSHIP REPORT

AS OF MARCH 2021, THE DIVISION OF FLUORINE CHEMISTRY OF THE ACS HAD 466 MEMBERS. THE BREAKDOWN IS AS FOLLOWS:

GROUP	COUNT	%
Regular Member	336	72.10
Regular Student Member	28	6.01
Student Member – UnderGrad	14	3.01
Emeritus Member	50	10.73
Retired Member	19	4.07
Division Affiliates	10	2.15
Society Affiliate	9	1.93
<b>TOTAL</b>	<b>466</b>	<b>100</b>

Please join me in welcoming the newest members to our Division: Olivia Gunther, Travis S. Holloway, Kenneth F. Kubiak, Aaron T. Laws, Mindy McIntosh, Kristen L. Mello, Gavin D. S. Milne, Jonathan M. Ryes, Joshua Saito, Scott T. Shreiber, Michael C. Standen, Mine G. Ucak, Michael L. Walker, Ian Burton, Rodrigo A. Cormanich, Curt A. Dvorak, Nathan Friede, Jean-Denys Hamel, Jared M. Ruoff, Christopher Scott, Amna T. Adam.

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## MESSAGE FROM THE CHAIR *Continued from p. 1*

to 2023. We all are looking forward to meeting friends and colleagues of our fluorine community again in-person.

In the meantime, the Division had a very successful **Fluorine Tutorial Week** and I would like to thank **Olga Boltalina** and **Daniel Hercules** for the organization and the speakers for their excellent presentations. All the presentations can be viewed on our Division website ([communities.acs.org/t5/Fluorine-Chemistry-Division/gh-p/fluorine-division](https://communities.acs.org/t5/Fluorine-Chemistry-Division/gh-p/fluorine-division)).

The Division is continuing its sponsorship of undergraduate research with the award of **Moissan Summer Undergraduate Research Fellowships** (SURF) of \$5000 each. In 2020, two SURFs were awarded to **Matthew Elardo** from the lab of Markus Etzkorn at the UNC Charlotte, NC and **Nathalie Rowlinson** from Tom Baker's lab at University of Ottawa, Canada. In 2021, the Division awarded one SURF to **Ryan Hossain** in the lab of Simon E. Lopez at the University of Florida, Gainesville, FL. Congratulations to the recipients. Please keep in mind our next deadline at the beginning of 2022. The details will be announced in our Fall Newsletter.

On a very sad note, I want to inform you that **Prof. Emeritus Ronald Gillespie** (McMaster University, Ontario, Canada) passed away on February 26, 2021. Prof. Gillespie has made outstanding contributions to fluorine chemistry, as well as chemical education with the VSEPR model. I am personally saddened because I have known Prof. Gillespie from my times as a graduate student at McMaster as a kind and knowledgeable member of my graduate supervisory committee.

**Slava Petrov** (Conference Chair) and **David Vivic** (Co-Chair) are working on the organization of our Division's flagship meeting, the **25th Winter Fluorine Conference** held in Clearwater Beach, Florida from January 16-21, 2022. Please follow the announcements on the conference website: [www.winterfluorineconference.com](http://www.winterfluorineconference.com)

The Executive Committee (EC) of the ACS Division of Fluorine Chemistry had a productive virtual meeting in March, where we discussed long-needed improvements to our Division website and the introduction of an **ACS Division of Fluorine Chemistry Doctoral Thesis Award** (nomination deadline: Sept 1, 2021). I ask all Division Members to consider nominating worthy doctoral students for this award. Please refer to the Call for Nominations at the end of this Newsletter. I would like to thank all EC Members and particular the Division Officers for volunteering their time. Please join me in welcoming our newly elected and re-elected EC members: **Bob Syvret** (Treasurer), **Markus Etzkorn** (Vice-Chair Membership), **Daniel Hercules**, **Nickeisha Stephenson**, **Gary J. Schrobilgen** and **David Vivic** (Members at Large). **Daniel Hercules** has agreed to serve as the new webmaster of our Division.

It is my honor to serve as the Chair of the ACS Division of Fluorine Chemistry. Please do not hesitate to contact me directly ([michael.gerken@uleth.ca](mailto:michael.gerken@uleth.ca)) if you have any comments, concerns, or questions. New ideas, improvements, and/or criticism for the Division are always welcome. Please stay actively involved in our Division and in the Fluorine Chemistry Community. It would be great if you could talk about our Division and Community and attract new members. I wish all of you on behalf of the Executive Committee a successful and healthy year 2021! ■



—Michael Gerken, *Chair 2021*

## VICE-CHAIR MEMBERSHIP REPORT

*Continued from p. 1*



MARKUS ETZKORN

In particular, I encourage our new student members to take advantage of the Division of Fluorine Chemistry many opportunities to grow profession-

ally and to network, as you hopefully will remain part of our community throughout their future careers.

Our Division is composed of members that make outstanding contributions in many areas of fluorine chemistry, and we remain the principal international organization of fluorine chemists around the world. The Division of Fluorine Chemistry continues to keep a membership profile with 70% of its members within the USA and 30% from abroad.

Our membership, that had dropped below 500 some time ago, has lost an additional 18 members by March 2021. As pointed out in the past, we all need to be very mindful of attracting new members, and I want to encourage our current members to talk to colleagues who work in fluorine chemistry, particularly those at your institution, to join our Division and become part of our welcoming, collegial, and close-knit fluorine chemistry community. In addition, I hope you can convince students or postdoctoral fellows in your groups to join the Division, as the new generation of fluorine chemists. The form and instructions to join our Division can be found at [www.acs.org/content/acs/en/membership-and-networks/join](http://www.acs.org/content/acs/en/membership-and-networks/join). Please note, as a regular member of the Division one has to be a member of the ACS. Non-members of the ACS can become affiliate members of the Division. If you have any questions or suggestions of activities that will expand our membership, please feel free to contact me. ■


 OLGA  
BOLTALINA

**First Virtual Fluorine Tutorial Week, 13–18 January 2021** was co-organized by O. Boltalina and D. Hercules. 7 tutorial lectures in four days were given by our esteemed colleagues on diverse aspects of fluorine science. At the end of the tutorial, live Q&A sessions were held.

1. “Late Stage Fluorination with Metal Alkali Fluoride” –*Veronique Gouverneur*
2. “Small Metal Fluoride Particles in a Big World” –*Erhard Kemnitz*
3. “Unsolved Step-Change Challenges in Industrial Fluorine Chemistry” –*Viacheslav Petrov and Bruce Smart*
4. “Applications and Critical Importance of High-Purity Fluorine Compounds in the Production of Semiconductor Materials” –*Robert Syvret*
5. “The Flexibility of Fluorine. From Weak Donors to Strong Acceptors” –*Steve Strauss*
6. “Contributions of Organofluorine Compounds to Pharmaceutical and Agrochemicals” –*Norio Shibata*
7. “Janus Cyclohexane Rings with Fluorine and Hydrogen Faces” –*David O’Hagan*

The video recordings of the lectures and Q&A parts of the event are available to FLUO Division members on the website.

#### Some statistics about the event attendance:

In Table below, the minutes per day are added for all the participants of that day (the result is displayed in total minutes and total hours), the length of the event for each day and number of participants.

PARAMETER	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>Sum</b> (Minutes)	8,949	11,240	4,074	13,187
<b>Sum</b> (Hours)	149	187	68	220
<b>Hours Broadcasted</b>	2.0	2.0	1.0	2.2
<b>Participants</b>	103	123	84	131

There was a total of 222 participants for the event and the splits are as follows:

- 114** Participants attending one lecture
- 39** Participants attending two lectures
- 25** Participants attending three lectures
- 44** Participants attending four lectures

Upon the conclusion of the event, each presenter received a gift of appreciation from the FLUO Division – a thumb drive with the edited video recording of their lecture in the gift box with the printed brochure featuring the event.

**ACS Innovative Programming Grant (IPG) was submitted on February 15, 2021.**

The [ACS Divisional Activities Committee \(DAC\)](#) funds new Division projects through Technical Division Innovative Project Grants (IPGs). This program encourages the creation of innovative projects that will serve Division members, encourage strategic planning for future division success, and foster collaborative projects among divisions and other governance groups. Our division applied for such IPG grant.

**Title:** Building Digital and Virtual Infrastructure for FLUO Division: Networking, Education and Inclusivity.

**Goal:** This innovative project aims at creation of the state-of-the art website of FLUO division that will serve as an effective platform for active networking, education, information and inclusion of new members. The division’s educational and inclusion goals within the project will be fulfilled by developing concepts, planning, and carrying out regular live virtual events for the current and prospective division members using the web platform of choice.

**Total funds requested:** \$4,174.00

We expect to hear from ACS before May 1, 2021.

#### Future programming activities

If the IPG application is funded, we will apply funds to upgrade the next Tutorial Week (s) events along with the division website.

2nd Tutorial Week “Synthetic methods in Fluorine Chemistry” will be organized in the summer 2021.

Another idea is to plan for inter-divisional event on the “Environmental effects of fluorinated materials” (aka: “Elephant in the room”). It was inspired by the discussions during the Tutorial Week, and also a general interest of FLUO members to participate in this aspect of fluorine science.

The format of such event is currently being discussed: either a virtual webinar, or as a theme for the next live ACS meeting. Suggestions, ideas from EC members are welcome. This project can also be part of the second FLUO IPG application this year.

#### Future Fluorine Symposia in 2022/23 (see details below):

- > **The 25th Winter Fluorine Conference** will take place on January 16–21 2022, in Clearwater, Florida at the Hyatt Regency Clearwater Beach Resort and Spa.
- > **The Pacific Chem 2021** will be held from December 16 to December 21, 2021 in Honolulu, HI, USA.
- > **The 23rd International Symposium on Fluorine Chemistry** (23rd ISFC) which will be held in conjunction with the 9th International Symposium on Fluorous Technologies (ISoFT’23) conference will take place on July 23 – 28, 2023 in Québec City. ■

## DIVISION COUNCILOR REPORT

### AMERICAN CHEMICAL SOCIETY VIRTUAL COUNCIL MEETING ON MARCH 24, 2021



DAVID A.  
DIXON

#### **Candidates for President-Elect, 2022:**

Judith Giordan and John C. Warner

#### **Candidates for Districts I and V:**

D. Richard Cobb and Katherine L. Lee as District I candidates; and Lisa Balbes and Joseph A. Heppert as District V

candidates. Ballots will be distributed to members residing in District I and District V around October 1, 2021.

**Candidates for Directors-at-Large:** The Committee on Nominations and Elections announced the selection of the following candidates for Directors-at-Large for 2022–2024 terms: Rodney M. Bennett, Arlene Garrison, Natalie A. LaFranzo, and Lee H. Latimer. The election of two Directors-at-Large from among these four candidates and any selected via petition will be conducted in the fall. Ballots will be distributed to all Councilors around October 1, 2021.

The Council approved the Petition to *Harmonize Committee Structures, Processes, and Terms*, as amended.

- > This petition places all committees in one category called “Society Committees” – eliminating the several different types of committees.
- > The years of service and the number of committee members on each Society Committee will now be consistent and would match the present terms of the Elected Committees: three-year terms with a two-term maximum for committee members.
- > Certain Society Committees will no longer have the “Councilor only” designation, allowing an individual to join and continue service on a committee regardless of their status as a Councilor.
- > The Committee on Committees amended the petition prior to bringing it to Council, in response to several committees’ concerns, to include the italicized phrase:
- > The terms for a member of a Society Committee shall be three calendar years. A member of a Society Committee shall be eligible to serve two successive three-year terms on the same committee, *however, that service could be extended if the appointing officer(s) determines that there is a compelling need for ongoing expertise on the committee.*
- > The Petition will become effective immediately upon approval by the Board of Directors, however, existing committee assignments will start a transition to the term limits on January 1, 2022.

The Council approved the *Petition to Amend the Duties of the Committee on Local Section Activities*.

- > This petition provides the Committee on Local Section Activities with the authority to support Local Sections by taking action on their behalf, including appointing an interim executive committee and/or facilitating a Local Section’s election when there is a lapse in the local section’s leadership.

The Council approved the 2022 Schedule of Membership, upon recommendation of the Committee on Membership Affairs.

- > The Schedule reduces the base dues rate to \$160 per year
- > It establishes various dues categories and benefits packages based upon career stages, role in the chemical enterprise, and desired level of interaction by the Member with the Society.

The ACS Board of Directors approved extensive changes to the ACS Strategic Plan in December 2020.

- > Equity was added to our Core Values, which now include on Diversity, Equity, Inclusion and Respect.
- > Our Vision and Mission statements were modified to make clear that these statements include all people.
- > A fifth Strategic Goal: ‘To Embrace and to Advance Inclusion in Chemistry’, was added to make clear that Diversity, Equity, Inclusion and Respect was our commitment at the same level as our long-standing four strategic goals.

The Committee on Ethics will be continued.

The Council approved the Distribution Formula for Division Allocations upon the recommendation of the Committee on Divisional Activities.

- > ACS Standing Rules state that 9% of the ACS Member Dues Pool be allocated to the technical divisions.
- > The new allocation formula is transparent, immediately implementable, reduces the year-to-year variation in the distribution amount and will work in all current national meeting formats.
- > The new formula increases the base allotment and the per division member allotment portion of the pool to be distributed among the 32 Divisions.
- > The portion of the pool devoted to Innovative Project and Strategic Planning Grants will increase from 10 to 15%. The intent is to support division strategic planning, expand the scope of innovative projects grants, and fund shortfalls due to the capping of year-to-year losses.

- > A 7.5% cap on the year-to-year distribution gain/loss by a division is intended to increase stability and give divisions a chance to adjust to the new formula.
- > This formula is considered transitional and will be reviewed by the Committee on Divisional Activities yearly.

**Budget and Finance:** In 2020, ACS generated a net from operations of \$61 million, which was almost \$20 million higher than the budget. Total revenues were \$618.4 million, increasing 3.9% or \$23.1 million over 2019. Expenses for the year were \$557.4 million, virtually even with the prior year and almost 5 percent below budget. This result was attributable to strong revenue performance from the Society's Information Services units (i.e., CAS and ACS Publications) and a combination of COVID-19 related impacts on, and careful management of, expenses across the ACS.

The Society's 2020 Net from Operations totaled \$130.5 million and included Information Services and Investments. The Society's financial position strengthened considerably in 2020, with Unrestricted Net Assets, or reserves, increasing by 35 percent to \$553 million at December 31. The increase was primarily the result of the \$61 million net from operations, and growth of the Society's investments totaling \$66 million.

**Meetings & Expositions:** The Spring 2021 Meeting will be held virtually, with the live portion from April 5–16, followed by 2-weeks of on-demand access. There will be 120 scientific sessions held live per day, with live Q&A to follow, and visibility of other attendees in the room. The price for registration has been significantly reduced to \$99 for ACS Members and \$29 for students. To date, 8,724 abstracts have been accepted. ■

#### ACS DIVISION OF FLUORINE CHEMISTRY 25th Winter Fluorine Conference

The 25th Winter Fluorine Conference will take place in St. Petersburg, Florida on January 16-25, 2022 at Hyatt Regency Clearwater Beach Resort - the official conference hotel for the 25th Winter Fluorine Conference.

Technical programming areas will include:

- > Organic and Bioorganic Fluorine Chemistry
- > Inorganic Fluorine Chemistry
- > General Fluorine Chemistry
- > Industrial Fluorine Chemistry
- > Physical Fluorine Chemistry



Presentations will include Plenary, Invited, Contributed, and Poster contributions. Contributed oral and poster presentations are encouraged. Abstract submission opens August 30, 2021 and closes October 25, 2021.

Information about the conference site, registration, abstract submission, sponsorship opportunities can be found at official conference website at: [www.winterfluorineconference.com/2022](http://www.winterfluorineconference.com/2022)

Please plan on coming to sunny Florida in January of 2022!

Viacheslav Petrov, *Chair of 25th Winter Fluorine Conference* | David Vivic, *Co-Chair of 25th Winter Fluorine Conference*

#### PACIFICHEM 2021

The Pacific Chem 2021 will be held from December 16 to December 21, 2021 in Honolulu, HI, USA. It will be a Hybrid Congress, attendees can participate in the Congress either in person in Honolulu, or virtually if they are not able to travel in December.

THREE FLUORINE CHEMISTRY SYMPOSIA ARE INCLUDED:

1. The Chemistry of 18F, 11C and Radiometal-based Probes for Molecular Imaging & Precision Medicine (**Symposium #178**) *Organizers: Vasdev, Neil; VanBrocklin, Henry; Luyt, Leonard; Tamagnan, Gilles; Choe, Yearn Seong; Reiner, Thomas; Davis, Thomas*
2. Diversity in Inorganic Fluorine Chemistry, from Fundamental Aspects to Applications for Global Challenges (**Symposium #243**) *Organizers: Gerken, Michael; Hagiwara, Rika; Matsumoto, Kazuhiko; Mercier, Hélène; Schrobilgen, Gary J.; Syvret, Robert.*
3. Innovative Fluorination/ Fluoroalkylation/ Fluoro-functionalization (**Symposium #368**) *Organizers: Shibata, Norio; Amii, Hideki; Hu, Jinbo; Vivic, David.*

For more details, please see the website: [Pacifichem.org](http://Pacifichem.org)



BOB SYVRET

The Division's total assets have increased approximately **9.5%** over the course of the 12-month period ending **December 31, 2020**. This increase in assets is due to zero symposia support spending resulting from the cancelled ACS National meeting in Philadelphia (March, 2020).

**ASSETS (actual as of 31 December 2020)**

	(\$ as of 31 December 2019)	(\$ as of 31 December 2020)
Wells Fargo Bank Account	\$9,277	\$18,942
Long-term Investment Accounts	\$178,637	\$186,825
<b>TOTAL ASSETS</b>	<b>\$187,914</b>	<b>\$205,767</b>
Percent Change		+9.6%

**2020 FINANCIAL HIGHLIGHTS:**

> In 2020 the Division provided 2 Moissan Summer Undergraduate Research Fellowships in the amount of **\$5,000** to Professor Markus Etzkorn at UNC Charlotte and **\$5,000** to Professor Tom Baker at the University of Ottawa.

> The Division sponsored the ACS Award for Creative Work in Fluorine Chemistry at a cost of **\$9,018.55** for 2019 and **\$5,000** for the 2020 Award.

**OUTLOOK FOR 2021:**

> The Division will provide **1 Moissan SURF @ \$5,000** in 2021.  
 > The Division will provide **\$2,500** to each of three co-sponsored symposia to be held at the Pacific Basin Conference (Pacifichem) in December 2021.

> The Division will provide **\$2,500** to the SERMACS Conference to be held in Birmingham, AL. November 10-13, 2021.  
 > The Division will provide funding for expenses related to the 25th WFC to be held in January, 2022. ■

**MOISSAN SUMMER UNDERGRADUATE RESEARCH FELLOWSHIPS (SURF)**

**SURF 2020 AWARDEES**

MATTHEW ELARDO, Department of Chemistry, University of North Carolina Charlotte, NC  
*Supervisor: Prof. Markus Etzkorn*  
 NATHALIE ROWLINSON, Department of Chemistry, University of Ottawa, Ottawa, Canada  
*Supervisor: Prof. R. Tom Baker*

**SURF 2021 AWARDEE**

RYAN HOSSAIN, Department of Chemistry, University of Florida, Gainesville, FL  
*Supervisor: Dr. Simon E. Lopez D'Sola*



(SPONSORED BY THE ACS DIVISION OF FLUORINE CHEMISTRY)

## 2020 ACS AWARD FOR CREATIVE WORK IN FLUORINE CHEMISTRY



**DR. ROBERT (BOB) SYVRET**, ACS Fellow and Principal of Fluorine Chemistry and Technology, LLC (F<sub>2</sub>ChemTech) has received the 2020 ACS Award for Creative Work in Fluorine Chemistry from the American Chemical Society. Bob received the Award for industrializa-

tion of Selectfluor<sup>®</sup> and DeoxoFluor<sup>™</sup> fluorination agents and development of selective fluorination processes for high-purity electronics and low-GWP gases and fluorinated biologically active materials.

Robert (Bob) Syvret has a Ph.D. in main group fluorine chemistry from McMaster University with 30+ year industrial experience creating new molecules, developing new process technology, and commercializing a number of new high-value products. He has hands-on experience with new molecule synthesis for applications in electronics (fluorine etchants and deposition agents), pharmaceuticals (fluorinated steroids, nucleotides, and aromatics), agricultural (fluorinated herbicides, and pesticides), low-GWP refrigerants and foam expansion agents, fluorinated monomers and polymers, fluoro-surfactants, and inorganic fluorine compounds.

During his career, Bob has provided technical leadership in activities including new molecule discovery, process development and optimization, scale up, plant

support, hazards assessment and regulatory issues, analytical methods development, product stewardship, and safety testing. He was the technical leader on projects that delivered successful commercial products including Selectfluor<sup>®</sup> (I) and (II) electrophilic fluorination agents, DeoxoFluor<sup>™</sup> reagent, and improved process technology for important commercial products that include NF<sub>3</sub>, SiF<sub>4</sub>, C<sub>4</sub>F<sub>6</sub>, and F<sub>2</sub>. In the recent past he was responsible for HF process research for the development of low GWP fluorochemicals 1234yf and 1233zd as well as diversification of fluorochemical products and technologies outside of traditional refrigeration and foam expansion applications.

Bob has held the position of visiting scientist at the University of Albany since 2009 and is a Research Fellow in the Chemistry Department of Lehigh University since 2017.

Currently he is Chief Scientist of Electronic Fluorocarbons with responsibilities for the development of high-purity products for advanced semiconductor manufacturing including new ALD, ALE, and RIE candidates and also Principal of the consulting company Fluorine Chemistry and Technology, LLC (F<sub>2</sub>ChemTech).

Bob served the ACS Division of Fluorine Chemistry as Vice-Chair Secretary-Treasurer (1999-2001), Chair (2002), and as Treasurer from 1999 to present. Bob was inducted into the 2016 Class of ACS Fellows.

(SPONSORED BY ARKEMA)

## 2021 ACS AWARD FOR CREATIVE WORK IN FLUORINE CHEMISTRY



**PROF. DR. BEATE KOKSCH** of Freie Universität Berlin has received the 2021 ACS Award for Creative Work in Fluorine Chemistry from the American Chemical Society. Beate received the Award for her outstanding contributions to fluorine chemistry at the interface

of chemistry, biology, as well as protein science and engineering with exceptional originality and creativity.

Beate Kokschi received a Ph.D. degree from University Leipzig and pursued postdoctoral studies at The Scripps Research Institute, La Jolla and postdoctoral lecture qualification at University Leipzig under the mentorship

of Klaus Burger. She has been Professor of Organic and Natural Product Chemistry at Freie Universität Berlin since 2004. Her group investigates fluorinated amino acids in the context of peptides, proteins, and cells, studies amyloid formation, develops new peptidic multivalent scaffolds, catalytically active peptide-nanoparticle conjugates and foldamers and applies phage-display technology to find binding partners for artificial amino acids and peptides. Her group has published more than 150 scientific papers. She has been the organizer of the 8th Peptide Engineering Meeting 2018 and the 10th German Peptide Symposium 2011, both held in Berlin, Germany.

**FOLLOW US ON TWITTER!** AN EASY WAY TO DISCOVER THE LATEST NEWS RELATED TO THE ACS DIVISION OF FLUORINE CHEMISTRY IS TO FOLLOW OUR TWITTER ACCOUNT LOCATED HERE: [TWITTER.COM/FLUORINECHEM](https://twitter.com/fluorinechem).



## 2020 DISTINGUISHED SERVICE AWARD IN FLUORINE CHEMISTRY



**PROF. DR. GARY J. SCHROBILGEN**, FRS (Canada), ACS Fellow, from Department of Chemistry, McMaster University has received the 2020 Distinguished Service Award in Fluorine Chemistry in honor of his distinguished service to the ACS

Division of Fluorine Chemistry.

Gary J. Schrobilgen, a native of Eastern Iowa (USA), received his B.S. degree in chemistry from Loras College (Dubuque, Iowa), a M.Sc. degree in inorganic chemistry from Brock University (St. Catharines, Ontario, Canada), and carried out his Ph.D. research in inorganic fluorine chemistry at McMaster University (Hamilton, Ontario) under the supervision of Prof. Ronald J. Gillespie. Prof. Schrobilgen was a Natural Sciences and Engineering Research Council (NSERC) of Canada Postdoctoral Fellow at Leicester University, U.K. and joined the McMaster Chemistry Department as an NSERC University Research Fellow (1980-90) and member of faculty, and was promoted to full Professor in 1988.

He has made important contributions in several areas of synthetic and structural inorganic chemistry: main-group, and transition metal fluorine chemistry and the polyatomic anions of the main-group elements. His research relies on the use of modern methods of structural elucidation, including multi-NMR spectroscopy, X-ray crystallography, and vibrational spectroscopy, and quantum-chemical calculations to characterize novel bonding situations among main-group and high-oxidation state transition element species. He is best known for his work in the experimentally challenging field of inorganic fluorine chemistry, encompassing the syntheses and structural characterization of a large percentage of the

known compounds of krypton and xenon, as well as the fluoro- and oxofluoro-derivatives of main-group and transition elements in their highest oxidation states and at the limits of coordination. He is also known for his work in two areas of radiochemistry; the syntheses of <sup>99</sup>Tc fluorine compounds that are relevant to the uranium fuel cycle and <sup>18</sup>F-labelled radiopharmaceuticals of use in PE (positron emission) imaging of the human brain. His fundamental work has been of importance in our understanding of structure and chemical bonding in hyper-valent molecules and main-group ring, cage, and cluster species. Many of his compounds are now textbook examples.

Prof. Schrobilgen is recipient of the President's Award for Excellence in Graduate Supervision at McMaster University (1997); the American Chemical Society Award for Creative work in Fluorine Chemistry (1998); several Canadian Society for Chemistry Awards: the Alcan Lecture Award (2002), the Award for Pure or Applied Chemistry (2002), the E.W.R. Steacie Award in Chemistry (2003); Thirty from the Past Thirty Award (Recognizing Excellence Among Brock University Alumni); and has held a Canada Council Killam Research Fellowship (1998-99). He was elected a Fellow of the Royal Society of Canada in 1999 and received a Senior Humboldt Forschungspreis (Research Award) from the Alexander von Humboldt Foundation (2010), the McMaster University Distinguished Alumni Award in the Sciences (2011), the Brock University Distinguished Alumni Award in Mathematics and the Sciences (2014), the Lifetime Achievement Award in Fluorine Chemistry sponsored by SciFluor (2012), and was elected a Fellow of the American Chemical Society (2013). ■

## 2020 AMERICAN CHEMICAL SOCIETY FELLOW



**PROF. DR. NEIL VASDEV**, University of Toronto has been selected as 2020 American Chemical Society Fellow in recognition of his outstanding achievements in and contributions to science, the profession, and the Society.

Contribution to the science/profession: Recognized for outstanding contributions to radiochemistry with the short-lived radionuclides carbon-11 and fluorine-18, including multi-step and atypical reactions, applied for human medical imaging studies with positron emission tomography.

Contribution to the ACS community: Currently serving the Division of Fluorine Chemistry as past-Chair.

Previously served as Chair, Vice-Chair for Programs (2016-2018), Member-at-large (2015). Inaugural Organizer of joint radiopharmaceutical chemistry symposia at the ACS (2012-present).

Dr. Neil Vasdev is the Director and Chief Radiochemist of the Centre for Addiction and Mental Health (CAMH) Brain Health Imaging Centre, and the Director of the Azrieli Centre for Neuro-Radiochemistry at CAMH. He is also the endowed Azrieli Chair in Brain and Behaviour, and a Tier 1 Canada Research Chair in Radiochemistry and Nuclear Medicine. In addition, he is a full Professor in the Department of Psychiatry at the University of Toronto. He received his Ph.D. in Chemistry from McMaster University, under the co-supervision of Prof. Raman Chirakal and



Prof. Gary J. Schrobilgen while supported by the Natural Sciences and Engineering Research Council of Canada (NSERC), and continued training with a NSERC postdoctoral fellowship at the E.O. Lawrence Berkeley National Laboratory in California, under the mentorship of Dr. Henry VanBrocklin. He began his independent faculty career at CAMH/University of Toronto in 2004. He worked at CAMH for 7 years and was recruited to Boston. From 2011-2017 he served as the Director of Radiochemistry at Massachusetts General Hospital and joined the faculty of Medicine in the Department of Radiology at Harvard Medical School, where

he still maintains a faculty appointment.

His research focuses on developing novel radiochemical methods with fluorine-18 and carbon-11, and translating new PET imaging agents to use in various brain health illnesses. He has held continuous tri-council and NIH funding, published over 150 peer-reviewed articles, delivered over 100 lectures worldwide and he has received numerous scholarly awards throughout his career. He is a Fellow of the American Chemical Society, Royal Society of Chemistry, and Society of Nuclear Medicine and Molecular Imaging. ■

## CALL FOR NOMINATIONS

ACS DIV. OF FLUORINE CHEMISTRY  
DOCTORAL THESIS AWARD

— DEADLINE SEPT 1, 2021 —

**THE ACS DIVISION OF FLUORINE CHEMISTRY DOCTORAL THESIS AWARD** acknowledges an outstanding doctoral student each year for excellence in conjunction with her/his doctoral research in any area of fluorine chemistry. The doctoral thesis may be written in any language. The Doctoral Thesis Award will be given to a worthy candidate regardless of the candidate's nationality and country from which the thesis originated. The doctoral student must be nominated by the student's doctoral supervisor. The nominating supervisor must hold concurrent memberships in the American Chemical Society and the ACS Division of Fluorine Chemistry.

The nomination must include (1) an electronic copy of the thesis, (2) an English abstract of the thesis, and (3) a nomination letter from her/his supervisor that (a) provides the date of the thesis defense, (b) a statement relating to the significance and (c) the quality of the student's the doctoral research work, and (d) a list of publications that have thus far resulted from the student's doctoral research work.

The nomination deadline is September 1 of the year in which the award is presented; the student must have successfully defended the doctoral thesis during the preceding 12 months (Sept 1 of the previous award year to August 31 of the present award year) to be eligible for the award in that year. Students who defend after Sept 1 are eligible for the Award in the following year. All nominations must be submitted electronically to Michael Gerken, the Chair of the ACS Division of Fluorine Chemistry: [michael.gerken@uleth.ca](mailto:michael.gerken@uleth.ca).

The awardee will receive (1) a certificate, (2) one-year registration as a full ACS and ACS Division of Fluorine Chemistry member, (3) an invitation to present a lecture at the next ACS Winter Fluorine Conference, and (4) a cash award of \$300 US. In the event the student is already an ACS Member (and/or an ACS Division of Fluorine Chemistry Member), the membership fee(s) will be added to the cash award. ■



PROFESSOR RONALD JAMES GILLESPIE, O.C., F.R.S. (Canada), F.R.S. (UK), was born on August 21, 1924 in London, England and passed away on February 26, 2021 in Dundas, Ontario. He is survived by his wife Marcelle and by his daughters Ann (Stewart Patch) and Lynn (Geoffrey Levin) from his previous marriage to Madge (Garner, deceased 2008).

Ronald Gillespie was interested in science from an early age and received a scholarship to a local grammar school (Harrow County Grammar School) at age 11, which he attended from 1936 to 1942. In 1942, when he had passed his final examination at school, Ron was awarded a bursary to do a special two-year wartime undergraduate degree in chemistry at University College, London (UCL). At this point, Great Britain

was well into the war so that the chemistry department had to be evacuated to the University of Wales in Aberystwyth. Toward the end of the second year, Christopher (later Sir Christopher) K. Ingold, who was head of the department and a pre-eminent physical organic chemist, asked that Ron remain at UCL to work for his Ph.D. under Ingold's supervision. When it seemed clear that the war was coming to an end, the department moved back to London in the summer of 1944. Ingold had a team working on aromatic nitration, and put Ron to work on the cryoscopy of nitric acid in sulfuric acid to look for the nitronium ion. Fellow students were taking other approaches using Raman spectroscopy, attempting to prepare stable  $\text{NO}_2^+$  salts, and working on the kinetics of aromatic nitration. It was at this point that Ron began to wonder what else might be achievable in sulfuric acid, and thus began the quest for other superacid systems of even greater acidity and studies of their unique abilities to stabilize novel and important chemical species that were otherwise elusive, and often had unusual structures.

Ron was appointed an Assistant Lecturer at UCL prior to receiving his Ph.D. degree in 1949. Subsequent to receiving his Ph.D., Ron continued at UCL as a Lecturer, where he continued to carry out research on strong acid systems and taught inorganic chemistry. Ron Gillespie continued his investigations into superacid media which led to his technically difficult electrical conductivity measurements of 100% sulfuric acid and a definitive description of the solvent that would prove to be the first superacid medium. In the course of these investigations, it was shown that the electrical conductivity of pure sulfuric acid is predominately associated with the Grotthuss chain mechanism of proton transfer (proton jumping), rather than simple transport of  $\text{H}_3\text{SO}_4^+$  and  $\text{HSO}_4^-$  ions. The pure solvent studies provided the foundation for subsequent investigations of new strong acids such as  $\text{HSO}_3\text{F}$ ,  $\text{HB}(\text{HSO}_4)_4$ ,  $\text{HSO}_3\text{F}-\text{SbF}_5$  (so-called "magic acid"). The new superacids would enable the preparation of stable solutions of important intermediate species such as acylium ions and carbocations. They are now essential tools of inorganic and organic chemistry, providing acidities far beyond the reach of the acidic aqueous solutions. Superacid media would later provide the means to prepare a diverse range of main-group inorganic cations.

In 1953–54, Ron received a Commonwealth Fund Fellowship to work in the U.S. at Brown University where he did dielectric measurements on sulfuric acid. These were difficult measurements because 100% sulfuric acid is very highly conducting owing to its extensive self-dissociation. Ron obtained his D.Sc. degree from UCL in 1957 and in the following year, he received a very attractive offer from McMaster University. However, his acceptance of the offer was conditional, and stipulated that a commercial NMR spectrometer, capable of running 19F and 1H spectra, and a Raman spectrometer be purchased for his use.

The NMR spectrometer, a Varian HR-60 operating at 56.4 MHz for 19F, was one of the first commercial NMR spectrometers in Canada. Almost simultaneous with the arrival of the Chemistry Department's first NMR spectrometer, Ron offered the first NMR course at McMaster in the fall of 1959 and continued to do so in subsequent years. The NMR facility was unique in eastern Canada and, through Ron Gillespie's generosity, it was made available to George A. Olah, then at Dow Chemical in Sarnia, Ontario, who carried out some of his earliest investigations on carbocations in superacid media. George Olah was awarded the Nobel Prize in Chemistry in 1994 for his lifetime work on carbocation systems. Ron was also responsible for introducing Raman spectroscopy as a routine tool for structure determination in inorganic chemistry into Canada shortly after his arrival at McMaster.

Ron Gillespie and his co-workers were quick to use the modern physicochemical and spectroscopic tools to structurally characterize newly identified species. For instance, Ron's group provided the first conclusive evidence

for the polyatomic nature of the  $I_2^+$  and  $I_4^{2+}$  species. The Gillespie lab also had a strong focus on fundamental inorganic fluorine chemistry, and utilized weakly coordinating fluoro-anions, superacid media, and oxidants such as  $HSO_3F-SbF_5$ ,  $HF-AsF_5$ , and  $S_2O_6F_2$  for the syntheses of other exotic species such as  $Br_2^+$ ,  $Br_3^+$ ,  $S_4^{2+}$ ,  $S_8^{2+}$ ,  $S_{19}^{2+}$ ,  $Se_4^{2+}$ ,  $Se_{10}^{2+}$ ,  $Te_4^{2+}$ ,  $Te_6^{2+}$ ,  $Te_4Se_4^{2+}$ , and  $Hg_3^{2+}$  in both solution and crystalline salts. The structures of many of these species, determined by X-ray crystallography, brought many surprises, and deepened our understanding of chemical bonding.

Ron was excited by the discovery of the noble-gas compounds, which provided an obvious opportunity to show that VSEPR reliably predicted their structures. The author, then a Ph.D. student (1971-73) in Ron Gillespie's group, used superacid solvent media such as HF and HF-SbF<sub>5</sub> to prepare noble-gas fluoride cations, e.g.,  $XeO_2F^+$ ,  $XeOF_3^+$ , and  $XeF_3^+$ . Characterization of these and other noble-gas species involved extensive use of <sup>19</sup>F NMR and Raman spectroscopies as well as single-crystal X-ray diffraction. Ron's research supervision was characterized by gentle guidance, support, and freedom to find one's own research path, as was typical for so many of us.

Professor Gillespie's distinguished fifty-year scientific career, most of it spent at McMaster University, is highlighted by the discovery and characterization of superacid media, the earliest identification of many polyatomic cations of the main-group elements, and early studies of noble-gas fluoro- and oxyfluorocations. He is perhaps best known for the ubiquitous rules of the Valence Shell Electron Pair Repulsion (VSEPR) model of molecular geometry; thus a significant part of his legacy to chemistry is familiar to anyone who has taken freshman chemistry. The VSEPR model had been advanced in 1957, when together with his Australian colleague, Ronald (later Sir Ronald) Nyholm, Ron Gillespie published "Inorganic Stereochemistry" in *Quarterly Reviews of the Chemical Society* (volume 11, page 339). G.N. Lewis first described valence in terms of the electron pair bond and the octet rule. The VSEPR model extends the Lewis picture to account for molecular geometry in terms of Pauli principle repulsion of electron domains (either bonding or nonbonding) about each atom and accounts for hyper-valent species. The extraordinary simplicity and success of this model made it an essential component of the freshman chemistry curriculum around the world. The model was elaborated on and applied extensively in two books authored by Gillespie: "Molecular Geometry" (1972) and "The VSEPR Model of Molecular Geometry" (1991, with István Hargittai).

Ron Gillespie continued his research after retirement in 1989. He collaborated with Prof. Richard F. W. Bader and several of Bader's students and postdoctoral fellows in conducting atoms in molecules (AIM) analyses of bonding in a wide range of molecules. Ron's goal was to improve upon the VSEPR model by mainly accounting for the exceptions to its rules that challenged his understanding.

Ron Gillespie's longstanding interest in chemical education also led him to develop the VSEPR model as an aid to teaching and was implemented in two innovative first-year chemistry texts, which he co-authored. His many contributions to teaching have been recognized by the Manufacturing Chemists' College Chemistry Teaching Award (1972), the Union Carbide Award of the Chemical Institute of Canada (1976), and the McMaster Students Union Award for Excellence in Teaching (1983).

Among Prof. Ronald J. Gillespie's many awards and recognitions are: Election to Fellowship in the Royal Society of Canada (1965), ACS Award for Distinguished Service to the Advancement of Inorganic Chemistry (1973), Queen Elizabeth II Silver Jubilee Medal (1977), ACS Award for Creative Work in Fluorine Chemistry (1981), Election to Fellowship in the Royal Society, London (1977), Henry Marshall Tory Medal of the Royal Society of Canada (1983), Izaak Walter Killam Memorial Prize of the Canada Council for Pure Science (1987), and Member of the Order of Canada awarded by the Governor General of Canada (conferred May 3, 2007; invested on February 22, 2008). ■

*\*For more detailed accounts of Professor Ronald J. Gillespie's scientific career and achievements, the reader is referred to Edward A. (Peter) Robinson's article in *Coordination Chemistry Reviews*, 2000, 197, 3–19, and to an interview with Ronald J. Gillespie that was conducted by István Hargittai in March 1998 and published in *The Chemical Intelligencer*, 1999, 5, 6–10.*

—Gary J. Schrobilgen, *Department of Chemistry, McMaster University, Hamilton, ON L8S 4M1, Canada*



# ACS NEWS

THE BIENNIAL NEWSLETTER FOR THE AMERICAN CHEMICAL SOCIETY DIV. OF FLUORINE CHEMISTRY

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CANADA  
+1-403-329-2173  
[michael.gerken@uleth.ca](mailto:michael.gerken@uleth.ca)

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[metzkorn@uncc.edu](mailto:metzkorn@uncc.edu)

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Colorado State University  
200 Lake St. Fort Collins  
CO 80523, USA  
+1-970-491-5088  
[olga.boltalina@colostate.edu](mailto:olga.boltalina@colostate.edu)

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ROBERT G. SYVRET  
Fluorine Chemistry and  
Technology LLC  
1156 Clearwood Drive  
Allentown, PA 18103  
+1-484-788-8476  
[syvretrg@f2chemtech.com](mailto:syvretrg@f2chemtech.com)

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