It’s been 23 years since I accepted a faculty position at SUNY Potsdam. I am still hanging out on campus day after day and communicating my excitement about new science discoveries with anyone who will listen. For sure, it means that Potsdam is a special place worth being at. Our program is strong and growing. Since 2000 our number of majors and minors have doubled. The Chemistry Department is very successful in fostering undergraduate research. Many of our undergraduates have presented their research findings at professional meetings at the national and regional level. Some of them are coauthors of published papers in peer-reviewed scientific journals.

Our program is of course all about preparing students for a future of their own making. So we love to hear from ex-students and to learn about their achievements and adventures. In addition to our successful seminar program, our department is also aiming to bring alumni speakers to campus more regularly. In the past, we had several of our alumni visiting us and giving talks at our chemistry seminar, namely Steve Jones (Staff Scientist from Jet Propulsion Laboratory, California, who helped to lead the “Stardust space mission”), Jim Spencer (Professor from Syracuse University), Matthew Pietrzykowski (Research Engineer from Gerber Sci. Products), James McCarger (Professor from Baldwin-Wallace College) and Adam Tripp (graduate student from Medical School in Syracuse).

Our graduates do all sorts of good things in different areas. Please call and say hello, or just send an email. We would love to hear from you.

I would like to let you know about changes in our curriculum. In addition to a B.A. in Chemistry, students also have the option to choose a B.S. in Chemistry. Since 2002, we have been offering a B.S. program in Biochemistry. We have added to our curriculum several non-major courses such as “Forensic Science” (a course required for the Criminal Justice Major), “Fundamentals of Environmental Science” and a new on-line course promoting green chemistry “Sustainable Manufacturing”. We also offer two new courses for chemistry majors “Advanced NMR Spectroscopy” and “Advanced Analytical Chemistry”.

During the last ten years, we have successfully applied for the National Science Foundation CCLI grants and have been awarded funds to purchase a 300 MHz NMR and an Atomic Force Microscopy/Scanning Tunneling Microscopy-Nanoscope III. We have used both pieces of equipment in our research with undergraduates and in teaching.

Last year we have hired a new physical chemist, Dr. Fadi Bou-Abdallah, who is preparing several new experiments for physical chemistry labs. This year we are looking to fill the Inorganic Chemistry faculty position after the retirement of Dr. Ken Coskran. Our new course “Matter and Energy” lecture and lab required for the Early Childhood Education majors is taught by adjunct Patty French. We have also hired an alumnus Paul Cutter, a new adjunct to teach two more Organic Chemistry sections, because of the increased enrollments in our programs.
The Chemistry Department would like to thank you for the generous contributions you have made to our foundation throughout the years. Your gifts provide the funds needed to support many of our undergraduate research projects that would not exist for students if we had to rely solely on state funding. Students often get the opportunity to present their research at events such as the American Chemical Society meeting and the Electrochemical Society meeting. Several students have had their research published in journals such as the Electrochimica Acta, Sensors and Transducers, the International Journal of Hydrogen Energy and the Journal of Electroanalytical Chemistry. The knowledge and experience the students gain from research is vital to their success as future chemists, biochemists and educators. Thank you again for your support.

Sincerely,
Chemistry Faculty and Staff
I am a native of Lebanon, a small country in the Middle-East that borders the Mediterranean Sea. I received my Masters degree in Chemistry from the Lebanese University in 1995 and then went to France where I earned a Ph.D. in Physical Chemistry from the University of Paris 7 for work I did on the iron uptake and release by three iron transport proteins, human serum transferrin (present in serum), lactoferrin (mainly present in milk) and ovotransferrin (present in egg-white). Synthesized in the liver, transferrin carries iron in the circulation from the gut to the bone marrow and other tissues for the synthesis of hemoglobin and a number of other iron-containing proteins. By binding iron tightly, transferrin helps to prevent dangerous free radical reactions catalyzed by iron in solution. Such reactions have been implicated in liver and heart diseases as well as cancers, arthritis, and arteriosclerosis. Interestingly, transferrin is the target of chelation therapy used to treat individuals with diseases of iron overload such as the thalassemias and hemochromatosis, the most common genetic disorder in this country, affecting 1 out of 200 individuals.

After my PhD work on the major iron transport system in mammals, I continued my quest for proteins involved in iron homeostasis. Just like in the haulage business all big transport firms need to have good storage facilities, I embarked on a mission to investigate the major iron storage system in mammals with the aim of understanding where and how is iron stored in living organisms. With that goal in mind, I came to the United States of America in the year 2000 for postdoctoral work in the laboratory of Prof. N. Dennis Chasteen at the University of New Hampshire (UNH) to study ferritin, a ubiquitous iron storage, detoxification and biomineralizing protein found highly conserved in species from bacteria to plants to humans. Up to 4500 iron atoms can be reversibly stored inside the ferritin cavity, a remarkable iron capacity when compared to transferrin, the iron transport protein, where only 2 iron atoms can be transported by the protein at any given time. At present, my research interests are in the general area of iron-protein biochemistry and are part of a major international effort to understand the role of iron in health and disease. Using a variety of biophysical techniques, we seek to understand the structure-function relationships and elucidate the iron redox and iron binding chemistry of various metal-ion trafficking and storage proteins such as transferrin, frataxin and a variety of cytoplasmic and mitochondrial ferritins.

I joined the faculty in the department of chemistry at SUNY Potsdam in the fall of 2007 following a Research Scientist II position that I held at UNH for the past three years. I currently teach Physical Chemistry courses and labs as well as General Chemistry labs. I look forward to working with undergraduate students and continuing these exciting research activities. Over the past seven years, I have collaborated extensively with researchers in the United States and overseas (mainly in Europe) and my work has led to the publication of some 20 articles all in peer-reviewed scientific journals. In addition, I serve as a reviewer to the National Science Foundation (NSF) and the National Institute of Health (NIH) and to a number of scientific journals as well.

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In the mid 1980s I moved from managing the Stockroom to becoming General Chemistry Laboratory Coordinator. A few years later, I added teaching CHEM 100 to my responsibilities. CHEM 100 is the non-majors course, used by many to fulfill the general education physical science requirement. Each fall, there is an additional section of CHEM 100 that adds the Freshman Speaking requirement, so over the years I have met a large number of our students as freshmen or sophomores. CHEM 100 is fun as well as challenging: it doesn’t have to lead anywhere in particular, so I can select the topics that interest me, and at the same time,
many students in the course are afraid of science, so I have to try to convince them that they can succeed.

The General Chemistry laboratory has evolved over the years in response to new technologies, regulations governing the management of chemical waste, and new instructional techniques. We now have our own lab manuals printed on campus, which saves our students money and makes best use of the equipment and supplies we own. We use sensors of various sorts for data acquisition, and use computers in the department’s computer lab to graph, process and analyze data. Several faculty members share teaching responsibilities for CHEM 105/106, and we work comfortably together.

Away from the department, I continue to sing, currently in the Potsdam Community Chorus, a welcome new group sponsored by Crane. I’m Treasurer of the local ACS section. I chair a local housing rehabilitation program, a ministry of the Presbyterian of Northern New York. My husband, Mark, and I enjoy traveling and have begun to spend a couple of weeks each summer exploring Europe in small chunks. One year we saw the lab where Roentgen discovered and investigated X-rays, and last summer we visited Marie Curie’s lab in Paris.

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A native of Michigan, I attended and received a BA in 1978 from Spring Arbor University with majors in both Chemistry and Biology. Having discovered the excitement of molecular approaches to biology, I pursued graduate work in the Chemistry Department at the University of Wisconsin-Milwaukee, studying molecular distribution and redistribution of the metals in the cytosol of the protist Euglena gracilis under Zn-sufficient or Zn-deficient conditions and upon exposure to cadmium or copper. In addition, I did a small amount of work studying the binding of Au(I) to the heavy metal-binding protein metallothionein in rat kidney and liver cytosol. While there, I was associated with what is now the NIEHS-Marine and Freshwater Biomedical Sciences Center.

Postdoctoral work led me to the laboratory of Brian Hoffman at Northwestern University where I was involved in the preparation and study of mixed-metal [αM,βFe] (M=Zn,Mg) hemoglobin hybrids in order to probe aspects of long-distance electron transfer reactions in proteins. Additional postdoctoral work in the laboratory of Lawrence Grossman at Johns Hopkins University, included searching for human genes involved the maintenance of genetic information via DNA excision repair processes. The molecular basis of the acquisition of resistance to therapeutic drugs by tumor cells due to the action of P-glycoprotein (P-gp or MDRI) that transports these drugs out of the cell preventing their chemotherapeutic action was investigated while at the University of Maryland-Baltimore.

I came to SUNY Potsdam in 2000, following faculty positions at John Carroll University, Kent State University and St. Lawrence University and am now an Associate Professor. Since arriving I have been new Biochemistry major which was officially approved in 2002. I currently teach the biochemistry courses and labs required for the major as well as General Chemistry courses. I am also faculty advisor for the local undergraduate affiliate of the American Society for Biochemistry and Molecular Biology (ASBMB) and have recently taken over from Ken Coskran as the chair of the Health Professions Advisory Committee. Several students are involved in research projects studying various aspects of essential and toxic metal metabolism. One active set of projects involves zinc homeostasis in the green algae Chlamydomonas reinhardtii.

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Dr. Maria Hepel
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I received my Ph.D. in 1976 from Jagiellonian University, Cracow, Poland, a University with over 650 years history. I have been affiliated with a number of international institutions and also with the University of Buffalo, where I still hold a Research Professor position.

My research interests are very broad, interdisciplinary in nature and include:

Electrocatalysis of methanol and ethanol oxidation of interest in fuel cells
Environmental remediation of toxic pollutants,
photodegradation of textile dyes
Environmental monitoring using highly sensitive piezoimmunosensors for detection of herbicides and PCB’s and development of biosensors for the detection and determination of trace levels of heavy metals
Nanotechnology- preparation of nanowires and nanobridges from metals and semiconductors and their characterization for nanoelectronic applications
Development of electrochromic materials with fast switching time and low lattice stress for smart windows and display applications
Characterization of ion dynamics in conductive polymers using EQCN technique and their use as a matrix for the metal deposition and controlled drug release
Testing of environmentally friendly inhibitors for corrosion of copper
Bioelectrochemical studies of the interactions of proteins with metal ions and interactions of glutathione with metal cations and drugs.

My current research interests are focused on nanoscience and nanotechnology with a final goal to develop nanowire sensor arrays. In 2005 I organized two symposia in this area: “Nanotechnology and Emerging Analytical/Bioanalytical Applications” at the Eastern Analytical Symposium (EAS) in Somerset, NJ and the other on “Nanostructures: Biosensors and Sensors” at the National Meeting of the American Chemical Society in San Diego, CA.

I have research collaborations with several universities. I collaborate with Professor Skladal from Masaryk University in Brno, Czech Republic in the field of immunosensors used for the detection of pesticides, herbicides and PCB’s. This collaboration involved exchange of our students during summer months. The outcome of this project was the development of a very sensitive piezoimmunosensor method for the detection of atrazine, 2,4-D and polychlorinated biphenyls. Collaboration with Professor Radecki from the Polish Academy of Sciences, Olsztyn, Poland is focused on the development of food sensors. A graduate student from this institution spent several months in my lab studying protein adsorption and the interactions of heavy metals with proteins. In progress is work on the development of quartz crystal nanobalance biosensors for the detection of genetically modified organisms. I had a grant funded by the International Science Foundation to support a postdoctoral researcher from the V.I. Vernadskii Institute of General & Inorganic Chemistry of the Ukrainian National Academy of Science, Kiev. Collaboration with this institution continues in the field of electrochromic materials and photonics.

My research studies have been funded by the National Science Foundation, the Research Corporation, ACS-Petroleum Research Fund, Chema Technology and SUNY Faculty-Undergraduate Summer Research grants. I have published 110 papers in peer-reviewed journals, including 22 chapters in books and made over 300 presentations at professional meetings at the international, national and regional level. Four years ago, we received a CCLI grant from the National Science Foundation for the purchase of the Atomic Force Microscopy (AFM) and Scanning Tunneling Microscopy (STM) equipment. This allows us to popularize nanoscience not only for chemistry majors but also for biology and physics departments and for high-school students visiting us during Science High-School Day. Now our students in analytical courses and from other science departments use this equipment as well as research students.

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I came to SUNY Potsdam in the fall of 1997 after teaching at Belmont University in Nashville, Tennessee, for a brief period of time. I was hired as an organic chemist and began my first year at Potsdam teaching general chemistry and managing the organic chemistry laboratories. During my second year here, Ken Coskran and I coauthored a CCLI grant to acquire a 300 MHz nuclear magnetic resonance (NMR) spectrometer. The focus of the grant was the development of project laboratories to be used in a number of different courses. These lab exercises were designed to teach students how to solve chemical problems rather than illustrate the concepts taught in lecture. The grant also led to the development of an advanced NMR course where students are taught how to solve more challenging problems using a wide variety of 1D and 2D NMR experiments.

After teaching organic chemistry for several years, I returned to teaching general chemistry. In addition, I started teaching Fundamentals of Environmental Science, a non-majors course. Although environmental science was outside my area of exper-
tise, the course soon became one of my favorites. Environmental science is an area of great relevance to everyone, including myself, and is frequently in the media. It is amazing how few people are aware of the basic issues in environmental science.

My most recent endeavor is a forensic science course. Although Dr. Hepel has been teaching the course for a number of years, I had the opportunity to become involved this past spring. Like environmental science, I was not an expert in this area. I found it an enjoyable challenge to teach students about a host of topics including glass analysis, DNA typing, fingerprints, arson, explosives, and blood analysis. At this time, we are exploring the possibility of developing a forensic laboratory course to complement the lecture. We hope this will enhance the chemistry department’s non-major offerings. Although I no longer teach organic chemistry, I enjoy science and the interaction with students, both majors and non-majors. It has been fun to move into new areas and discover the practical applications of chemistry.

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I grew up near Newcastle upon Tyne, UK, and received a BSc (Hons) from the University of Bristol in 1981. I then worked for twelve years as a chemist in process development in the fine chemicals industry, learning the importance of making processes commercially practicable and scalable. After 18 months working in the US, I enrolled in graduate school at Brandeis University under Prof. James B. Hendrickson, and in 1998 received a Ph.D. for work on synthetic organic chemistry using organosulfur compounds. I began teaching, and joined the faculty at SUNY Potsdam in 2001. I am married, with two young daughters.

I became fascinated by chemistry at the age of 11, and there was little doubt where my career would lead me. I have always loved the idea of building things at the molecular level, changing the very essence of matter, and creating new materials with valuable or unusual properties. My time in industry made me see the importance of process efficiency, and this has led to an interest in green chemistry – I would like to reduce pollution by making processes more efficient. While at Brandeis I rediscovered my former love of teaching, and now I feel continually inspired by students’ ideas and by seeing their knowledge and enthusiasm for chemistry grow.

While at SUNY Potsdam I have mainly taught organic chemistry, a subject I thoroughly enjoy. I have sought to present students the core of the subject matter in an organized way, and I have developed workbooks of reaction maps and study material to assist them. In the laboratory I have tried to make the experiments both interesting and relevant, and I have written a manual for the first semester. Students in my research group have worked on developing green processes, mainly centered around a Friedel-Crafts method I patented in 2002, and have presented their work at regional and national meetings. I have recently become active in the Wikipedia chemistry community and in the drive to make the Web more "chemistry-friendly." In my spare time I also coordinate the project to produce offline releases of Wikipedia. I serve as the chair of the local section of the American Chemical Society, for which I am helping to organize a regional conference at SUNY Potsdam. I also serve on the advisory boards of Chemistry Central Journal and chemspider.com.

We thought you might appreciate learning about faculty members you may remember, who have retired in the last 20 years or so.

Paul Merritt is still living in the North Country, now in Canton.

Bruce Campbell has moved to Tennessee.

Dave Jordan summers in Potsdam, and heads south to South Carolina before the snow begins to fly.

Nick Zevos also summers in Potsdam, and returns to Georgia when the weather turns cold.

Ken Coskran is staying in Potsdam (see separate article).

We regret the passing of Norma North and Jack Reynolds.
With the close of the 2006-07 academic year I completed 35 years at SUNY Potsdam and have now joined the ranks of retired faculty. In Fall, 2007, however, I will still be in my office since I will be teaching the Inorganic Chemistry course until we complete a faculty search for an Inorganic Chemist.

The Chemistry Department continues to be an invigorating place to work with wonderful colleagues and stimulating students. I have thoroughly enjoyed my 35 years here and thank all my colleagues and students, past and present, for making those years very rewarding. I am especially fond of those students who spent time with me during the school year and/or during a summer investigating various research projects.

In retirement, Carol and I do not plan to move away from Potsdam, but do plan to travel and play some golf. I plan to do more hiking, skiing and kayaking. I am always interested to hear from past students so please write or call.

As well as the BA in chemistry we also now offer a BS, which provides graduates with a rigorous ACS certified degree that is attractive to employers.

We offer a wide range of non-major chemistry courses, some of which can still appeal to chemistry majors. The Forensics course appeals to Criminal Justice majors (and CSI fans!), while courses like Environmental Science and Sustainable Manufacturing (now online) serve the new Environmental Studies program. We also provide a fairly new basic course tailored for Education majors, “Matter and Energy,” which has both lecture and lab components. Meanwhile Tony Molinero has taught the ever-popular General Chemistry I and II for the last two summers, offering additional flexibility to students.

There are also exciting advanced courses available for our majors. Advanced Analytical Chemistry allows students to learn about state of the art techniques in chemical analysis. The Advanced NMR Spectroscopy course has also proved popular. It is mainly experimental, and students can use some of the advanced features of our JEOL 300 MHz NMR spectrometer.

The 2010 North East Regional Meeting (NERM) of the American Chemical Society (ACS) will be held on the SUNY Potsdam campus in June, 2010. Martin Walker (local section chair) will be conference chair, and Maria Hepel will be the program chair. Others in the department can expect to be busy too, with a predicted 500-600 chemists coming to campus from all over New England and upstate New York.

Most of the talks will be held in Kellas Hall, which offers a perfect range of lecture halls and wireless internet connections in all locations. ACS staff were impressed by the facilities on offer – they checked everything including dorm rooms, food, entertainment and conference space, and they believe that the Potsdam campus offers an excellent location. We hope you’ll join us for a great 2-3 days of chemistry in 2010!
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Mrs. Westerling, Chemistry Stockroom Manager, joined the Chemistry Department in April 1998. She has a BS in Biology from Temple University, Philadelphia, PA, and an MS in Zoology from the University of Minnesota, Minneapolis, MN. In August, 2004, she achieved the designation of Certified Scientific Materials Manager through the National Association of Scientific Materials Managers (NAOSSM).

As a columnist for the NAOSSMM Quarterly Newsletter, Mrs. Westerling has written on a variety of chemical storage and safety issues relating to proper procedures in the laboratory. She also recently completed a two-year term on the NAOSSMM Board as Secretary. In this time she assisted in organizing the NAOSSMM Conventions in both Savanna, GA (2006), and Cleveland Ohio (2007).

Mrs. Westerling organizes the Chemical Stockroom, plans the annual purchase of departmental supplies and continually works to improve departmental chemical storage and safety.

Patricia Kraske-French
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Mrs. French has her BS in Biology and her MS in Chemistry from the University of Maine at Orono. Her Master’s thesis was “The Electrochemical and Enzymatic Oxidation of 6-Thioguanine”. Upon its completion, she worked in chemical research in Princeton, NJ, studying Liquid Chromatography/Mass Spectrometry interfaces and supporting Organic synthesis of agriculturally important chemicals. When she and her husband moved to Canton, she pursued her Masters of Science in Teaching at SUNY Potsdam, while assisting Dr Nick Zevos in physical chemistry lab. After a number of years at home raising her three children, she has returned to SUNY Potsdam to teach Matter and Energy, a physical science course for Early Childhood and Elementary education majors and, periodically, Freshman Chemistry labs.

CHEMISTRY ARCHIVES: DO YOU KNOW WHO WE ARE?

1986
Undergraduate Students Presenting Research at Recent Professional Meetings:

J. Dallas, M. Hepel and M.D. Noble
“Adsorptive Stripping Voltammetry of Hg(II) on GSH Modified Gold EQCN Electrodes”
Accepted for presentation at The National Meeting of the Electrochemical Society, Phoenix, AZ, May 18-23, 2008

J. Dallas and M. Hepel
“Glutathione Modified Gold Piezometric and Voltammetric Sensors for Determination of Mercury Ions and Methyl Mercury” 18th Annual Great Lakes Research Consortium Student Faculty Conference
March 14-15, 2008, Syracuse, NY

H. Redmond, M. Hepel
“Electrodeposited Electrochromic WO₃-x Films with Reduced Lattice Deformation Stress”
Presented at the Session: Nanoscience: Characterization and Applications at the 233rd National Meeting of the American Chemical Society, March 25-29, 2007, Chicago, IL.

M. R. Hudson, and Martin A. Walker:

H. Redmond and M. Hepel
“Electrochromic WO₃-x Films with Reduced Lattice Deformation Stress and Fast Response Time”
General Poster Session, The Northeast Regional Meeting of the American Chemical Society (NERM) 2006, October 5-7, Binghamton, NY

I. Della, C.J. Zhong and M. Hepel
“Nanoporous TiO₂ - Supported Bimetallic Catalysts for Methanol Oxidation in Acidic Media”
General Poster Session, The Northeast Regional Meeting of the American Chemical Society (NERM) 2006, October 5-7, Binghamton, NY

F.T. McBride and D.J. Gingrich “Cloning a Putative Zinc Transport Protein from Chlamydomonas reinhardii”
Annual Meeting of the American Society for Biochemistry and Molecular Biology, San Francisco, CA, March 31-April 6, 2006

Published Recent Research Papers Co-Authored by Undergraduate Students:

J. Dallas, M. Hepel and M.D. Noble
“Glutathione Modified Gold Piezoelectric and Voltammetric Sensors for Determination of Mercury in a Wide Concentration Range”

H. Redmond, I. Della and M. Hepel
“Electrochromic WO₃-x Films with Reduced Lattice Deformation Stress and Fast Response Time”
Electrochimica Acta 52 (2007) 3541-3549

I. Kumarihamy and M. Hepel
“Nanocrystalline Structure and Nanopore Formation in Modified Thermal TiO₂ Films”
Invited paper for the Special Issue on “Solar-Hydrogen”

I. Della, J. Luo, C.J. Zhong and M. Hepel
“Novel Dynamic Effects in Electrocatalysis of Methanol Oxidation on Supported Nanoporous TiO₂ Bimetallic Nanocatalysts”
Invited paper to the special issue: “Surface Imaging/Spectroscopy at the Solid/Liquid Interface”
Electrochimica Acta 52 (2007) 5529-5547

I. Kumarihamy, C.J. Zhong and M. Hepel
“Nanoporous TiO₂-Supported Bimetallic Catalysts for Methanol Oxidation in Acidic Media”
Electrochemistry Communications 8/9 (2006) 1439-1444

S. Hazelton and M. Hepel
“Photoelectrochemical Degradation of Diazo Dyes on Nanostructured Electrodes”
Invited paper to the Special Issue: “Electrochemistry from Nanostructures to Power Plants”
Kenneth Moot and Matthew Fayette presenting research on Methanol Fuel Cells at SUNY Potsdam Learning and Research Fair.

Dr. Fadi Bou-Abdallah and Hiba Iqteit working with Isothermal Titration Calorimetry.

Matthew Hudson isolating his transacylation product

Dr. Tony Molinero and Rachon Gillis Working with NMR

Indee Dela analyzing the effect of different inhibitors on copper corrosion with the Scanning Electron Microscope.

Dr. Maria Hepel and Indee Dela imaging semiconductor nanowires using Atomic Force Microscopy.

Haley Redmond presenting a poster on electrochromic films at The Northeast Regional Meeting of the American Chemical Society in Binghamton, NY.

Kenneth Moot and Matthew Fayette presenting research on Methanol Fuel Cells at SUNY Potsdam Learning and Research Fair.