

**Annual Report  
2020-2021  
Chemistry Department**

**IA. Peer-Reviewed Faculty Publications**

**Maria Hepel**

1. “Cancer-Targeted Controlled Delivery of Chemotherapeutic Anthracycline Derivatives Using Apoferritin Nanocage Carriers”. K Kurzątkowska, MA Pazos, JI Herschkowitz, Maria Hepel, *International Journal of Molecular Science*. 2021, 22(3), 1362; <https://doi.org/10.3390/ijms22031362>
2. “Magneto-Plasmonic Nanoparticle Grid Biosensor with Enhanced Raman Scattering and Electrochemical Transduction for Development of Nanocarriers for Targeted Delivery of Protected Anticancer Drugs”. Hoda Ilkhani, Chuan Jian Zhang and Maria Hepel, *Nanomaterials*, 2021, 11, Issue 5, 1326, <https://doi.org/10.3390/nano11051326>

**Martin Walker**

1. Hermann Staudinger – Organic chemist and pioneer of macromolecules. Michael Hess and Martin Walker, *Pure and Applied Chemistry*, May 2021.

\* SUNY Potsdam Undergraduate Students Co-authors;

# SUNY Potsdam Students Alumni

**IB. Other Faculty Publications (including WEB news, discussions, reviews, editorials, etc.)**

**II. Papers Delivered by Faculty and Students at Conferences and Conference Attendance. Faculty Presenter and Students Presenter names underlined**

**IIA. Professional Meetings**

**David Gingrich**

1. American Society for Biochemistry and Molecular Biology (ASBMB) 2021 Annual Meeting in conjunction with Experimental Biology April 27-30 2021. (Virtual),
2. V-ATPase Summit: From structure and mechanism to cell biology, physiology and disease June 28 - 29, 2021. (Virtual)
3. eBIC - The SBIC Electronic Biological Inorganic Chemistry Meeting, July 20-22, 2021. (Virtual)

**Fathima Nazeer**

1. Participant. Institutional Research and Academic Career Development (IRACDA) conference (Virtual) June 2021

**IIB. Presentations at the Learning & Research Fair, SUNY Potsdam**

**David Gingrich**

1. Alis Hart and David Gingrich. "Cloning the MTP1 Gene from *Chlamydomonas reinhardtii*."

**Maria Hepel**

1. Emily DeVoe and Maria Hepel. "Synthesis and Applications of Cerium Oxide Nanoparticles in Nanomedicine" (Poster Presentation).
2. Jared Morse and Maria Hepel "Synthesis of Silver Nanoplates and Nanostars Nanoparticles and Their Biomedical Applications

**Fathima Nazeer**

1. Kellin Tasber and Fathima Nazeer. "Identifying the Role of a protein degradation factor (Elc1) in regulating mRNA processing factors." (Poster Presentation).
2. Aisha Laguda and Fathima Nazeer. "Does a protein degradation factor (Elc1) bind to mRNA processing factors?" (Poster Presentation).

**IIC. Presentations at the ACS Undergraduate and Graduate Chemistry and Biology Symposium**

**III. Receipt of Grants/Awards and Grants Applied For**

**David Gingrich**

1. Lougheed Applied Learning grant, SUNY Potsdam. "Replacement of Gel Imaging System" (awarded at 50% of \$26,072), purchased and installed.
2. Training Support Program, Promega Corp, towards lab supplies for CHEM 425/426 - Awarded \$432.

**Maria Hepel**

1. Resubmitted a collaborative NSF Proposal (**Co-PI**) with Clarkson University - NSF Proposal title: “*MRI: Acquisition of XPS to Enable Electrochemical & Materials Research and Education in North Country*” with Professor Podlaha-Murthy as the Principal Investigator **Under Review**.
2. Submitted an Application for the Loughheed Applied Learning Grant to secure funds for Raman Spectroscopy equipment update and replacement of broken parts” **Under Review**.
3. (With Martin Walker) Loughheed Applied Learning grant, SUNY Potsdam. “Restoring Raman Spectroscopy Equipment Use in Science Departments by replacing broken part of the equipment.” \$17,479.85 requested, awaiting review.

**Fathima Nazeer**

1. American Association of University Women **Research Publication grant** proposal, “**Studying multiple mechanisms that regulate mRNA maturation following UV-type DNA damage.**” \$10,000-\$25,000. Not funded.
2. **Loughheed Applied Learning Grant, SUNY Potsdam.** Studying an unexpected role of a DNA damage factor on mRNA maturation. Fathima Nazeer (\$2000)
3. **Presidential Scholars, SUNY Potsdam.** Do mRNA processing factors physically interact with a DNA damage response factor? Yadriel M Bracero and Fathima Nazeer (\$900)
4. **Frederick B Kilmer Student Research Fellowship, SUNY Potsdam.** Does a protein degradation factor regulate mRNA maturation? Aisha Laguda and Fathima Nazeer (\$600)
5. **Frederick B Kilmer Student Research Fellowship, SUNY Potsdam.** Identifying the Role of Elc1 in regulating mRNA processing factors. Ke Tasber and Fathima Nazeer (\$600)

**Clifford Rossiter**

1. National Science Foundation RUI: Detection of Esterase Activity using a Modified Indicator Displacement Assay. Declined

#### **IV. New Programs; Courses and/or Laboratories Proposed or Revised**

##### **David Gingrich**

1. Biochemistry 1 in-person lab sequence/manual/procedures revised to accommodate Covid 19 restrictions for distancing and partial online instruction.
2. Revised Biochemistry 1 lecture material, including special biochemical Covid 19 information.

##### **Maria Hepel**

1. Quantitative Analysis lecture CHEM 311
  - Prepared lectures for online format
  - Used Microsoft TEAM for lectures
  - Prepared exams for online format
  - Offered personalized help sessions for students through TEAM
2. Quantitative Analysis Lab CHEM 311
  - Used mixed format online and face to face instructions
  - Prepared videos of experiments for online labs
  - Prepared laboratory handouts for online labs
3. Quantitative Analysis Recitation CHEM 311
  - Used mixed format: online and face to face
  - Prepared projects involving problem solving and calculations for the online format
4. Nanobiotechnology CHEM 495 (**new course**)
  - Prepared 40 new PowerPoint lectures based on recent publications (2019-2020) published in the International Journal of Nanobiotechnology, Biosensors & Bioelectronics and ACS Nanoletters
  - Used Microsoft TEAM for lectures
  - Prepared exams for the online format
  - Offered personalized help sessions through TEAM
5. Taught "Tutorial Study Nanobiotechnology CHEM 598 for graduate student Michael Frohm.
6. Prepared 36 new lectures in PowerPoint for a new course to be offered "Nanomedicine". These lectures are based on recent papers (2020-2021) published in the "International Journal of Nanomedicine"
7. Involved in preparing and planning a new proposal for the interdisciplinary "Nanoscience" major.

**Patricia Kraske French**

- a. Fall 2020:
  - i. Chem 105 lectures: Transitioned General Chemistry I (Chem 105) lectures to online format for both five day a week lecture and traditional lecture. Necessary adaptations included power point revisions and recording of lecture videos for asynchronous viewing; development of Moodle practice exams and semester & final exams with extended exams times to allow working students the needed flexibility. Worked one on one with students who had inadequate internet capabilities. Held seven office hours per week synchronously via Microsoft TEAMS. Individual (personalized) TEAMS meetings were held when students required them and students were allowed virtually unlimited contact via email and phone.
  - ii. Chem 105 recitations: Both the twice a week section and the once a week section were held in person with masks and social distancing. This allowed the face to face time that the students had requested at the end of Spring 2020 and provided for more personal interaction with them. The sessions were also held synchronous online and recorded to accommodate online students.
  
- b. Spring 2021:
  - i. Chem 106 lectures: Due to a ruptured disc and subsequent back surgery, during the first half of the semester both sections of Chem 106 were held synchronously on Zoom. Lectures were also re-recorded in a better format and made available for students who were unable to attend the synchronous sections. During the second half of the semester, the 9:10 am lecture section was transitioned to in-person format while the 1:50 lectures were still held in a synchronous online format. Again, practice exams and exams were developed and held on Moodle with extended exams times to allow working students the needed flexibility. Office hours were held both online and in person. Individual (personalized) Zoom meetings were held when students required them and students were allowed virtually unlimited contact via email and phone.
  - ii. Chem 106 recitations: As with lecture, recitations were held synchronously for the first half of the semester, then transitioned to in person for the second half of the semester, again providing more personal interaction and increased participation.

**Fathima Nazeer**

1. Created new course with lab, CHEM 100: Chemistry in the news to fit Pathways natural science requirement.
2. Revised Biochemistry II lecture and lab and created multiple lab modules based on analyzing primary literature.
3. Currently revising Gen Chem lecture and lab to fit Pathways guidelines. for the natural science requirement.

**Clifford Rossiter**

**Fall 2020**

1. Adapted organic chemistry labs (49 students) and CHEM100 (85 Students) classes to online only delivery due to Covid restrictions.
2. Held asynchronous classes in CHEM100 twice a week and synchronous class once a week to help prevent Zoom burn-out and maintain student engagement.

**Spring 2021**

1. Adapted forensic science (90 students) to an online format with asynchronous classes twice a week and synchronous class once a week to help prevent Zoom burn-out and maintain student engagement.
2. Held general chemistry and inorganic chemistry labs in person to insure students learn the vital techniques required of those skilled in the art of science.

**Martin Walker**

1. Taught WAYS 101, "Science: Fact or Opinion" for the first time in fall 2020, and reprised the class in spring 2021 using a new class workbook.
2. Taught "Fundamentals of Environmental Science" for the first time, taught virtually.
3. Several other classes adapted for virtual learning.
4. Updated OER textbook, lab manual, workbook and Moodle site for organic chemistry.
5. Revised research module in Spring lab sequence, to introduce enolate alkylations.

**V. Service**

## **VA. Administrative/Committee Assignments**

### **David Gingrich**

1. College Radiation Safety Officer
2. College Radiation Safety Committee
3. Chemistry Safety Committee (Chair)
4. Health Professions Advisory Committee (HPAC)

### **Maria Hepel**

1. Member of the Distinguished Academy Board” SUNY, Albany
2. Member of the group involved in planning a new “Nanoscience” major
3. Delegate of the United University Professionals (UUP)

### **Patricia Kraske French**

1. Teacher Education Advisory council

### **Fathima Nazeer**

1. Member, Health Professions Advisory Committee (HPAC)

### **Clifford Rossiter**

1. Elected member of faculty senate business affairs committee.
2. Alternate delegate to faculty senate.

### **Martin Walker**

1. Department Chair (and re-elected for another three-year term)
2. Potsdam Pathways Curriculum Committee member and TS-Natural World Liaison/Reviewer
3. Departmental Safety Committee
4. Health Professions Advisory Committee
5. Worked on STEM outreach materials
6. Conducted external review (with Prof. Cheri Boyd) of the Mathematics Department
7. Served on review committee for Linghong Li (promotion) and Ananta Adhikari (reappointment), both in Physics.

## **VB. College-Related Public Service**

### **David Gingrich**

1. Faculty advisor for the SUNY Potsdam American Society for Biochemistry and Molecular Biology ASBMB Student Chapter, (SGA Biochemistry Club)
2. Faculty advisor for SGA Pre-Health Club.
3. Academic Coordinator for Men’s Hockey.

**Maria Hepel**

1. Provided an external evaluation for Dr. Yuxin Liu from West Virginia University for her promotion and tenure.
2. Supervised “Internship” for undergraduate student Emily DeVoe, SUNY Potsdam, Fall 2020

**Fathima Nazeer**

1. Participated in STEM openhouse

**Clifford Rossiter**

1. Participated in STEM openhouse

**Martin Walker**

1. Organizer for several “Spotlight” and Open House events to promote Chemistry and Pre-Health programs.
2. Faculty Advisor for Intervarsity Christian Fellowship.
3. Faculty Advisor for Gamma Sigma Epsilon, Chemistry Honor Society.

**VC. Professional Service**

**Maria Hepel**

1. Accepted invitation to serve as a reviewer of papers submitted to the following journals: Analytical Chemistry, Academic Letters, Biosensors & Bioelectronics, Frontiers in Chemistry, Biomedicine, Journal of Alloys & Compounds, Nanomaterials, Molecules
2. Invited to serve as Review Editor in “Frontiers in Analytical Chemistry-Forensic Chemistry”.
3. Member of the Editorial Boards for the following journals:
  - “Polish Journal of Environmental Studies”
  - “Open Electrochemistry Journal”
  - “Journal of Molecular Imaging & Dynamics”
  - “Journal of Nanomedicine & Nanotechnology”
  - “Mediterranean Journal of Chemistry”
  - “International Journal of Nano Studies and Technology”
  - “Frontiers in Physical Chemistry and Chemical Physics”
  - “Journal of Nanotechnology: Nanomedicine & Nanobiotechnology”
  - “Austin Journal of Biosensors & Bioelectronics”
  - “Analytical & Bioanalytical Techniques”
  - “Journal of Molecular Science”
4. Invited to serve as an Organizing Committee Member for the upcoming event “4<sup>th</sup> Edition of World Nanotechnology Conference”, April 25-27, 2022, Las Vegas, USA



5. New research collaboration with Dr. Marta Fiolka from University of Marie Curie-Sklodowska, Lublin , Poland
6. Continue research collaborations with SUNY Albany; SUNY Binghamton; Technical University, Bratislava, Slovakia; Masaryk University, Brno, Czech Republic; and Polish Academy of Science, Olsztyn , Poland.

#### **Fathima Nazeer**

1. Judge, poster session, IRACDA conference

#### **Martin Walker**

1. Alternate Councilor, Webmaster and Regional Delegate for the Northern New York section of the American Chemical Society
2. Member of the outreach task force of the Polymer Division, also assisted the chemical data standards task force, for the International Union of Pure & Applied Chemistry (IUPAC). Worked with the IUPAC leadership to facilitate dissemination of IUPAC content into Wikipedia through CC licensed images.
3. Editorial boards for two journals:
  - Journal of Cheminformatics (impact factor 5.326)
  - ARKIVOC or “Archive of Organic Chemistry” (impact factor 1.003)
4. Reviewed one paper for the *Journal of Chemical Education*.

### **VD. Community Service**

#### **David Gingrich**

1. Sound/Media Technician, Potsdam Church of the Nazarene.

#### **Maria Hepel**

1. Serving as an advisor for students who are members of the Newman Club.

#### **Patricia Kraske French**

1. Member of New Life Presbyterian Church, Canton, NY.

#### **Clifford S. Rossiter**

1. Member of the American Chemical Society.

#### **Martin Walker**

1. Deacon, worship team bassist, and organizer of a “Coffee House” social evening, at New Hope Community Church, Potsdam, NY. Gave a sermon on August 1, 2021.

## **VE. Other Service not mentioned above.**

### **Maria Hepel**

1. Supervised undergraduate research projects CHEM 485 of two students: Emily DeVoe and Jared Morse (currently, both are accepted into graduate programs at Clarkson University)
2. Served as an advisor to 8 chemistry majors and minors students
3. Supervised projects (written papers and oral presentations) of two students for CHEM 406 Chemistry Topics and CHEM 407 Chemistry Seminar: Gideon Smith and Leah Potter

### **Clifford Rossiter**

1. Supervised one student for summer research.

## **VI. Chemistry Seminar Program**

The Chemistry Department Seminar program consists, in part, of invited speakers and student seminars. The visitors from graduate schools are a crucial part of our seminar program and very beneficial to our students. Time is provided for our students to meet with each visitor and to discuss graduate school opportunities. The list of visitors and their seminar topics are listed below along with our student seminars.

### **SEMINAR SPEAKERS FOR FALL 2020**

Dr. Matthew Cerda, Department of Chemistry & Biochemistry, UC-Berkeley.  
“Development of Chemical Tools for Studying Reactive Sulfur Species”

Dr. Kathleen L. Morrissey, Department of Chemistry and Chemical Biology, RPI.  
“Studies of G-quadruplex DNA Aptamer Discovery and Proteomic Profiling using a Genome Inspired Reverse Selection Approach”

Dr. Nikki A. Thiele, Chemical Sciences Division, Oak Ridge National Laboratory, Tennessee.  
“Selective Chelation of Metal Ions: Saving Lives, Money, and the Toyota Prius”

Professor Kathryn E. Knowles, Department of Chemistry, University of Rochester.  
“Synthesis and Photophysics of First-Row Transition Metal Oxide Semiconductor Nanomaterials”

Professor Puja Goyal, Department of Chemistry, SUNY Binghamton.  
“Role of structure and conformational dynamics in protein function: A B12-dependent photoreceptor and a dynein adaptor protein”

### **SEMINAR SPEAKERS FOR SPRING 2021**

Professor David Heppner, Jere Solo Assistant Professor of Medicinal Chemistry, Department of Chemistry, University at Buffalo. “Mutant-selective allosteric inhibitors for mutant EGFR lung cancer”

### **STUDENT SEMINARS FOR SPRING 2021**

Riley O’Neil: “Aspects of Borylation”

Dylan Jock: “The Role of Methionine Oxidation in *Helicobacter Pylori* Urease”

Gideon Smith: “Detection of Immunoglobulins using Enzyme Mimic Nanoparticles”

Casey Mahony: “Palladium-Catalyzed Direct  $\gamma$ -C(sp<sup>3</sup>)-H Arylation of Free Amines by Transient Directing Group Strategy”

Michael Weirich: “Cryogenic Electron Microscopy (Cryo-EM) of Biomolecules”

Makayla Bacon: “Photodynamic Therapy’s Effect on Cellular Metabolism”

Leah Potter: “Synthesis and Biomedical Applications of Nanoceria, A Redox Active Nanoparticle”

Jarisa Escalante: “A Wip1 Inhibitor as a Potential Therapeutic Supplement in Neuroblastoma Treatment”

Samuel Kramer: “Curcumin, a Potential Treatment for Cancer”

## **VII. 2021 Chemistry Major Graduates – 5 graduates**

**B/S:** Emily DeVoe

**B/A:** Emily Dean  
Makayla Bacon  
Leah Potter  
Michael Weirich

**Biochemistry Major Graduates – 4 graduates**

Jarisa Escalante  
Samuel Kramer  
Victoria Boateng  
Karl Palmer (May 2019)

**2021 Chemistry Minor Graduates – 7 graduates**

Monica Mack  
Arfa Mal-Lawane  
Katelyn Martin  
Rachel Schwartz  
Richard Sharpe  
Keira Thacker  
Philip Dorman