SEAC*communications*

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The Society for Electroanalytical Chemistry - 111 Loren Place, West Lafayette, IN 47906

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President's Message

How PITTCON Works

I thought that it would be appropriate, with PITTCON®*2000* on the horizon, to tell you a bit about the meeting and the people who manage it. I will describe briefly the history, how the technical program is developed, and what happens to the financial gains realized by the organization.

In Pittsburgh 50-odd years ago there was a lot of technical activity. There were not only thriving technically oriented businesses, but also world-class research institutions like the Mellon Institute and Gulf Research. From this milieu crystallized a couple of Societies with close associations with each other, the Society for Analytical Chemists of Pittsburgh and the Spectroscopy Society of Pittsburgh. It was Mary Varga, a spectroscopist, who began the technical meeting/exposition called the Pittsburgh Conference. It was in Pittsburgh for a while, until it outgrew the town, moved to Cleveland, then Atlantic City, and finally entered its peripatetic stage in the early-mid '80s. We've been in Chicago, New York, Atlanta, New Orleans, and Orlando over those years.

The meeting grew during the '80s, and more or less plateaued in the '90s. You can expect the attendance to be about 30 Kfolk, half registered as exhibitors and half registered as participants of some sort. There will be about 1000 companies exhibiting in about 3000 booths (this number, unlike the attendance, has not plateaued—it continues to grow!). They pay on the order of 1 Kbuck per booth (I am doing all of this from memory, so 1-2 sig figs is all that I have justification for). There will be a bunch, 20-40, of short courses given by PITTCON. I have never seen a balance sheet, but the meeting probably generates about 3.5 Mbucks each year.

The program's size is variable and dependent on the number of available rooms for program sessions. The program's structure is variable, and dependent on the Program Chair. There might typically be about 30 so-called "Invited Symposia". These are the 5-speaker sessions. PITTCON pays the expenses for these speakers—total cost about 150 Kbucks. People outside of PITTCON suggest most of these symposia (see the last paragraph to get instructions on how to do this). In addition, there will be 20-to-25 10-speaker sessions during a full day and a bunch of posters totaling 2000 or so presentations from contributors.

The organization of the contributed papers is a tough job. A group of perhaps 30 technically qualified PITTCON committee members will receive in late August a stack of abstracts to review based on technical specialty or application area. These are read for a quality check. Abstracts that are rejected are generally those without substance. Those that remain in the pile are then loosely organized according to some plan that becomes obvious only after reading through the abstracts. The ultimate goal is to have sessions of 10 papers on a similar topic. This is really the hard part. The group of 30 reviewers, with their loosely organized sessions, gets together in mid-late September on a Saturday to finalize sessions and arrange them in the week. Unfortunately, some papers do get pushed into odd sessions, converted to posters, or outright rejected because they don't fit. Also unfortunate is the fact that, despite the best efforts of yours truly, sessions are not always arranged optimally. What is optimal? Of course, that's when YOUR talk is Monday afternoon. Just kidding. It is really hard to optimize.

How about fairness and favoritism? I don't think that there is much to be concerned about there. The committee is very open to new ideas, and there are no guarantees given to anyone. For example, this year, I am presenting a talk in a session organized by someone else at the same time that **George Whitesides** speaks in a room nearby. **Adrian Michael** proposed a beautiful symposium that was accepted by the Program Committee, then put on the program for Friday. The lesson: We in Pittsburgh would love to help all of our pals, but the PITTCON organization operates in a very open and fair way that doesn't allow for too much influence from one person. We don't even control our own placement.

A lot of the money earned is spent on obvious expenses like the speakers and the rental of the exposition hall. PITTCON does support a staff of about a half a dozen people here in

Pittsburgh, and rents office space. There is always a bit left over, and this is used to support a multitude of programs in science education. From Assistant Professor Starter Grants to Spec 20s for grade school environmental projects, PITTCON gives back to the two Societies a total of about 700 Kbucks for these efforts.

To submit a program idea to PITTCON:

When: Between the Meeting and April 1

To Whom: Program Chair
PITTCON
300 Penn Center, Suite 332
Pittsburgh, PA 15235-5503

What: Propose a topic, a slate of speakers and a rationale for why this is timely and important. It is best to propose a ½-day session (5 speakers). You do not need to have confirmed the speakers.

Judgement: We get 80–125 proposals, and then the committee generates a few on its own, so the chances are about 25/(80–125) or 20–35%. Important criteria are *(1)* timeliness (a cynic would translate this as "cute" or "buzzword laden"). I am sorry, but I have already reserved for my own use the title "Nanobiosensors on Chips for the New Millennium". Again, just kidding, but you get the idea. *(2)* Speakers: Qualified, but not necessarily the same old gang is best. *(3)* Luck: If yours is the only proposal on HPLC, it may be accepted, even though it is scientifically less meritorious than others. On the other hand, if yours is one of 5 nanomaterials symposia suggested, it has only a small chance of getting in.

See you in New Orleans.

Steve Weber

Editorial

You knew it was coming…and here it is: the pre-PITTCON issue of *SEAC Communications*. The festivities are planned and we are all poised to celebrate SEAC, electroanalytical chemistry, and the 2000 SEAC Award winners, **Henry White** and **Merlin Bruening** in New Orleans, 12-17 March 2000. We are just awaiting your arrival! Details on the wheres and whens of the various activities can be found inside/downstream/later.

… oh, yes … the formal program for the Reilley Award Symposium is included within, as are the titles of SEAC-influenced symposia to be held during PITTCON®*2000*. Read on!

In his El Prez column, **Steve Weber** walks us through some of the inside doings at PITTCON, so SEAC Surfers now have no excuse not to propose topics near-and-dear to their electroanalytical hearts as future PITTCON symposia. Please also take note, later in his column, of an oh-so noble gesture: Steve magnanimously allowed his talk to be the one scheduled at the same time as one given by **George Whitesides** … we should now all feel so guilty that we skip George's talk on Monday afternoon, 13 March, and catch Steve's en masse …

Also in this issue we unveil a SEAC exclusive from our very own Webmeister, **Sam Kounaves**: "Electroanalysis on Mars!!!". [and you thought *your* experiments were tough!] Sam and I have discussed (off-and-on) the idea of publishing articles in *SEAC Communications* that discuss scientific issues of interest to the members of SEAC—this piece represents the first in a series (others are under discussion). Many thanks to Sam for going first. Enjoy this glimpse into electrochemistry at the very frontiers of in-the-field analysis!! Be sure to relay your comments to Sam at skounave@tufts.edu

I hope to see many of you in New Orleans in March—please find me during the week, especially at the SEAC Reception on Tuesday in honor of Henry and Merlin, and tender your opinions on the newsletter and what new features you might like to see in the future.

May your beignets be piping hot!

Debra Rolison

YES, THE SAGA CONTINUES!

Earlier Adventures of Horseshoe Henry

Date: Mon, 3 Jan 2000
To: Henry White
From: Keith Stevenson (a.k.a. C.A.R.P.: Commissioned Advisor Rescue Person)
Cc: Debra Rolison

Well, that is one way to get back at Debra....invite her on one of your adventures so she can experience the wrath of HH. That is pretty wild country. I've been to Goblin Valley just northeast. I swear there must have been 10 vehicles with flat tires on that road because the rocks are so sharp. I'm surprised that you didn't take them to the Henry Mts (just outside of Hanksville!)! They might have thought that this playground was named in honor of its most esteemed explorer HH!

To: Keith Stevenson
From: Henry White
Cc: rolison@nrl.navy.mil

Debra is not the one I need to get even with...I don't recall her writing the stories! Don't stand too close to the edge of the boat when we go fishing at the GRC…

To: Keith—the C.A.R.P.—Stevenson
From: Debra Rolison
Cc: SEAC

Keith: Been there. Done that! Loved it!!! Henry, his sons, Michael and Andy, and I spent one weekend in May in 1996 tooling about those very spots (paid for on the installment plan: I gave two lectures and one seminar at the U of Utah during the week preceding). I agree completely: Goblin Valley is not only wild, it is otherworldly. We spent an extra couple of hours, which our day's schedule didn't really allow, just to stay and play and wander and climb (as I recall, we finally made it to lunch at 4:30 p.m.—remember to hike with HH, it pays to be an air plant). Can you just picture the place at night during a full moon? I'd buy popcorn for that suspense thriller!

Modesty may have prevented Henry from telling you this, but he *did* drive us by the main sign for the Henry Mts, but modesty did not prevent him from posing for an eponymous photo: see the man and inevitable hat, *in situ*!!

One can only shudder at the possible adventures planned by HH as Chair of Vice for the 2001 GRC on Electrochemistry in Ventura…

Your Editor amidst geological whimsy: Goblin Valley, Utah, May 1996.

A SEAC EXCLUSIVE—✯✯Electroanalysis on Mars and Beyond ✯✯

"Where no electrode has gone before!!"

brought to you by SEAC's Webmeister, **Samuel Kounaves**, Tufts University, Medford, MA.

During the coming decade, NASA will embark on a series of missions to explore Mars and several moons of Jupiter. Human exploration of Mars will require astronauts to live on the surface of the planet for as many as 500 days. During such a mission it will be impossible to avoid contact with the finer Martian soil/dust (the proper name of the surface material on a planet is regolith, but soil is commonly used). It will contaminate space suits, habitats, processing plants, and surface vehicles. It will be transported back into the habitats bringing it in direct contact with the astronauts. One practical question NASA would like to answer is: what hazards will this material pose to the astronauts?

Many fundamental science questions also still await an answer: Has there been or is there life on Mars? How can we detect biogenic chemical signatures of past or present life? What is the chemistry of the Martian soil? What can we learn about earth's environment by studying Mars? From the Viking and Pathfinder missions it appears that Mars is a frozen desiccated desert with temperatures ranging from –120 to 20 °C, planet-wide dust storms, and a 7-torr carbon dioxide atmosphere. Even though water flow is evident from even a casual glance (http://www.msss.com/mars_images/), the debate still rages as to whether it resulted from a few sudden floods or from extended periods of moist climate. It is estimated that about 3.5 billion years ago Mars had abundant lakes, seas, and possibly oceans. Ancient riverbeds are evident on a large portion of the surface, and between 4.0 and 3.8 billion years ago, conditions on Mars may have favored the emergence of life. The geographic dichotomy of Mars today has evoked speculation about a planet-encircling ocean which was eventually desiccated by some catastrophic event. Signatures of Mars' wet past should however be preserved in the form of salt-rich evaporites from such standing basins of water.

While the missions to Mars will consist of some human and mostly robotic explorers, those to the Jovian moons Io and Europa will be entirely robotic. In order to obtain the best data return, the robotic missions will take a "balanced" approach, including sample return, remote sensing, and in-situ analysis. Two of the most limiting constraints facing the robotic instrument packages are the launch vehicle and environmental conditions. Scientific instruments for such missions would typically be limited to a volume of about 10 liters, a mass of about 10 kg, and a peak power usage of 15 W. In addition to these flight constraints, the instruments have to withstand temperature fluctuations that may ranging from –130 to 60°C, a near vacuum atmosphere, as well as anticipate any unexpected conditions Mars might present. The development of this instrumentation, and its use to analyze the surface material in a remote hostile environment, will pose a unique set of analytical challenges. Electroanalytical instrumentation has the potential to provide the best data return within such harsh constraints.

In 1997, Dr Michael Hecht, a physicist at JPL, with the help of Dr Martin Frant at Orion Research (inventor of some of the first ion-selective electrodes), and Thomas Meloy at West Virginia University (a pioneer in powder science and the first to predict the soil properties of the moon), proposed to NASA to include an array of electroanalytical sensors as part of an in-situ sampling instrument dubbed the *Mars Environmental Compatibility Assessment* (MECA). The instrument package was to include electroanalytical measurements such as pH, dissolved ions, gases, and conductivity, and both an optical and atomic force microscope. The proposal was enthusiastically adopted by NASA. Iin 1998 we were invited by NASA-JPL to join the MECA project team on the next Mars Surveyor Lander mission (currently scheduled for launch in April of 2001). During the past

two years the MECA instrument box has evolved and now includes an electrometer and a set of adhesion/abrasion plates.

The current Mars Lander rests on three legs, approximately 1 meter long, and acquires soil samples with an articulated robot arm (Figure 1). Fully extended, the robot arm is 2 meters long, and it can dig trenches up to 50-cm deep with its 100-cm^3 scoop. In addition to MECA, the Lander deck will host a copy of the Pathfinder rover, an alpha-proton-X-ray spectrometer (APXS), a panoramic camera, a miniature thermal emission spectrometer (MiniTES), a prototype system for generating compressed oxygen from the martian atmosphere (MIP), and a radiation detector (MARIE). The robot arm carries a small camera (RAC), the MECA electrometer, and a Mössbauer spectrometer. More details about these other instruments can be found at:

http://mars.jpl.nasa.gov/2001/

and related links.

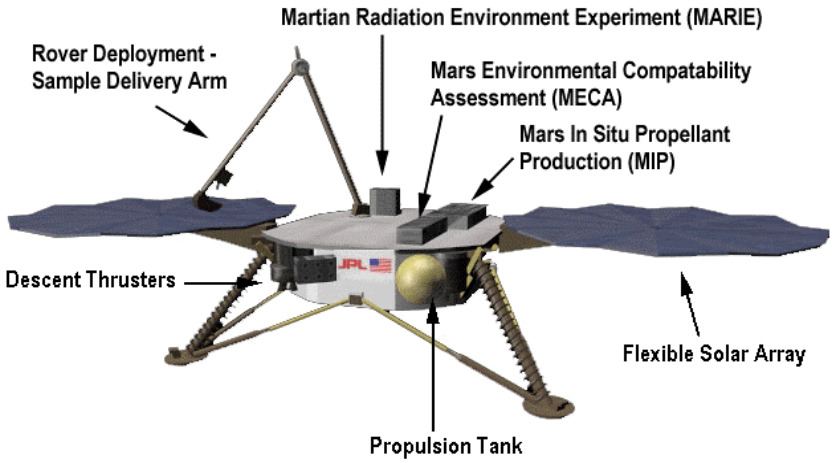


Fig. 1: The 2001 Mars Surveyor Lander, showing the five experimental payloads (MECA, MARIE, MIP, MARDI, and APEX).

A top view of the MECA instrument enclosure is shown in Figure 2. Designing the MECA analytical instruments was a formidable task. Before they are even launched they must undergo a series of torturous qualifications tests consisting of severe vibrations, freezing, thawing, and vacuum conditions. After sitting in storage and on the launch vehicle for over a year, they will undergo these same conditions at launch, during the 8–10 month trip through deep space, and continually after landing on Mars. Under such harsh conditions and with radio communications limited to small windows of a few minutes twice each day, the MECA experiments must operate without operator intervention for over 90 sols (a *sol* is the length of a day on a planet other than Earth, a Mars sol is 24.6 hrs long). A more detailed description of the other MECA experiments can be found at:

http://mars.jpl.nasa.gov/2001/lander/meca/

and related links.

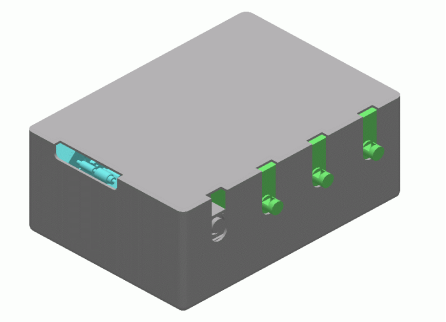
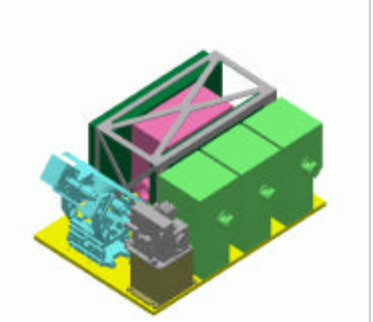


Fig. 2: Packaged within the MECA box are, the sample wheel mounted on its translation table; four wet chemistry cells; and the microscopy assembly including dual-magnification optics, visible camera, and AFM.



The MECA *Wet Chemistry Laboratory* (WCL) shown in Figures 2 and 3, fabricated by Orion Research of Beverly MA and Starsys Systems of Boulder CO, consists of four thermally insulated, single-use, independent analysis cells for performing the analyses, capped with a water reservoir/actuator assembly. Each cell contains an array of electroanalytical sensors which will identify the components in the soil when mixed with water, in effect, an "electronic tongue". In addition to pH, conductivity, carbon dioxide, oxygen, redox potential, and ion-selective electrodes (ISE), the sensor array also includes several microfabricated voltammetric ultramicroelectrode array (UMEA) sensors developed by our group at Tufts University and currently fabricated by the IBM Watson Research Center in New York.

These types of sensors have been the focus of research and development by our group at Tufts over the past five years, supported by the EPA and NSF. This set of UME arrays will analyze the redox chemistry of the soil using cyclic voltammetry (CV) and determine the presence of heavy metals (such as Cu, Pb, Cd) using square wave anodic stripping voltammetry (SWASV). More details can be found at our site:

http://electrochem.tufts.edu/mars.html

and related links.

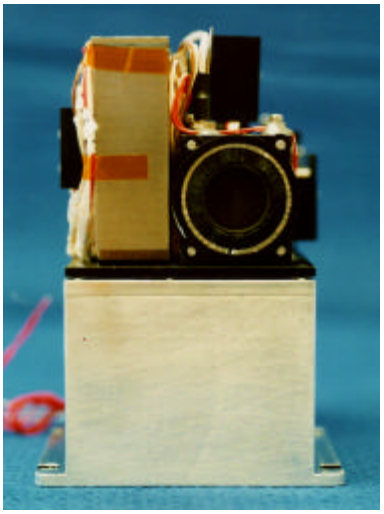


Fig. 3: A view of a chemistry cell and actuator assembly.

The Actuator Assembly consists of a sealed water tank with a puncture valve, a sample loading drawer, a stirrer motor with impeller, and a solid pellet dispenser. The pressurized tank contains 30 mL of a "leaching" solution. The solution, which contains several ions at 0.01 millimolar concentrations corresponding to the ISE, serves both to extract the soluble components from the soil and as a calibration standard for the reference and ion-selective electrodes. The sample-loading "drawer" will receive the soil from the Lander robotic arm, remove excess soil, and deposit it in the chamber. The sample drawer seals to maintain a chamber overpressure sufficient to prevent boiling at 27 °C (less than 25 torr). The drawer loading compartment holds ~1.0 cm^3 of soil, and the base is a spring-loaded flap which will retract to allow the soil to fall into the cell as the drawer is closed. A sieve or screen prevents particles > 0.5 mm from falling into the receptacle, while a gap between the receptacle and the seal allows excess soil to fall off. A scraper or leveling tool will remove excess soil as the drawer is closed.

Each rectangular cell, fabricated from an epoxy resin is 4×4-cm wide and 5-cm deep, with an internal volume of about 35 mL. The cells are designed to lose < 0.5 thermal watts of power against a 40 °C temperature gradient. A Viton sealing surface insures a leak rate of < 0.1 cm^3/minute of water vapor at 30 torr against an outside pressure of 5 torr, over the operating temperature range, despite contamination with dirt and dust.

Arrayed around the perimeter at two levels are 26 sensors (Table 1), with some redundancy for pH and reference electrodes. Each cell supports a one-sol experiment that begins with delivery of soil by the robot arm scoop, followed by addition of the leaching solution. While continuously monitoring the chemical sensors, the soil-water mixture is stirred to accelerate equilibration, and finally a reagent pellet is added for a post-calibration reading.

Table 1. The Wet Chemistry Cell Sensors.

Sensor	Configuration	Species/Parameter Measured
Conductivity Cell	4-electrode, planar chip	Total ionic content by electrical conductance
pH–Ion Selective Electrode (ISE) (Potentiometric)	Polymer membrane	Hydrogen ion concentration
pH	Iridium dioxide	Hydrogen ion concentration
Cyclic Voltammetry O_2 Electrode	Membrane-covered, 3-electrode	Dissolved O_2 and other volatile oxidants
Potentiometric Platinum Macroelectrode.	1.0-mm disc	For measuring redox potential
Voltammetric Gold Macroelectrode	0.25-mm disc	Cyclic Voltammetry for evaluating oxidants and reductants
Ultramicroelectrode Array (UMEA)	Planar chip, 512 10-µm Au elements	Anodic Stripping Voltammetry (ASV) for trace metal detection
Ag/S–ISE (Potentiometric)	Solid-state pellet	Silver / Sulfide
Cd–ISE	"	Cadmium
Cl–ISE	"	Chloride
Br–ISE	"	Bromide
I–ISE	"	Iodide
Li–ISE, used as reference	Polymer membrane	Lithium
Na–ISE	"	Sodium
K–ISE	"	Potassium
Mg-ISE	"	Magnesium
Ca–ISE	"	Calcium
NH_4–ISE	"	Ammonium
NO_3/ClO_4–ISE	"	Nitrate / perchlorate
HCO_3/ClO_4–ISE	"	Perchlorate or bicarbonate
CO_2–ISE	Gas-permeable membrane	Dissolved carbon dioxide

The most critical of the electrochemical sensors have been designed to suffer no serious effects from exposure to a dry evacuated environment. Several of these, the solid-state ISEs, reduction/oxidation potential , and conductivity sensors, contain no fluid and can tolerate the vacuum environment well. The gel-backed polymer ISEs have been extensively tested in simulated flight environments and have been shown to be sufficiently robust and even tolerant of complete dehydration if sufficient rehydration time is allowed.

The interferences for each ISE are known, as is the mathematical relationship between the primary ion and possible interfering species, thus, the full set of proposed measurements can be used to resolve nearly all ambiguities. Each of the dissolved species makes a contribution to the total conductivity which is the product of its mobility (which is known) and its concentration. Thus, the sum of the observed conductivities must agree with the estimated concentrations weighted by the mobilities. A series of simultaneous equations associated with each electrode can be solved to yield absolute concentrations, even in the event of failure of the reference electrodes.

To initiate a chemical analysis, the lander's robotic arm places soil in the sliding drawer scoop, the drawer is closed, and the chamber and cell are sealed by the drawer bottom. When the analysis sequence begins, the water reservoir is heated until the ice melts; the water then flows into the instrumented cup by opening a burst disk valve. The temperature inside the WCL will be maintained at 20 ± 0.5 °C during the analysis and monitored throughout as an additional indicator of any vigorous reaction. Because the cell is sealed from the low ambient pressure outside, the final pressure inside will

be greater than the vapor pressure of water, and prevent the water from boiling.

Although not all solution-dissolution reactions are necessarily reversible, the MECA electroanalytical experiments will limit the number of water-soluble species present in the soil that may have resulted from ancient hydrothermal mineralization, from chemical precipitation in lake beds and carbonate-rich ocean basins, from flood waters episodically disgorged from the upper crust, or from moisture-driven mineral differentiation. The MECA includes a unique **electroanalytical** instrument that will provide the **first** chemical composition data of another planet generated within an aqueous environment. Knowledge gained from the MECA electroanalytical sensors will be of significant value for both the future exploration of Mars by humans and to the scientific community. It is also a highly visible endeavor for demonstrating *the power of electroanalytical chemistry* to contribute to the quest for a better understanding of the universe.

Reminders to the Members of SEAC

—from Andy Ewing—

PITTCON® 2000: As is our recent custom, we will not have a booth at the Pittsburgh Conference. The dissemination of SEAC information will take place in the vicinity of the meeting rooms where the electroanalytical papers will be presented. Please look for our brochures and assist in their distribution. Your help will be greatly appreciated, particularly at the Reilley Award Symposium.

—Join us!

SEAC's (still-but-soon-to-be-Past) Membership Chairman, **Susan Lunte** [Department of Pharmaceutical Chemistry; 2095 Constant Avenue, University of Kansas, Lawrence, KS 66047, USA. E-mail: lunte@hbc.ukans.edu] will now receive all NEW MEMBERSHIP APPLICATIONS and INITIAL DUES PAYMENTS. **Remember: a membership form can be downloaded in either HTML or PDF format from the SEAC website** [http://seac.tufts.edu/membership.html]. Any new members recruited by current members should send their completed applications directly to Susan.

—This Just In!

Election Results! Don't be too shocked, but the following members, running unopposed, were elected as Officers of SEAC: **Mark Meyerhoff** as President-Elect, **Joe Maloy** to continue as Treasurer, and **Sue Lunte** as Secretary. Three new members were also elected to SEAC's Board of Directors for five-year terms (2000-2005): congratulations to **Lou Coury**, **Howard Dewald**, and **Greg Swain**.

—and now a message from Jim Cox, Chair of the Nominations Committee

(yes, there is a committee, not just Jim!)

As stated in the Society's By-Laws, suggestions for candidates can be made by SEAC members to the Nominations Committee at any time during the year—we welcome your input. The names of potential candidates can be forwarded to: coxja@miavx1.muohio.edu. The preparation of the next ballot will begin in late September 2000.

Plan your attendance accordingly! Part One.
Pittsburgh Conference—12-17 March 2000, New Orleans, LA

Congratulations to the 2000 SEAC Award Winners!

The Charles N. Reilley Award for 2000 will be presented to Professor Henry White of the Department of Chemistry at the University of Utah and the 2000 Young Investigator Award will be presented to Professor Merlin Bruening of the Department of Chemistry at Michigan State University. Please refer to *SEAC Communications*, **1999**, *15*(2) for their research biographies. The Reilley Symposium in their honor has been arranged by Professor Allen Bard of the University of Texas at Austin and will be held on Tuesday afternoon, 14 March 2000, Rooms 255-257 of the Morial Convention Center. The program follows below.

Immediately following the Reilley Award symposium, the annual meeting of the SEAC membership will be held in the same room. Please plan to stay for this brief business meeting that is required of all tax-exempt organizations. Prospective members and guests are welcome to attend the business meeting.

The Reception for Reilley Awardee Henry White and Young Investigator Merlin Bruening will be held on Tuesday, 14 March from 5:00 to 7:00 p.m. in the Grand Salon A of the New Orleans Hilton Riverside. The reception is open to all. Reservations are not necessary. Hors d'oeuvres will be provided with a cash bar.

The Reilley Award dinner in honor of Profs White and Bruening will be held at Ristorante Carmelo, 541 Decatur Street, New Orleans, Tuesday evening, 14 March 2000, from 7:00 p.m.–9:30 p.m. immediately following the SEAC Reception. THE DINNER IS OPEN TO MEMBERS AND GUESTS, BUT ADVANCED RESERVATIONS ARE REQUIRED. For reservations, please contact SEAC Activities Chair, **Craig Bruntlett** of Bioanalytical Systems, Inc. by telephone: 765-497-5806; FAX: 765-497-1102; or electronic mail [craig@bioanalytical.com]. Payment is by check or cash; the projected cost is $50.

SYMPOSIUM—**CHARLES N. REILLEY AND THE YOUNG INVESTIGATOR AWARDS**
Tuesday Afternoon, 14 March 2000, Rooms 255-257, Morial Convention Center, New Orleans, LA
Allen J. Bard *(University of Texas at Austin)*, Presiding

1:30 INTRODUCTORY REMARKS—**Allen J. Bard**

1:35 Presentation of the 2000 Charles N. Reilley Award to

Henry S. White
and
The 2000 Young Investigator Award of the Society for Electroanalytical Chemistry to
Merlin L. Bruening
by
Professor Allen J. Bard, University of Texas at Austin

1:40 (501) **AWARD ADDRESS**. MAGNETIC FIELD FOCUSING AND CONFINEMENT OF ELECTROCHEMICALLY GENERATED REACTANTS. SOLUTION-PHASE ION BEAMS, CYCLOTRONS, AND TRAPS—**Henry S. White** (*University of Utah*)

2:10 (502) ELECTRON TRANSFER DYNAMICS IN CONCENTRATED, SEMI-SOLID, MOLECULAR MELTS—**Royce W. Murray** (*University of North Carolina at Chapel Hill*)

2:45 (503) CARBON NANOTUBE ELECTRODES—**Richard M. Crooks** *(Texas A&M University*)

3:20 RECESS

3:35 (504) **AWARD ADDRESS**: MEMBRANES AND PROTECTIVE COATINGS PREPARED FROM LAYERED POLYELECTROLYTE FILMS—**Merlin L. Bruening** (*Michigan State University*)

4:10 (505) RECENT ADVANCES IN SCANNING ELECTROCHEMICAL MICROSCOPY—**Allen J. Bard** (*University of Texas at Austin*)

Further PITTCON®*2000* Symposia of Interest

[*i.e.*, symposia with SEAC fingerprints all over them]

Monday morning, 13 March 1999

—CAPILLARY ELECTROPHORESIS: BIOANALYTICAL I—Jonathan V. Sweedler (*University of Illinois*), Presiding, Room 245
—ELECTROCHEMISTRY: VOLTAMMETRY I—R. Mark Wightman (*University of North Carolina*), Presiding, Rooms 252-254
—IONOPHORE-BASED SENSORS I—Erno Pretsch *(Swiss Federal Institute of Technology)*, Presiding, Room 242
—POSTERS: SENSORS (Authors Present Monday Morning)

Monday afternoon, 13 March 1999

—James L. Waters Symposium—RECOGNIZING PIONEERS IN THE DEVELOPMENT OF SCIENTIFIC INSTRUMENTATION: X-RAY DIFFRACTION OF POWDERS AND THIN FILMS—arranged by Adrian C. Michael (*University of Pittsburgh*), Presiding, and Johannes F. Coetzee (*University of Pittsburgh*), Rooms 267-268
—BIOANALYTICAL TECHNIQUES FOR FOOD SAFETY—arranged by Richard A. Durst (*Cornell University*), Presiding, Rooms 280-282
—NANO SCALE ELECTROANALYTICAL CHEMISTRY—arranged by Robert A. Osteryoung (North Carolina State University), Presiding, Rooms 275-277
—ELECTROCHEMISTRY: VOLTAMMETRY II—Malgorzata Ciszkowska (*Brooklyn College–CUNY*), Presiding, Rooms 278-279
—IONOPHORE BASED SENSORS II—Eric Bakker (*Auburn University*), Presiding, Room 242
—SENSORS: ELECTROCHEMICAL—Mark E. Meyerhoff (*University of Michigan*), Presiding, Room 271

Tuesday morning, 14 March 1999

—FROM CHEMICAL SENSORS TO LUMINESCENT DISPLAYS: NEW FRONTIERS IN ELECTROCHEMILUMINESCENCE—arranged by Maryanne M. Collinson (*Kansas State University*), Presiding, and R. Mark Wightman (*University of North Carolina at Chapel Hill*), Rooms 255-257
—IONOPHORE-BASED SENSORS: NOVEL DIRECTIONS FOR A MATURE TECHNOLOGY—arranged by Eric Bakker (Auburn University), Presiding, and Erno Pretsch (*Swiss Federal Institute of Technology* (*ETH*)), Rooms 267-268
—THE ANALYTICAL CHEMISTRY OF SENSOR ARRAYS AND THE ELECTRONIC NOSE—arranged by Jay W. Grate (Pacific Northwest National Laboratory), Presiding, Rooms 275-277

—CAPILLARY ELECTROPHORESIS: DNA-RELATED APPLICATIONS—Andrew G. Ewing (*Pennsylvania State University)*, Presiding, Room 260
—ELECTROCHEMISTRY: MECHANISMS, ELECTROCHEMILUMINESCENCE—Melinda Stephens (*Geneva College*), Presiding, Room 261

Tuesday afternoon, 14 March 1999

—AFTER THE GENOME: CHEMICAL IMAGING AND ANALYSIS IN LIVING CELLS—arranged by Raoul Kopelman (*University of Michigan*), Presiding, Rooms 267-268
—CAPILLARY ELECTROPHORESIS: NEUROCHEMISTRY—Robert T. Kennedy (*University of Florida*), Presiding, Room 242
—NOVEL SENSING PLATFORMS—Charles W. Gardner (*Bacharach, Inc.*), Presiding, Room 271

Wednesday morning, 15 March 1999

—SEPARATION BASED BIOSENSORS BASED ON CAPILLARY ELECTROPHORESIS—arranged by Susan M. Lunte (*University of Kansas*), Presiding, and Andrew G. Ewing (*Pennsylvania State University*), Rooms 267-268
—ELECTROCHEMISTRY: MODIFIED ELECTRODES I—Teresa D. Golden (*University of North Texas*), Presiding, Room 271
—RAMAN SPECTROSCOPY: MATERIALS CHARACTERIZATION—Paul W. Jagodzinski (*West Virginia University*), Presiding, Room 262
—SENSOR ARRAYS: ELECTRONIC NOSE—Joseph R. Stetter (*Illinois Institute of Technology*), Presiding, Rooms 252-254
—POSTERS: ELECTROCHEMISTRY (Authors Present Wednesday Morning)

Wednesday afternoon, 15 March 1999

—NEW TECHNIQUES IN INDUSTRIAL HYGIENE CHEMISTRY—arranged by Richard S. Danchik (*Consultant*), Presiding, and Kevin Ashley (*National Institute for Occupational Safety and Health*), Rooms 265-266
—SOL-GEL-BASED SENSORS—arranged by Thomas M. Niemczyk (*University of New Mexico*), Presiding, and Joel M. Harris (*University of Utah*), Rooms 272-273
—ULTRASMALL CAPILLARY ELECTROPHORESIS: FROM CELLS TO VESICLES—arranged by Andrew G. Ewing (*Pennsylvania State University*), Presiding, and Susan M. Lunte (*University of Kansas*), Rooms 267-268
—ELECTROCHEMISTRY: MODIFIED ELECTRODES II—Anna Brajter-Toth (*University of Florida)*, Presiding, Room 242

Thursday morning, 16 March 1999

—ELECTROCHEMISTRY: CARBON MICROELECTRODES—Debra R. Rolison (*US Naval Research Laboratory*), Presiding, Room 262
—ELECTROCHEMISTRY: MONOLAYERS, FILMS—Leonidas G. Bachas (*University of Kentucky*), Presiding, Room 260
—IN VIVO SAMPLING BIOCOMPATIBILITY ISSUES—arranged by Julie Ann Stenken (*Rensselaer Polytechnic Institute*), Presiding, Rooms 265-266

Thursday afternoon, 16 March 1999

—NOVEL BIOANALYTICAL TECHNIQUES FOR DETECTING ENDOCRINE DISRUPTING CHEMICALS—arranged by Omowunmi A. Sadik (*State University of New York at Binghamton*), Presiding, Rooms 267-268

—BIOANALYTICAL AND LIQUID CHROMATOGRAPHY—James D. Burgess (*Longwood College*), Presiding, Room 263
—BIOSENSORS AND SENSORS—Steven Petrovic (*Southern Oregon University*), Presiding, Room 271
—ELECTROCHEMISTRY: FILMS AND DETECTORS—Adrian C. Michael (*University of Pittsburgh*), Presiding, Room 270
—ELECTROCHEMISTRY: POTENTIOMETRY AND OTHERS—Ingrid Fritsch (*University of Arkansas*), Presiding, Room 274
—SENSORS: OPTICAL II—Sylvia Daunert (*University of Kentucky*), Presiding, Rooms 278-279
—EMERGING NANOTECHNOLOGIES FOR CHEMICAL ANALYSIS—arranged by Shuming Nie (*Indiana University*), Presiding, Rooms 255-257
—IN VIVO ANALYTICAL CHEMISTRY: ANALYSIS OF THE MAMMALIAN CENTRAL NERVOUS SYSTEM—arranged by Adrian C. Michael (*University of Pittsburgh*), Presiding, Rooms 252-254

Friday morning, 17 March 1999

—SPECTROSCOPIC METHODS FOR NONINVASIVE SENSING IN CLINICAL CHEMISTRY—arranged by Mark A. Arnold (*University of Iowa*), Presiding, Room 243
—ELECTROCHEMISTRY: BIOSENSORS—William R. LaCourse (*University of Maryland Baltimore*), Presiding, Room 244

—Check it out!—http://www.pittcon.org/technical_program/detailed/

Plan your attendance accordingly! Part Deux.

NERM 2000
ACS Northeast Regional Meeting

Symposium on Bioelectrochemistry in the New Millennium
Organized by Prof. Jim Rusling

18-21 June 2000
University of Connecticut
Storrs, CT

The aim of this symposium is a very broad interpretation of Bioelectrochemistry, including electrochemistry of proteins, enzymes, DNA, drugs, small biological molecules, biomimetic processes including biomineralization, etc. Essentially, just about anything with a "bio" link fits.

Presentations by postdoctoral associates and graduate students are encouraged.

If you or a colleague would like to participate, please send your title to Prof. Jim Rusling—jrusling@nucleus.chem.uconn.edu—and submit an Abstract by email (preferred, as a Word attachment) or regular mail (unfolded) to:

Prof. Albert J. Fry
Program Chairman
Chemistry Department
Wesleyan University
Middletown, CT 06459

afry@wesleyan.edu

ABSTRACTS ARE DUE 15 MARCH 2000

Registration and Housing details will be posted soon at:

http://www.acs.org/meetings/regional.html

and details will be published in a March issue of C&EN.

Minutes of the Meeting of the SEAC Membership
Orlando, Florida; 10 March 1999

The meeting was called to order by President **Mark Wightman** at 11:35 am. Approximately 50 members and their guests were present.

The minutes of the 1998 Meeting of the Society were distributed by the Secretary and subsequently approved.

Certificates of Appreciation were awarded to retiring Directors **Jed Harrison**, **Joe Hupp**, and **Ed Bowden** as well as to **Robert Ensman** for sponsoring the Young Investigators Award. Certificates were also awarded to Pittsburgh Conference President **Thomas J. Conti** and to the Conference Program Chair **Clyde Clendenial**.

The President welcomed **Richard Baldwin**, **Sue Lunte** and **Marc Porter** as new members of the Board of Directors with terms of office having begun on July 1, 1998. He then announced the results of the most recent election. Elected as Directors for five year terms commencing on July 1, 1999 were **Harry Mark**, **Adrian Michael**, and **Andrew Gilicinski**.

The President thanked **Craig Bruntlett** for his efforts as Activity Chairperson for SEAC.

The meeting ended with a call by the President for nominations for the Reilley Award, The Young Investigator Award, and Student Award.

The meeting was adjourned at 11:39 am.

Respectfully submitted,

A.G. Ewing
Secretary of the *Society for Electroanalytical Chemistry*
age@psu.edu

SEAC on the Move!

—**Veronica Cepak** has returned to Colorado to join Eltron Research in Longmont, CO, as a staff scientist following her tour of duty at the Naval Research Laboratory, Washington, DC, where she expanded on the electrosynthetic uses of zeolite-supported nanoelectrodes in collaboration with Debra Rolison. In an earlier life, she received her Ph.D. with Chuck Martin, during his Colorado State University phase. Veronica can be reached at: vmcepak@eltronresearch.com

—Colorado was calling her back…my entire group plans to visit her often during ski season…—

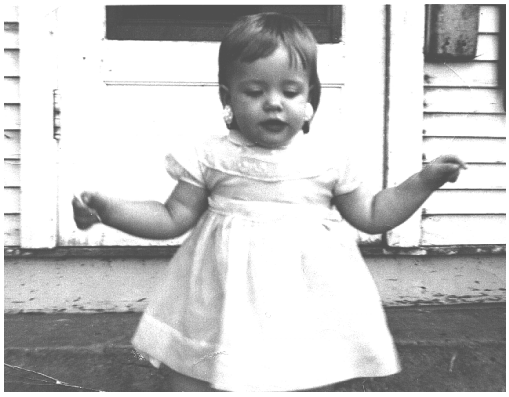
Another Victim of the Creeping Epidemic of Electrochemists Morphing into Chairs!!!

—**Eric Stuve**, acting head of the Department of Chemical Engineering at the University of Washington has unbelievably agreed to accept the gig full time (albeit beautiful Seattle is some consolation).

—send your condolences (and requests for coffee) to:

stuve@u.washington.edu

✯✯OUR CONTINUING AND HIGHLY POPULAR SEAC FEATURE✯✯ — *Name That Electrochemical Nerd * !!*



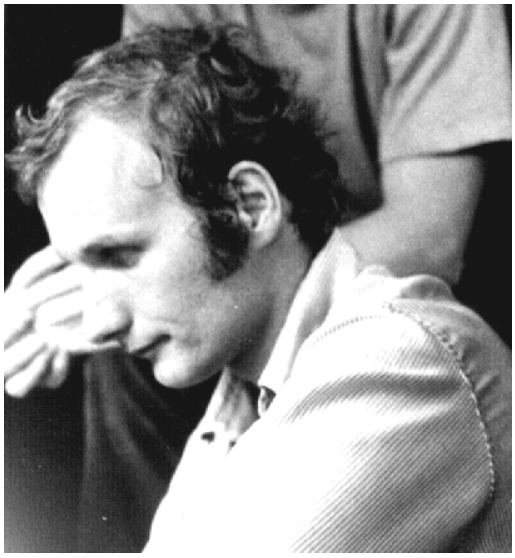
Pictured above is last issue's mystery entrant in **"Name that Electrochemical Nerd**". The babe evidently had you SEAC Surfers stumped. Many puzzled enquiries as to the identity of the *Loser-Electrochemist du jour*.

Did no one win? Yes! … No … Sort of.

Henry White (*University of Utah*) and **Carol Korzeniewski** (*Texas Tech*) experienced temporal consanguinity: both immediately knew it was Your Editor—most probably because they had seen a similar pose a few months earlier as she walked down (sans earrings) the steeper parts of Bryce Canyon [see *SEAC Communications*, **1999**, *15*(4)]. Henry and Carol thought it was so obviously me—and would be so obvious to others—that they refrained from contacting me (they both already have recent reprints of mine, so zero incentive). But they did 'fess up when we three intersected at an unnamed California meeting in mid-January.

—So, ha! I win!! Sort of.—

—Pictured is this issue's entrant in "Name that Electrochemical Nerd". Again, the first correct guess (as determined by directly contacting the pictured-herein EN) will win an autographed copy of the EN's latest Power Point presentation—



—…and please send in your candidates (and mystery photographs) for next issue's entrant in "Name That Electrochemical Nerd"!!—

**** a.k.a. "Loser-Electrochemist!", see SEAC Communications, 1998, 14(1)***

From the (E-)Mailbag

—The members rattle their electrons—

In message Wed, 5 Jan 2000 11:15:49 -0500,
Larry Anderson writes:

Debra—Beautiful job! The site is very nice and the current issue of *SEACComm*. is outstanding. My compliments to you and Sam.

Larry
Ohio State University
anderson@chemistry.ohio-state.edu

—Hi, Larry: you must have the fastest fingers (and mouse!) in Ohio. Thanks for the "thumbs up". Best.—

From **Debra Rolison** on Wed, 5 Jan 2000 11:06 –0500:

Without the address headers for those of us with dyspeptic servers! Cheers.

Debra
rolison@nrl.navy.mil

In message Wed, 5 Jan 2000 11:25:24 –0500,
Robert Osteryoung writes:

Debra—I like the address headers, and will spam accordingly. By the way, do you know you can get Spam sushi in Honolulu? Did you want to know that?

WETS should never have been disbanded!!

Bob
North Carolina State University
cherao@chemdept.chem.ncsu.edu

—no, Bob, I didn't want to know that…and may never eat again! …on second thought…I am eating unagi tonight…never mind…—

—wait a minute…WETS was disbanded?? …were those *ghosts* we were channeling in Ventura in January???—

In message Wed, 5 Jan 2000 12:24:44 –0500,
Robert Nowak writes:

Debra—now that you are electronic, why do double columns? With my poor eyesight I blow up the PDF version to a readable size which is less than one page. This requires scrolling down and then up again to read the next column. Please help an old fart like me.

Bob
DARPA/DSO
rnowak@darpa.mil

—durn…my secret is out…I never read the newsletter off the Web…I hit PRINT !!—

In message Wed, 5 Jan 2000 15:01:45 -0500,
Pete Kissinger writes:

Debra—Well done. Nice to see your picture out West!!

Pete
Bioanalytical Systems, Inc.
pete@bioanalytical.com

—Pete: see how it's done?!!! next time we run a Pete Kissinger exclusive [see *SEAC Communications*, **1999**, *15*(4)]***, I want a neat photograph to run with it!!!! Happy New Year!!—***

In message Thu, 6 Jan 2000 06:49:04 –0600,
Dick Van Effen writes:

Debra—I enjoyed the December issue of the SEAC newsletter, especially your adventures in the Southwest with HH. The latest "Electrochemical Nerd" is a tough one, since it's a picture of a very young nerd. I don't have a clue! See you soon in Ventura!

Dick
Analytical Sciences Laboratory
Dow Chemical Company
rmvaneffen@dow.com

—a very young nerd indeed, but a nerd nonetheless!—

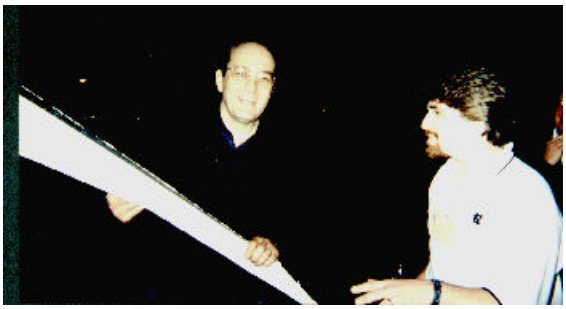
Scenes from WETS 2000

…from somewhere in California at some unnamed conference

Bartenders Anonymous. (L to R) Andrew Slaterbeck, Brad Bath, Mary Beth Williams, Keith Stevenson.

Finally!! Good food!!! (L to R): Bruce Parkinson, Bob De Levie, Fred Anson, Jay Switzer, Debra Rolison.

Bridge?! (L to R): Herb Silverman, Marcin Majda, David Cliffel, Larry Bottomley, Chairman RAO.



How to Launch a Poster. (L to R) Mark Spitler, Jason Ritchie.

Professors Ewing, White, and Porter make too much noise.

Poker! Now *that's* more like it!! (L to R): Michael Mirkin, Mark Wightman, Mike Elliott.