

# Fluorine Division

Moissan Research Fellowship



**Fall 2008 Newsletter and Official  
Ballot for Membership Chair**



**Brian O'Brien**

**November 2008**

## **Message from the Chair**

Greetings to all of my fluorine chemistry colleagues, from the North Star State! First, let me, on behalf of the Fluorine Division, congratulate the winner of this year's American Chemical Society Award for Creative Work in Fluorine Chemistry, Professor **Henry Selig** of Hebrew University, Jerusalem, Israel. The award this year is sponsored by **Honeywell**. Professor Selig will be giving his award address at the 19<sup>th</sup> Winter Fluorine Conference on January 15, 2009.

**Alain Tressaud**, Research Director CNRS at ICMCB, Bordeaux, along with **Jean Riess**, Honorary Professor at Nice University, and **Paul Rigny**, former Director of Physical Chemistry and Isotopic Separation at CEA, Saclay, have been awarded the Grand Prix CEA (Commissariat B l'Energie Atomique) of the French Academy of Sciences for their achievements in Fluorine Chemistry. On behalf of the Division of Fluorine Chemistry, congratulations to them all!

The Division's program at the 236th National Meeting of the ACS in Philadelphia, Pennsylvania (August 17-21, 2008), was of outstanding quality. A symposium, *Fluorinated Biologically Active Compounds*, (co-sponsored with the Division of Medicinal Chemistry and associated with the theme of the meeting, *Chemistry for Health: Catalyzing Translational Research*), was sponsored by and organized by David O'Hagan, Vadim Soloshonok, and Viacheslav Petrov. Thirty-one papers and four posters were presented. The Symposium was sponsored by **Air Products**, **Tosoh F-Tech**, **Hoffmann-La Roche**, and **Oakwood Products**. In addition, two tutorials were given: *Property Modulation by Fluorine in Drug Discovery* (Klaus Muller), and *The Role of Fluorine in Biologically Active compounds* (James McCarthy).

The Division, in conjunction with the Division of Polymer Chemistry, sponsored a symposium, *Fluoropolymer 2008: Current Frontiers and Future Trends*, October 19-22, 2008. I was unable to attend, but by all accounts that I have heard, it was a highly successful program. The symposium was organized by Professor Dennis Smith of Clemson University.



The **19<sup>th</sup> Winter Fluorine Conference**, to be held in St. Pete Beach, Florida in January 2009, is set to be an outstanding success. The conference, titled *Fabulous Future with Fluorine*, features 89 oral and 40 poster presentations, including Henry Selig's award address. In addition to symposia on *Organic* and *Inorganic Fluorine Chemistry*, special symposia will be held on *Fluorine in Medicines*, *Fluorine in PET Imaging*, *Fluorine in Energy*, *Fluoropolymers and Materials*, *Mechanistic Fluorine Chemistry*, and *Fluorous Chemistry*, in addition to presentations in other categories of fluorine chemistry.

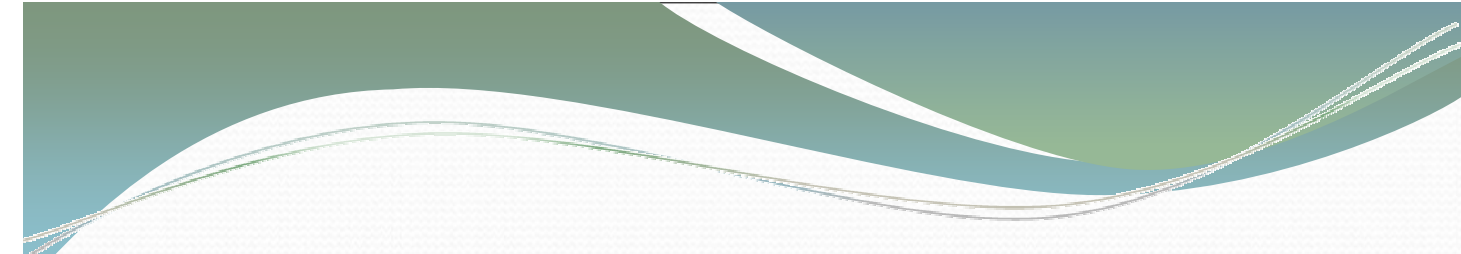
The division will also host the **19<sup>th</sup> International Symposium on Fluorine Chemistry**, August 23-28, 2009 at Jackson Hole, Wyoming under the leadership of Joseph Thrasher, Olga Boltalina, Steven Strauss and Richard Fernandez.

It is now time to elect a new Membership Chair for the Division, a position that is essential both for recruitment of new members and for retention of current members, among other duties. With this *Newsletter* you will receive a ballot with the names of candidates for the position of Vice-Chair/Membership. We have three excellent candidates who have volunteered to stand for election to this important position (and for Chair of the Division after three years of service as Membership Chair). They are: **Mark Watson** (University of Kentucky), **Steve DiMagno** (University of Nebraska), and **Chad Friesen** (Trinity Western University). I thank each of them for participating in this crucial activity of the Division. Biographical descriptions of the nominees appear later in this newsletter, and I think that it is apparent from those descriptions that we have an outstanding field of candidates.

Thank you all in advance for voting. Participation in the Divisional election has steadily increased during the past few years, and we should all try to enhance that trend!

I would like to remind everyone of the submission deadline (December 15, 2008) for the **Moissan Summer Undergraduate Fellowships**. The call for the fellowships to be tenured in 2009 is in this Newsletter, and has also appeared in *Chemical and Engineering News* and the *Journal of Fluorine Chemistry*.

To maintain the current number of Moissan Fellowships at the stipend level (\$3,500), we need to campaign aggressively to increase the **Moissan Summer Undergraduate Research Fellowship in Fluorine Chemistry Fund**. I call on the members of the Division and the industrial sponsors to support the current donation drive to reach the goal of \$150,000 (see Treasurer's Report). It is our objective to establish a self-sustaining investment pool (managed by the Fluorine Division) from which the annual Moissan Summer Undergraduate Fellowships can be provided. Three Moissan Fellowships were awarded by the Division in 2008. We hope that you and/or your organization will find the means to contribute to this important outreach program of your Division and equally important investment in the future of fluorine chemistry. Contributions should be directed to the Fluorine Division's Treasurer, **Bob Syvret**. Please visit the Fluorine Division website for details.



The Fluorine Division's website continues to be an extremely useful source for all matters pertaining to fluorine chemistry. We thank **Phil Henderson**, the site's Webmaster, for the considerable effort that he has expended in maintaining the website. The website contains, among other items, past newsletters, annual reports to the ACS, listings of officers, membership information, upcoming meetings, programs and abstracts, the new Fluorine Division Bylaws, and Executive Committee Operations Manual. Check it out if you have not done so recently, at <http://membership.acs.org/F/FLUO>.

It is still our main priority to increase the membership of the Division, and I request that each Division member attempt to recruit at least one new member this year. Membership application forms may be obtained from the Division's website (see the membership report). Please send completed membership forms to Membership Chair, **Vadim Soloshonok**. Remember, the first year of membership in the Division is free!

If there are concerns or questions that you have regarding the Fluorine Division, please send me an e-mail ([bobrien@gustavus.edu](mailto:bobrien@gustavus.edu)). If there are items that you would like to have considered for inclusion in the *Newsletter*, please do the same. I greatly look forward to seeing you at the 19<sup>th</sup> Winter Fluorine Conference in January.

Finally, it is with great sadness that I acknowledge the passing of two giants in the field of fluorine chemistry during the past few months. **Neil Bartlett**, the discoverer of noble gas reactivity and emeritus Professor of Chemistry at the University of California, Berkeley, passed away on Tuesday, August 5, 2008. **J. C. (Colin) Tatlow**, emeritus Professor of Chemistry at the University of Birmingham, England, one of the world's most prolific organofluorine chemists, passed away on Wednesday, April 9, 2008. Both will be greatly missed. Symposia in honor of each are planned for the 19th International Symposium on Fluorine Chemistry.



Brian A. O'Brien  
Chair, 2008





**Vadim Soloshonok**

## **Membership Chair's Report:**

The Division had, as of October 31, 2008, 667 (total) members. We would like to thank all of you who promoted our Division and helped us to retain current members and recruit new members. We would welcome any suggestions for activities that will help maintain and, most importantly, expand our membership.

If you wish to receive and have your name and contact information included in future Membership Directories, you will need to fill out an Opt-In Form (included in this newsletter, and also posted on the Fluorine Division's website). This needs to be done only once in a lifetime. If you wish to change or correct your contact information, please contact Vadim Soloshonok at [vadim@ou.edu](mailto:vadim@ou.edu).

We would like to request that every member actively recruit new members for the Division so as to achieve our goal of becoming a medium-size division. We would like to remind you that the first year of membership is free of charge, so please advise all your graduate students to enroll.

We would like to welcome the following new members: **Ralph Nicholas Salvadore** (Lehman College), **Igor Kuvychko** (Colorado State), **Phillip J. Fiore** (Pfizer), **Shaji Varghese** (Nycomed Pharma Pvt. Ltd.), **Shekhar Khanolkar** (Navin Fluorine International Ltd.), and **Maynard S. Raasch** (DuPont), D. Nandini (CFEES, DRDO, Delhi, India).



## Donald Burton

### ACS Council Report

The ACS Council Meeting was held on Wednesday, August 20, 2008 in Philadelphia, PA. Detailed below are some points of interest and information from the Council Meeting.

#### Election Results:

- (a) The Committee on Nominations and Elections presented a slate of 10 candidates to the Council for Membership on the Committee on Committees beginning in 2009. By written ballot, the Council elected:
  - 1. Cherlynlavaughn Bradley
  - 2. Rigoberto Hernandez
  - 3. James M. Landis
  - 4. Howard M. Peters
  - 5. Sara J. Risch
- (b) The Committee on Nominations and Elections presented a slate of 8 nominees for membership on the Council Policy Committee beginning in 2009. By written ballot, the Council elected:
  - 1. Ray A. Dickie
  - 2. Bonnie A. Lawlor
  - 3. Mamie W. Moy
  - 4. Eleanor D. Siebert
- (c) The Council Policy Committee presented a slate of 14 nominees for membership on the Committee on Nominations and Elections. By written ballot, the Council elected:
  - 1. W.H. (Jack) Breazeale, Jr.
  - 2. Peter K. Dorhout
  - 3. Catherine C. Fenselau
  - 4. Peter C. Jurs
  - 5. Andrea B. Twiss-Brooks
  - 6. Angela K. Wilson
  - 7. Dwight W. Chasar





### **Affiliate Dues:**

The Council **voted** to accept the Petition on Society Affiliate Dues. The petition raises Society Affiliate dues to be equal to the (full) member dues, while specifying that Society Affiliates are not subject to any of the discounts otherwise applicable to membership dues. To be valid, the petition next must be confirmed by the Board of Directors within 90 days, and will become effective five months following confirmation.

### **Committee Review:**

As part of a regular review, the Council **voted** to continue the Committee on Chemistry and Public Affairs, and the Committee on Patents and Related Matters. The Committee on Chemistry and Public Affairs is responsible for advice and recommendations for ACS action on public policy matters involving chemical sciences and technologies. The Committee on Patents and Related Matters consider patents and other related items insofar as such consideration and possible action are appropriate under the Society's Charter.

### **Registration Report and 2009 National Registration Fee:**

As of August 20, 2008, the ACS Fall national meeting had attracted 13,800 registrants. Total in select categories are as follows: Regular attendees, 8,196; Students, 3,087; Guests, 481; Exhibits only, 546; Exhibitors, 1,490.

In keeping with the objective of the National Meeting Long Range Financial Plan, previously approved by the Board of Directors and Council, the Meetings and Expositions Committee voted to support an **increase** of \$10.00 for the 2009 national meetings advance registration fee.

### **Revision of the Division Funding Formula and Formation of a New Division:**

After a motion to recommit failed, the Council voted, as recommended by the Divisional Activities Committee (DAC), to accept a revised division funding (allocation) formula. DAC reported that the formula improves clarity, offers simplicity, and rewards collaborative programming between divisions. The change will take effect in 2009 for 2008 activities.

The Council also noted to approve the formation of the Probationary Division of Catalysis Science and Technology. The primary objective of this "probationary" division is to provide a home for the chemical sciences of catalysis within the ACS in a way that will also insure a continual connection between this science and the essential chemical technology of catalysis.

### **Special Discussion Item:**

A special discussion item was put on the Council agenda by President Bruce Bursten. The discussion focused on Achieving Sustainability (e.g. Energy, Water, Food): What can ACS do to address this key global scientific challenge? In addition to a presentation by ACS Board Chair Judy Benham, 35 Councilors offered a wide variety of suggestions, which will be studied. Councilors and others who have ideas should send them to: [strategicplan@acs.org](mailto:strategicplan@acs.org).



**Viacheslav Petrov**

## **Vice-Chair/Program Report**

### **236<sup>th</sup> ACS National Meeting**

August 17-19, 2008, Philadelphia, PA

Organizers: Professor David O'Hagan, Professor Vadim Soloshonok, Dr. Viacheslav Petrov.

As part the of 236<sup>th</sup> ACS meeting, the Fluorine Division had a Symposium titled *Fluorinated Biologically Active Compounds*, sponsored by the Fluorine Division and MEDI. During a two and a half day Symposium, 31 oral presentations were given. Talks delivered by scientists from the UK, Japan, Germany, Switzerland, Italy, France, Russia, China and the USA highlighted recent development in this dynamic area of organofluorine chemistry. Professor K. Muller and Dr. J. McCarthy gave two interesting tutorials titled *Property Modulation by Fluorine in Drug Discovery* and *The Role of Fluorine in Biologically Active Compounds*, respectively. Four poster presentations were given as a part of the Sunday evening poster session. The Division expresses gratitude to all speakers, sponsors and organizers of the Symposium for putting together an excellent meeting.

### **Fluoropolymer 2008: Current Frontiers and Future Trends**

October 19-22, 2008, Charleston, SC

Organizer: Professor Dennis Smith, Chair.

The Division of Fluorine Chemistry was a co-sponsor of the *Fluoropolymer 2008: Current Frontiers and Future Trends* meeting, organized by the ACS Division of Polymer Chemistry. The Chairman, Dennis Smith, and the Organizing Committee did a marvelous job putting together the fifth biannual meeting, which was held this year in Charleston, South Carolina, on October 19-22, 2008. During this meeting 42 oral and 24 poster presentations were given, covering recent development of science, technology and global impact of fluorinated polymers.

During this meeting, the Fluoropolymer 2008 Sponsor's Award for Outstanding Contribution and Innovation in Fluoropolymer Science was presented to Dr. Paul Resnick (DuPont, retired, Fluorosience LLC). Dr. Resnick concluded his very interesting award address, titled *Fluoromonomers: Requirements for Fluoropolymers*, by saying "To make it happen, you to have curiosity, but you've got to have the serendipity too". Paul, congratulations on a well-deserved award!





## Upcoming Meetings

### **19<sup>th</sup> Winter Fluorine Conference, St. Pete Beach, Florida**

January 11-16, 2009, TradeWinds Island Resort, St. Pete Beach, FL, USA

Organizers: Professor P.V. Ramachandran, Chair, Professor David Dixon, Co-Chair.

Preparation for the meeting *Fabulous Future with Fluorine* is well underway and organizers of the 19<sup>th</sup> Winter Fluorine Conference have been quite successful in raising funds for this meeting. The registration for 19<sup>th</sup> WFC is open through December 11, 2008. Please visit the Fluorine Division website for further information:

<http://membership.acs.org/F/FLUO/>

### **238<sup>th</sup> ACS National Meeting**

August 16-20, 2009, Washington DC. Organizers: Professor V. Soloshonok and G. Butler. Abstract submission will open on January 19, 2009.

### **19<sup>th</sup> International Symposium on Fluorine Chemistry,**

August 23-28, 2009, Jackson Hole, Wyoming, USA

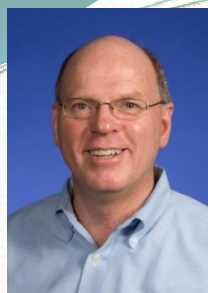
Joseph S. Thrasher, Chair (UA)

Olga V. Boltalina, Co-Chair (CSU)

Steven H. Strauss, Co-Chair (CSU)

Richard E. Fernandez, Co-Chair (UA)

<http://membership.acs.org/F/FLUO/19th%20ISFC%20Flyer.pdf>



**Robert Syvret**

## Treasurer's Report as of June 30, 2008

The fiscal state of the Division of Fluorine Chemistry continues to be strong in terms of cash flow, although the performance of the market over the last 12 months has resulted in a continued decline in the Division's long-term investments.. The Table below provides a snapshot view of the Division's assets as of 30 June 2008 and the comparative numbers for a year ago.

The Division's total assets have decreased 16% over the course of the 12 month period ending June 2008. This decrease is due in part to depreciation of invested funds (6.1% decrease in ACS Investment Pool holdings and 13.4% decrease in Moissan SURF Fund).

	(\$ as of 30 June 2007	(\$ as of 30 June 2008
ACS Investment Pool (market value)	135,339	127,073
Wachovia National Bank	28,937	8,612
American Express SPS Advantage Account		
Moissan SURF Fund	83,676	72,499
<b>Total Assets</b>	<b>247,952</b>	<b>208,184</b>
percent change		<b>-16%</b>

### Other financial highlights for the Division for Fiscal Year 2008 include:

The Division provided \$1,761.36 in financial support to the Fluorine Division Symposium held at the Spring ACS National Meeting in New Orleans and \$7,400.30 to the Symposium on Fluorine in Biologically Active Compounds held at the Fall ACS National Meeting in Philadelphia.

The Division received \$4,500 in Corporate sponsorship money (Air Products \$1,000; Hoffmann-La Roche \$2,000; Oakwood Products \$500; Tosoh F-Tech \$1,000) to support the Symposium on Fluorine in Biologically Active Compounds held at the Fall ACS National Meeting in Philadelphia.

The Division awarded 3 Moissan Summer Undergraduate Research Fellowships in the amount of \$3,500 each to Professors Alexander Doemling, John Welch, and Brian O'Brien.

The Division provided \$4,500 in sponsorship money to FLUOROPOLYMER 2008, held in October 2008 in Charleston, SC.



## ANNOUNCEMENT

### CALL FOR PROPOSALS 2009 MOISSAN SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP IN FLUORINE CHEMISTRY

The American Chemical Society, Division of Fluorine Chemistry is committed to continuing its sponsorship of undergraduate research and actively encourages the submission of appropriate proposals for research to be conducted during the summer of 2009. This program is intended to encourage an interest in fluorine chemistry among prospective graduate students. The program will provide funds for a student's summer salary and will be awarded directly to faculty members conducting research in any area of fluorine chemistry at colleges or universities on the basis of competitively judged applications. The awards for 2009 are currently \$3,500 for a ten-week program. In addition, a limited stipend will be available for the student to present his/her research results at an ACS sponsored meeting. Research expenses in connection with this program will be the responsibility of the faculty member or his/her department or institution. The number of awards to be made will be dependent upon the funds available. Applications for funding under this program may be submitted by a faculty member conducting research in fluorine chemistry. The application should be no longer than five pages and should outline the specific research to be undertaken by the student, should present reasons for anticipating progress by the student during the allotted time, and should suggest how the program might encourage the student to pursue graduate work in fluorine chemistry. All applications must state that the faculty member has adequate facilities and sufficient additional funds to cover research expenses for the proposed research program, and must be signed by the applicant. To be considered for an award in 2009, the Division Chair must receive an application by 15 December 2009. The application, in triplicate, should be sent to:

Prof. Brian A. O'Brien  
Department of Chemistry  
Gustavus Adolphus College  
800 West College Avenue  
St. Peter, MN 56082

In addition to the three paper copies, an electronic submission in the form of a Word document should be submitted to [bobrien@gustavus.edu](mailto:bobrien@gustavus.edu). No more than one award will be provided to an individual applicant per year. Applications for funding under this program will be judged by a committee consisting of the Division Chair, one academic member and one industrial member of the Division of Fluorine Chemistry and one member-at-large of the Fluorine Division. The awards for 2009 will be announced in the Spring 2009 Newsletter of the Division and the award recipients will be notified prior to this by mail or telephone. It is anticipated that students in this program will have completed the equivalent of three years of a chemistry major's program, although outstanding students with less academic experience can also be considered. Faculty members will be urged to consider students from institutions other than their own and especially from schools that provide limited opportunities for undergraduate research. However, selection of a student for participation in this program will be at the sole discretion of the faculty member. The selection process should be completed by 01 March 2009. Brief reports (two to three pages) to the Division Chair are required from the faculty member and student by 01 October 2009. The faculty report should include a summary of technical accomplishments, skills realized by the student, perceived interest by the student in graduate work, and the perceived success or failure of this program in encouraging interest in fluorine chemistry by the student. The student report should include a summary of technical accomplishments and an evaluation of the influence of the award program in his/her decision to consider graduate work in chemistry or fluorine chemistry.

# Two Previous Moissan Fellowships in Fluorine Chemistry

UG: Man Xia (Mandy) Lee  
Montclare Lab



The 2007 ACS Division of Fluorine Chemistry Moissan Summer Undergraduate Research Fellowship has given me the opportunity to do research on chloramphenicol acetyltransferase type I (CAT) protein. CAT acetylates chloramphenicol rendering the antibiotic inactive and functions as a trimer. Each monomer contains 13 leucine residues but none of them are involved in catalysis. The monomer contains 6-stranded  $\beta$ -sheet supported by  $\alpha$ -helices, and has a molecular weight of ~25 kDa. The goal of this project was to incorporate a fluorinated amino acid 5',5',5'-trifluoroleucine (TFL) and investigate how this influenced the protein stability.

We observed that the incorporation of TFL into a mutant L158I CAT showed an enhanced thermostability of the protein relative to the wild-type conventional protein. The thermostability of L158I CAT was determined by the use of Circular Dichroism (CD) at four different temperatures (25 °C, 30 °C, 55 °C and 60 °C). We monitored the wavelength scan from 190 nm - 250 nm as a function of temperature (Figure 1a and 1b). In the case of the fluorinated L158I CAT, there appeared to be an enhancement in structure upon increase in temperature at 222 nm (Table 1). Where as a slight decrease in structure was observed for the wild-type.

Table 1. Mean residue ellipticity at 222 nm  $\times 10^4$

Protein	25°C	30°C	55°C	60°C	25-60
L158I + L	-0.46391	-0.46609	-0.49174	-0.42971	-0.0342
L158I + T	-0.37249	-0.40324	-0.50281	-0.52174	0.14925

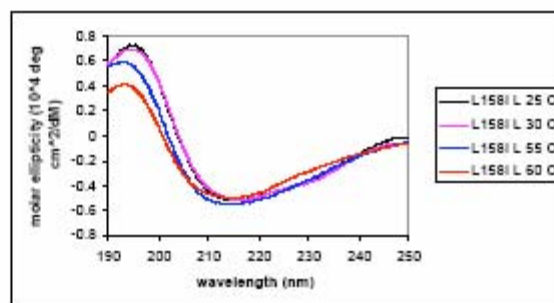


Figure 1a: Wavelength spectra of L158I expressed in twenty amino acids.



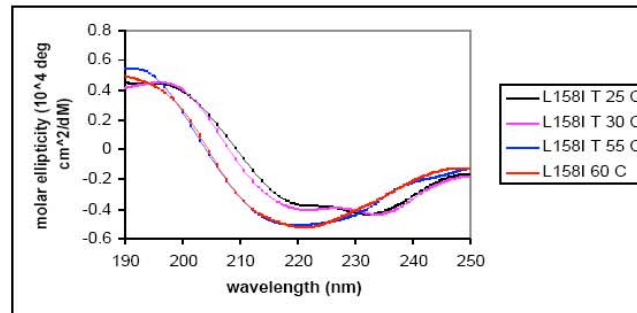


Figure 1b: Wavelength spectra of L158I expressed in TFL.

The summer internship proved to be very intellectually rewarding; not only have I built upon my knowledge in the areas of biology, biochemistry and molecular engineering, but I have also gained confidence as an active participant in the Montclare lab. I remain amazed at the possibility of structurally engineering proteins with different functions, and I enjoy working in the lab although there are frustrating moments when mistakes are made. The internship offered first-hand experience of the laboratory work and strengthened my interest in the research topic. With the support of Professor Montclare and other lab members, I have learned to think critically and work efficiently in the lab.



## Synthesis and Characterization of Some

# Fluorine-containing Complexes of Ruthenium(II): Use of <sup>19</sup>F NMR in Studying DNA Interactions

Lamarque Moody, Marauo Davis, Luke Seymour, Varma H. Rambaran, Woodrow Ward, Eva Clark, Donald G. VanDerneer, Suman Parajuli, William Jarrell, Wajlan Miao, and Amin A. Holder\*  
 Department of Chemistry and Biochemistry, The University of Southern Mississippi, Hattiesburg, MS 39406, U.S.A.

### Abstract:

Several novel ruthenium(II) and ruthenium(II)iodomethane(II) complexes with a novel fluorinated bridging ligand were synthesized. The ruthenium(II) and the ruthenium(II)iodomethane(II) complexes were characterized by UV/Visible, IR, and NMR spectroscopy and X-ray crystallography. Electrochemical studies were carried out on the complexes in CH<sub>3</sub>CN so as to detect the redox potentials of the ruthenium(II) and ruthenium(II) metal centers, and the effect of ligand environment on the redox potentials of ruthenium(II) and ruthenium(II)iodomethane(II). Detailed <sup>19</sup>F NMR studies involving the interaction of these complexes with calf thymus DNA (CTDNA) were also carried out.

### 1.0 Introduction:

For many years ruthenium(II) complexes with polyanionic ligands have been utilized in the photocleavage of DNA via intercalative and covalent modes.<sup>1-4</sup> Recently Holder,<sup>5,6</sup> Brewer,<sup>4,6</sup> and Williams<sup>11</sup> have utilized several complexes [(ppy)<sub>2</sub>Ru(dpp)]<sub>2</sub>(RuCl<sub>2</sub>)<sub>2</sub> and [(ppy)<sub>2</sub>O(dpp)<sub>2</sub>RuCl<sub>2</sub>]<sub>2</sub> [(ppy = 2,2'-bipyridine, dpp = 2,3-bis(2-pyridyl)pyrazine), and [(ppy)RuCl<sub>2</sub>(PCL<sub>2</sub>)(PF<sub>6</sub>)] (where BL = bis(2-pyridyl)peroxoquinoline (dpp), and bpy = 2,2'-bipyridine) to study photocleavage DNA.

### 2.0 Experimental:

Monomeric complexes were prepared by reacting 6-thiuro-2,3-dipyridin-2-yl-quinoline (dpp-F) with [Ru(ppy)<sub>2</sub>Cl<sub>2</sub>] (where bpy = 2,2'-bipyridine) and [Ru(phen)<sub>2</sub>Cl<sub>2</sub>] (where phen = 1,10-phenanthroline). The binuclear complexes were prepared from the respective monomeric complexes. UV/Visible spectra were acquired on a HP 8452A diode array spectrophotometer. Calf thymus DNA was used as received. Cyclic voltammetry was carried out on an Epilab BAS Workstation. 0.1 M Tetrabutylammonium perchlorate (TBAP) was used as the supporting electrolyte. Ag/AgCl was used as the reference electrode. Platinum was used as the working electrode and Ag wire as the auxiliary electrode. Ferrocene was used as an external standard for the cyclic voltammograms. <sup>19</sup>F NMR spectra were acquired on a <sup>19</sup>F-NOVA 500 MHz NMR Spectrometer KF in D<sub>2</sub>O was used as a standard for <sup>19</sup>F NMR. Fluorescence spectra studies were acquired in acetonitrile.

### 3.0 Results and Discussion:

Figure 1. Structures of dpp-F and the synthesized ruthenium containing complexes.



Figure 2. An ORTEP diagram of the [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> complex.

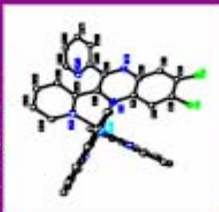


Figure 3. UV/Visible spectra for [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> and [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> in CH<sub>3</sub>CN.

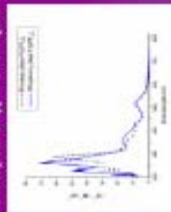


Figure 4. UV/Visible spectra for [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> and [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> in CH<sub>3</sub>CN.

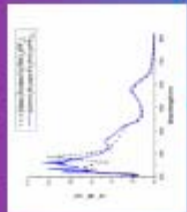


Figure 5. Spectral changes of [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> in solution of CTDNA after 24 hours.

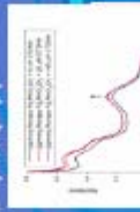


Figure 6. Electronic emission spectra of [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> and [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> in CH<sub>3</sub>CN. The excitation wavelength is 340 nm and the emission wavelength is 410 nm.

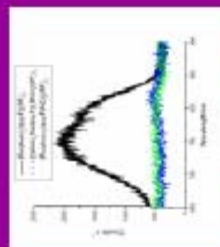


Figure 7. Cyclic Voltammograms of [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> and [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> in CH<sub>3</sub>CN.

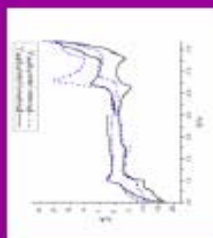


Figure 8. Cyclic Voltammograms of [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> and [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> in CH<sub>3</sub>CN.

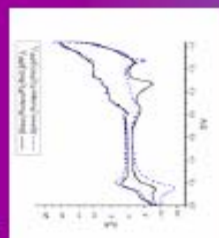
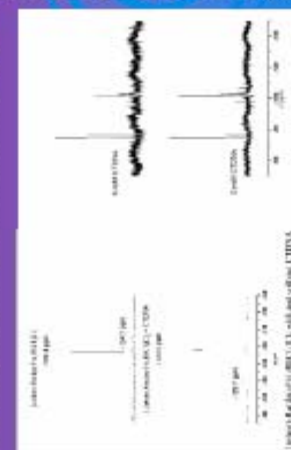


Figure 9. <sup>19</sup>F NMR spectra of [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> and [Ru(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub> in CH<sub>3</sub>CN at various concentrations of CTDNA.



### 4.0 Conclusions:

- A series of mixed-metal ruthenium(II)-ruthenium(II)iodomethane(II) complexes were synthesized and characterized.
- The emission spectrum of [(ppy)<sub>2</sub>(dpp-F)]<sub>2</sub>[RuCl<sub>2</sub>(PF<sub>6</sub>)<sub>2</sub>] showed extensive quenching, which was due to the presence of the Ru(II) metal center.
- There has been a reaction between the calf thymus DNA and the respective complexes.
- It was also noted that 0.10 M phosphate buffer (pH 7.0) reacted with the respective complexes.

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## Membership Chair Candidates

### *Stephen G. DiMagno*

Professor Stephen DiMagno received his B.A. in chemistry at Swarthmore College in 1985. After a brief stint at the Raytheon Semiconductor Research Division in Lexington, MA, he enrolled in graduate school at the University of California, Berkeley where he studied with Professor Andrew Streitwieser. He obtained his Ph.D. degree in 1991 and took a postdoctoral position in the laboratory of Professor Michael J. Therien at the University of Pennsylvania. In 1993, he started his independent career at the University of Nebraska, where he has risen through the ranks and is currently Professor of organic chemistry. Professor DiMagno's research interests span many aspects of organofluorine chemistry, ranging from the physical chemical implications of fluorine substitution in organic molecules, to the use of fluorinated ligands in catalysis, to novel methods of for the introduction of fluorine. Contributions to fluorine chemistry from Professor DiMagno's research laboratory at Nebraska include: 1) development of the concept of "Polar Hydrophobicity", 2) the first examples of meso-tetrakis(perfluoroalkyl)porphyrins and b-octafluoroporphyrins, 3) facile syntheses of anhydrous fluoride salts, and 4) the development of new methods for radiochemical fluorination. He served previously on the Executive Committee of the Fluorine Division (1999-2002) and is on the editorial advisory board for the Journal of Fluorine Chemistry (since 2005).

### *Chadron Mark Friesen*

Chad Friesen is currently an associate professor of chemistry at Trinity Western University in British Columbia, Canada, with an adjunct appointment at Simon Fraser University. In addition to Friesen's academic work, he has spent time as a visiting scientist at E. I. du Pont de Nemours and Co., Inc. (i.e. DuPont). Terms at DuPont ranged from several months in 2001, to a one year sabbatical term in 2006-2007. Friesen's interests reside in industrial applications of fluorine chemistry. Many of Friesen's journals and patents focus on the design of fluorinated ether stability, functionality, and expanded applications. Current effort in Friesen's laboratory is on the development of fluorinated ether functionality in applications of fluorous biphasic systems (FBS). Chad Friesen completed a B.S. in Chemistry and a B.S.E in Secondary Education from John Brown University in Siloam Springs, Arkansas in 1995. In 1996, he began graduate school at The University of Alabama in Tuscaloosa, AL, under the direction of Joseph S. Thrasher. Additionally, Jon L. Howell at Dupont co-supervised Friesen in the latter part of his Ph.D. degree, which he completed in 2000. Chad Friesen began his independent career with Trinity Western University in 2000



## ***Mark D. Watson***

Mark Watson began his research career while obtaining a B.S. in Polymer Science from the University of Southern Mississippi. He conducted research successively in two separate research groups and during an industrial co-op with Schering-Plough, gaining exposure to formulation and testing of personal care products, adhesives, and coatings. To learn more about synthetic chemistry leading to polymers, he began graduate studies in the Department of Chemistry at the University of Florida. In the group of Prof. Kenneth B. Wagener he developed methods for depolymerization of elastomers and tandem olefin metathesis-hydrogenation, which served as the basis of a Ph.D. granted in 1999. During this time, he began to notice some of the unique challenges associated with organo-fluorine chemistry, and decided to delve into this field in the future. After spending nearly one year as a post-doc in the group of Prof. Klaus Muellen at the Max-Planck Institute for Polymer Research (Mainz, Germany), he was offered a semi-permanent position as project-leader in the same group. The group's research focused on the synthesis and structure-property studies of large condensed polycyclic aromatic compounds. Since 2003, Mark has been engaged in a tenure-track faculty position at the University of Kentucky, Department of Chemistry. His group focuses on adapting the unique chemistry of highly fluorinated aromatics to the synthesis of fluorinated conjugated polymers and polycyclic aromatic compounds, all with potential as organic (opto)electronic materials. The materials are also designed to exploit the unique properties of fluorinated organics to control self-assembly (attraction between fluorinated and nonfluorinated aromatics and between fluorine atoms and chalcogens).