

# NDSU

## COATINGS AND POLYMERIC MATERIALS

VOLUME 1, ISSUE 1

SUMMER-FALL 2007

### CPM APPOINTS NEW CHAIR

In October 2006 Stuart Croll became the department chair succeeding Gordon Bierwagen. Professor Croll joined the faculty at NDSU in 2000, and was granted tenure in 2006. Prior to arriving at NDSU, he worked in a number of positions in the coatings industry, most notably Millenium Chemicals and Sherwin-Williams.

Keeping up with all the research and academic activity ensures that he lives perpetually in interesting times. The department now has over 60 people including staff, graduate students and faculty who handle a wide range of projects from chemistry to physics and from practical to theoretical.



Stuart Carol

### TWO TENURE TRACK POSITIONS FILLED

The Department of Coatings and Polymeric Materials has recently filled both of its open tenure-track positions.

**Dr. Andrej Voronov** will be joining us from Germany where he currently is in the Institute of Particle Technology at the Friedrich-Alexander University in Erlangen-Nuremberg.

Dr. Voronov has a Ph.D. in Chemistry from the Lviv Polytechnic Institute in Ukraine and has worked on chemically grafting polymers onto inorganic surfaces, polyelectrolytes, nanoparticles and their colloidal stability. Dr. Voronov will be

starting at the end of October, as the relocation of his family permits.

**Dr. Victoria Johnston Gelling** joined the tenure-track on 16<sup>th</sup> of August, having been with the department as an assistant research professor since 2003. Dr. Gelling gained her first degree in Chemistry from the University of North Dakota, then came to NDSU to pursue a Ph.D. in the Chemistry Department under the supervision of Dr. Dennis Tallman. Since 2001 she has worked in the Coatings and Polymeric Materials Department on coating

materials science, corrosion protection by coatings and its measurement. At present she is the principal investigator on a multi-year project for the Army Research Laboratory on corrosion of military vehicles as well as being involved with other projects.



Gelling

### 2008 SHORT COURSES

*Fundamentals of Coatings*

*June 1-6*

*Corrosion:  
Coatings and Electrochemistry*

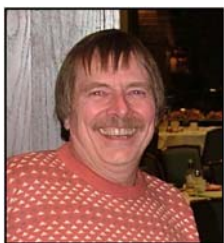
*June 8-13*

*See our website for details*

*<http://cpm.ndsu.nodak.edu/shortcourse>*

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Tallman

## TALLMAN MOVES TO CPM

After 36 years in the Department of Chemistry and Molecular Biology at NDSU, Professor Dennis Tallman accepted a new position as Research Professor in the Department of Coatings and Polymeric Materials (CPM), begin-

ning January, 2007. It's not a major transition for Professor Tallman since his research has been closely aligned with that department for almost 15 years and he held an appointment as Adjunct Professor in CPM from

2002 to 2006. Additionally, his main office and research laboratories have been located in CPM in the Research Technology Park since the spring of 2002.



Battocchi

## BATTOCCHI RECEIVES ADJUNCT APPOINTMENT

Dante Battocchi has been granted adjunct status in the Department of Coatings & Polymeric Materials. Dante is the Associate Director of the Center for Surface Protection and a research scientist in the

corrosion group. Battocchi has the degree of Doctor of Materials Engineering from the University of Trento in Italy and an M.S. in Polymers & Coatings from NDSU. He has worked extensively with

Dr. Bierwagen on magnesium-rich primers which are a very promising potential replacement for chromate containing systems.



Allahar



Hinderliter

## RESEARCH ASSISTANT PROFESSORS NAMED

Brian Hinderliter and Kerry Allahar were promoted to become research professors last autumn as acknowledgement of the

tremendous value that they have brought to the department and the hopes that we have for their future.

They have become an essential part of the scientific backbone of the department.

## CPM REPRESENTED AT CONFERENCE IN FRANCE

Brian Hinderliter, Kerry Allahar, and Dante Battocchi attended the 7<sup>th</sup> International Symposium on Electrochemical Impedance Spectroscopy in Argeles-sur-Mer, France. The symposium is held every 3 years on recent

advances of Electrochemical Impedance Spectroscopy in the understanding of corrosion and coatings among the applications. NDSU researchers made 4 presentations, one researcher doing double duty and making 2 presen-

tations. Despite being misdirected in the remote regions of France by a faulty GPS navigation aid (3 PhDs couldn't be lost!), they arrived to a productive and enjoyable conference.

## 2007 IAB Meeting

A very successful and interactive meeting of our Industrial Advisory Board was held on 2-4th April 2007.

The meeting was well attended with representatives from Toyota, Valspar, Bayer, BASF, Marvin Windows, Sherwin-Williams, Air Force-Materials Laboratory, Air Products, Dow, Rohm and Haas, Phoenix International, PPG, Cytec, Chemspeed, Deft, Sioux

Manufacturing, Tecton and Trinkote.

A poster session, held by the graduate students, was attended by the members of the board and NDSU's President, Joe Chapman; the Provost, Craig Schnell; and the Vice President of Research, Phil Boudjouk.

Before giving feedback to the department, the Board heard input from the Provost, Vice President of Research and the Dean of

Science and Mathematics, Kevin McCaul as well as the entire faculty.

On Wednesday, 4<sup>th</sup>, April, Dr. Dean Webster lead the meeting and proposed to the company representatives that the department start a Center for Formulation, Optimization and Rapid Methods, CFORM, to which the companies could contribute in order to share in the research results.



Croll and NDSU President Chapman at IAB poster session

## GORDON P. BIERWAGEN TO DELIVER 2007 FSCT MATTIELLO MEMORIAL

The Federation of Societies for Coatings Technology has announced that Gordon P. Bierwagen, Professor, Department of Coatings and Polymeric Materials at North Dakota State University, Fargo, ND, will deliver the FSCT 2007 Joseph J. Mattiello Memorial Lecture. His presentation will be the focal point of the first Mattiello Symposium, to be held during the organization's Future-Coat! conference, October 3-5, 2007, at the Metro Toronto Convention Centre, Toronto,

Ont., Canada. Future-Coat! will be held in conjunction with ICE 2007.

Prof. Bierwagen's presentation is entitled "The Physical Chemistry of Organic Coatings Revisited—Viewing Coatings as a Materials Scientist."

The invited lecture commemorates the contributions of Dr. Mattiello, former President of the FSCT (1943-44), who was instrumental in expanding the application of the sciences in the decorative and protective coatings fields. Dr.

Mattiello was vice president and technical director of Hilo Varnish Corporation, Brooklyn, NY, when he died in 1948.

The lecturer, chosen from selected individuals who have made outstanding contributions to the science and/or technology of coatings, is invited to deliver a paper on a phase of chemistry or other physical science, engineering, human relationships or other sciences fundamental to paint and coatings, varnish, lacquer, or otherwise related to protective or decorative coatings.



Bierwagen

## SURE PROGRAM

This summer our department had the honor to welcome seven Summer Undergraduate Research Experience (SURE) students. The students were here for a ten-week period during which they were active participants in our department.

All students were required to present their research findings to the department at the end of the program. For many it was their first experience with research and public presentations.

We will be accepting applications in the near future for our SURE 2008 program. Please refer any interested individuals to our departmental website, <http://cpm.ndsu.nodak.edu/>



2007 SURE Students (left to right): Ryan Reopelle, Autumn Zakula, Dustin Pfundheller, Stacy Bjorgaard, Matt Vetter, Amber Simpson, TJ Nelson, Vicki Gelling (Advisor)

The success of the program is very dependent on the external funding we receive from industry and alumni; this year's program was possible due to funding received from Valspar, Kuang Jong Wu, and Cytec Industries Inc. Without it, we would have been unable to offer the wonderful opportunity for students to become interested in coatings and materials. We would like to thank Valspar, Kuang Jong Wu, and Cytec Industries for their support.

If you are interested in donating to the Summer Undergraduate Research Experience Program, please contact:

Victoria Johnston Gelling  
Assistant Professor  
Director of the SURE Program  
Dept of Coatings and Polymeric Materials  
1735 NDSU Research Park Drive  
P.O. Box 5376  
Fargo, ND 58105-5376  
701.231.8027  
Fax 701.231.8439  
[V.J.Gelling@ndsu.edu](mailto:V.J.Gelling@ndsu.edu)

## NORTH DAKOTA STUDENT PARTICIPATES IN SURE

Stacy Bjorgaard, a UND student and resident of Fargo returned home to participate in the SURE program. She is working on understanding the degradation of polymers using

most of the techniques available in the CPM department at NDSU. The research is supported by Valspar a regional company interested in polymer coatings. In 10 short

weeks Stacy presented the results to the CPM department and Richard Simon and Howard Killilea of Valspar who organized the collaboration.

## COATINGS SHORT COURSE

The Coatings Science short course welcomed a wide variety of people to Fargo, early in June, as usual (a very nice time to visit North Dakota). We had visitors from Mexico, Canada, Europe and the

US, both from the coatings industry and suppliers' industries, including the pigment industry. The course was taught mainly by Dean Webster and Stuart Croll, but Dr. Rick Roesler of

Bayer and Dr. Gary Larson of Rohm and Haas added their experience and knowledge in important sessions, with the course rounded out by Profs. Gordon Bierwagen and Vicki Gelling.



Lesley Kennedy receives certificate from Dean Webster

## CORROSION SHORT COURSE

Once again, the department offered a short course in June on the electrochemistry of corrosion. The course was a team effort taught by Gordon Bierwagen, Dennis Tallman, Kerry Alla-

har, Brian Hinderliter, Jie He, and Vicki Gelling, who also organized the course. This year we had numerous attendees from all over United States and a few from abroad.

The courses will be offered again during 2008, please see our website for updated information regarding attending the short course.



Neena Ravindran receives certificate from Vicki Gelling

## SCHOLARSHIPS

Our department is fortunate to have one of the strongest undergraduate scholarship programs on campus. This program is possible due to support from alumni and coatings industry. Considerable support for this year's scholarships was provided by (only major contributors listed due to space

constraints):

TNEMEC Corporation to the Albert C. Bean, Sr. Foundation Scholarship, Coatings Industry Education Foundation Scholarship, Northwestern Society for Coatings Technology Scholarship, Carlton L. Rydstron, Sr. Memorial Scholarship, Valspar

Foundation Scholarship, George Nichols Endowed Scholarship. During the 2007-2008 academic year, eight scholarships totaling \$18,785 were provided to chemistry and mechanical engineering undergraduates that were pursuing the coatings option or minor.

Education is the most powerful weapon which you can use to change the world.

~Nelson Mandela

## WEBSTER GROUP NEWS

The summer was another busy one for the Webster group. We added five undergraduates to the effort. Three were from the SURE program: Autumn Zakula helped Dr. Dipak Chattopadhyay with the work on sol-gel modified glycidyl carbamate res-

ins, Dusty Pfundheller helped graduate student Umesh Harkal with some new UV curable resins, and TJ Nelson worked with undergrad Aaron Muehlberg with the NASA project. Scott Ennis also joined the group assisting Robert Pieper with his foul-

ing-release coatings and Vishal Sonalkar worked with Dr. Mohammed Nasrullah on polymer synthesis. All of the other group members, Ankit Vora, Samali Datta, Chavanin Siriprom, Stacy Sommer, and Rajan Bodkhe accomplished a lot on their research on the Sprintronic, Microsensor, and Navy projects.



Webster Group  
Summer 2007

We were informed that we received funding for two new projects. One project, sponsored by Jotun, a Norwegian paint company, will involve the design of some new antifouling coatings. The other, sponsored by the United States Department of Agriculture, will be focused on the synthesis of new coatings polymers based on fatty acids.

The group also found some time to have a little fun with outings to Thunder Road for miniature golf and go-carting, bowling, and a picnic at Dr. Webster's house.

## CROLL GROUP NEWS

Although the research remains focused on understanding the weathering durability of coatings, we have digressed into other fields, notably the use of bio-materials in coatings applications. Nevertheless, Stuart Croll, Brian Hinderliter, Dilhan Fernando and Xiaodong Shi have all been very busy and have presented their research at meetings of the American Physical Society (Los Angeles, 2005, Baltimore 2006 and Denver 2007), Coatings Science International in the Netherlands (2005 and 2007) and gave several talks and posters

at each International Coatings Exposition.

Every other year, we attend the Tri-Services Corrosion Conference where, in 2005, Dilhan Fernando was awarded a prize for his poster.



Fernando

Being in Denver, allowed us to visit Allen Skaja, a Ph.D. graduate in 2005, who has this year been working at the Bureau of Reclamation (looking after the water supply to the western USA).

In addition to other talks, Stuart Croll gave a keynote presentation in May 2006, at "Modern Paints Uncovered" to an audience of art conservators and scientists at the Tate Gallery in London.

## GELLING GROUP NEWS

Professor Gelling's year started out with the American Chemical Society Local Section Leadership Development meeting in Baltimore as she was recently elected Chair-Elect of the Red River Valley section of the American Chemical Society.

In April, she went to Spain to attend the Applications of Electrochemical Techniques for Organic Coatings (AETOC) conference. Also in April, she conducted a training session on Electrochemical Techniques for Coating Measurement while at Aberdeen Proving Grounds visiting the Army

Research Labs. Gelling attended the Army Corrosion Conference in Clearwater Beach, FL; the Smart Coatings Conference in Orlando, FL; and the Pittsburgh Conference in Chicago. She was invited to speak at the Air Force Corrosion Summit in Macon, GA in March.

Undergraduate Bret Enderson, graduated in December with the Coatings and Polymeric Minor and Major in Mechanical Engineering. Bret accepted a job at 3M in Brookings, SD.

Graduate student Xiaoning Qi, spent the summer preparing for his Maxi Defense.

Kenneth Croes joined the lab in February as a Laboratory Technician. Previously, he was employed at University of Wisconsin, River Falls for many years...but he decided he needed a change! This turned out to be a good thing for us, as he has become an indispensable member of our laboratory. He has kept busy working on the Marvin Windows projects.

There are numerous undergraduates working in the lab: Sam Booraas, Adam Wahler, Chris Vetter, Lisa Evans, and Amber Simpson all have projects that they are working on diligently.

## TALLMAN GROUP NEWS

Professor Tallman's research continues in the general area of corrosion electrochemistry, with emphasis on measurement, mechanisms, instrumentation and electrochemically active polymer coatings. He continues to co-direct (with Professor Gordon Bierwagen of CPM) the NDSU Corrosion/Coatings Research Center and continues as editor of the Journal of Solid State Electrochemistry.

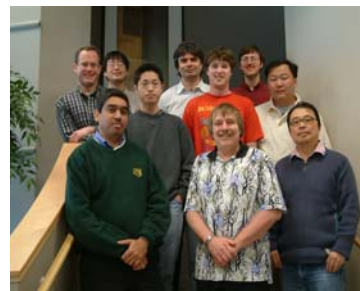
A new addition, Dr. Maocheng Yan, came to us from the Environmental Corrosion Center, Institute of Metal Research, Chinese Academy of Sciences in Shenyang, China.

One of the Ph.D. researchers working with Tallman is Professor Mark Jensen, a Professor (and past Chair) of the Department of Chemistry at Concordia College of Moorhead, MN. Professor Jensen spent the 2005-2006 academic year with our group while on sabbatical leave and continues to spend time in our lab both during the academic year and full time in the summers. Working with Professor Jensen in our laboratory is

Audrey Guerard, a senior chemistry major from Concordia. Professor Jensen and Ms. Guerard are employing scanning electrochemical microscopy in conjunction with rotating disk and ring/disk electrodes to better understand electrochemical reactions occurring at the surface of the aluminum alloy AA 2024-T3, used extensively in the aerospace industry.

Professor Tallman continues his collaboration with the Intelligent Polymer Research Institute (IPRI) and the ARC Centre of Excellence for Electromaterials Science (ACES) at the University of Wollongong in Australia, where he spends the month of February most years. While visiting in February, 2007, he presented three invited lectures (entitled Corrosion of Metals, Corrosion Control Coatings Based on Electromaterials, and Scanning Probe Techniques for the Study of Electromaterials) at the 2<sup>nd</sup> International Electromaterials Science Symposium held at the University of Wollongong. Other conferences at which he gave invited talks during the past year include the Interna-

tional Conference on Synthetic Metals, held at Trinity College in Dublin, Ireland, and the symposium "Critical Factors in Localized Corrosion 5: A Symposium in Honor of Hugh Isaacs" at the 2006 Joint International Meeting of the 210th Meeting of The Electrochemical Society and the XXI Congreso de la Sociedad Mexicana de Electroquímica, held in Cancun, Mexico. Tallman has been invited to be a keynote speaker at the 3<sup>rd</sup> International Electromaterials Science Symposium to be held in Melbourne, Australia in February 2008.



Tallman and Researchers

The Department of Coatings & Polymeric Materials would like to apologize for the lapse in our newsletters. In the future, it is our intention to send out a newsletter each semester. Our next letter is planned for the first of the year. We would again like to hear about your new changes and endeavors so we can include them in the next newsletter. Please send in your alumni news/changes using this form.

**Newsletter Questionnaire**

Name	Degree Received (check all that apply)	Year	Field of Study
Address	<input type="checkbox"/> B. S. Degree		
	<input type="checkbox"/> M. S. Degree (P&C)		
	<input type="checkbox"/> M. S. Degree (Chem)		
Phone	<input type="checkbox"/> PhD. Degree (P&C)		
Email	<input type="checkbox"/> PhD. Degree (Chem)		

Address is:      New          Old   

Employer: \_\_\_\_\_

Position/Title: \_\_\_\_\_

Send to:

Carol Johnson  
 NDSU Coatings & Polymeric Materials  
 1735 NDSU Research Park Drive  
 PO Box 5376  
 Fargo, ND 58105-5376  
 Email: carol.johnson@ndsu.edu

**News Items:**

