

# The SAS Spectrum



**FEBRUARY 2002  
VOLUME 29, ISSUE 1**

## INSIDE THIS ISSUE:

**Documents from the  
October 2001  
Governing Board**

**Reminiscence:  
Development of the  
First FTIR**

**Vignette: GC and IR  
Make a Team**

**Editor's Musings**

**News of Members:  
Rina Dukor**

**2002 Executive  
Committee Contacts**

**Member Get a  
Member**

**Governing Board  
Nominations Sought**

**Photos from FACSS  
2001**

## The Spectrum

Editorial Office  
25 Maple Avenue, #3B  
Hastings-on-Hudson,  
NY 10706-1426, USA  
SASNews@telocity.com

## A Personal View of the Development of the FTS-14 Spectrometer

Raul Curbelo

BIO-RAD Digilab Div.

68 Mazzeo Drive, Randolph, MA 02368

To have a perspective of the factors that led us to the development of the FTS-14, we need to look back at the two decades before 1970. A combination of science and technology became available during the 1960's as the result of the advances from the late 40's through the 50's. The development of the 296 interferometer in 1968, and the availability of low cost minicomputers, made it possible for us to develop the FTS-14.

At Bell Labs, research efforts to improve communication systems led to fundamental advances in communications theory. We call it information theory now. Nyquist and Shannon made the more important contributions.

Fellgett at the University of Cambridge, demonstrated in his 1951 thesis, the advantage of multiplexed spectroscopy, while trying to improve the sensitivity of his astronomical infrared measurements.



**Managers on the FTS-14 project: G. Kneissl,  
L. Hyatt, C. Foskett, R. Curbelo, T. Dunn**

The effort to reduce the size of electronic components led the research on semiconductors by Shockley and others at Bell Labs, to the invention of the transistor in 1948 and to usable devices in 1951. The search for improved yield and reliability of transistors at Fairchild, led Noyce to the invention of integrated circuits.

The scientific advances in communications before 1960, in conjunction with the development of the transistor, led to an expansion of related technologies beyond the communications applications, and led to applications in all sorts of commercial instrumentation. These included solid state detectors, better computers and faster analog electronics including better analog to digital

converters. The publication of the FFT algorithm by Cooley and Tukey in 1965, made practical the Fourier transform of large arrays in the slow computers of the time.

Larry Mertz pioneered the application of the multiplexed advantage in infrared spectroscopy, first with a FIR polarization interferometer built in 1954 at Baird Associates. At Block Associates, Mertz championed rapid-scan interferometers and data processing methods that were the basis for the I3 and I4 interferometers developed at Block in the early 60's. Rapid-scan interferometers minimize the effects of scintillation noise, are less sensitive to external vibrations, reduce the effect of slow drift, and can be implemented in a compact instrument without a chopper. The mechanical and optical engineering for these interferometers were done by N. Young, and the electronics by Gerry Wyntjes.

The physicist Mertz understood where the spectral information was in the interferogram and the importance of the phase information in the interferogram, and developed an algorithm that provides the best corrections to the resulting spectrum when the needed constraints are met. His book, "Transformations in Optics", includes the key information theory aspects of interferogram spectral

(Continued on page 2)

(Continued from page 1)  
estimation.

In 1960 you could get a spectrum from an interferogram by taking punched cards to a main frame computer. This was an expensive operation. It took one hour of CPU time to transform a 1K interferogram.

For getting a spectrum in the laboratory, Mertz first used an audio tape recorder playing a tape loop with the recorded interferogram into an audio wave analyzer with the output going to a chart recorder. Here he retained the multiplexed advantage in the measurement but forfeited it in the data processing, although not entirely, because he played back the tape at a faster rate. He tried other interferogram storage methods, including mechanical switched capacitor filters and magneto-strictive delay lines. The storage capacity was too small for practical use, and the implementation difficulties were substantial.

In 1964 at Block Engineering we developed a complete spectrometer system that would coherently add (the term coadd was coined by Myron Block) successive interferograms, and play them back at a faster rate to a built-in wave analyzer. This was the Block Coadder, the prototype was built with Digital Equipment Corporation (DEC) modules and the production units used the first low cost commercial IC's, packaged in transistor cans.

For the Coadder, the core memory stack had 1K of 16-bit words and a 10  $\mu$  sec cycle time. It used a 10 bit A/D; we built the rest of the electronics. The digital circuits were 24 cards. This system became the Model 200 Spectrometer. The resolution was limited to 10  $\text{cm}^{-1}$  in the mid-infrared (MIR), and it was primarily an emission spectrometer, without a built-in infrared source. About 30 Model 200 systems were sold. Manfred Low of Rutgers University was one of the early users.

The HeNe laser was invented in 1961. Commercial lasers in '63 were 1 meter long and needed a large RF power supply. By 1966 these had evolved to a foot long with a DC supply, when we first used a laser in an interferometer for the NASA expedition to observe the solar eclipse in the South Atlantic.

The processes developed to fabricate semiconductors were adopted to produce new detectors, including pyroelectric detectors first developed by Marconi in the UK. A commercial pyroelectric bolometer available in 1969 (DTGS) had good sensitivity ( $D^* > 3 \times 10^7$ ) and a frequency response beyond 1KHz that allowed rapid scan in the MIR, as opposed to the thermistor bolometers, which had a cutoff at about 200 Hz.

Transistors and integrated circuits started a revolutionary trend of improving capability and performance, and shrinking the size and cost of electronics that continues today. The effect of this trend was most visible in the evolution of computers.

In the early 60's, the first commercial interactive minicomputer, the PDP1, filled a room with 6-foot high 19" racks. Each 18-bit register was 8" of rack panel made-up of 18 modules (cards), one per bit, built with discrete transistors. Transistors were \$12 and it took 12 transistors to make a flip-flop. With 4K words of memory, it sold for more than \$100,000.

By 1965 the PDP8 was a 12-bit machine. Originally designed as a controller, it was the first RISC machine, had 3 registers and 4 logic instructions including addition, all in a 4-foot high table top rack, that sold for \$18,000.

The Varian 620i was a slow 18-bit machine, still too expensive for a spectrometer.

In 1969 the Data General introduced the Nova minicomputer in a 5 1/2"-high box. It used mid-scale integrated circuits, up to four flip flops per IC. The CPU fit in two 15" x 15" boards. It had four registers and seven instructions.

For us, at Block Engineering, another milestone was a NASA contract in 1968 to build an interferometer for emission measurements, to operate primarily in the NIR, with 10X more resolution and larger optics (10 times the area) than the interferometers built at Block to date. In this interferometer, the support mechanism for the moving mirror needed a longer travel for the resolution, and had to have small enough tilt for interferometer operation at 1 micron with the larger mirrors, and smooth motion in the micron scale with no stickiness. These requirements led us to the air bearing. The tilt specification required that the center of support be fixed with respect to the center of gravity of the moving system. With the help of John Hero of Dover Instruments, we developed a linear bearing that had less than one arc second of tilt over its travel.

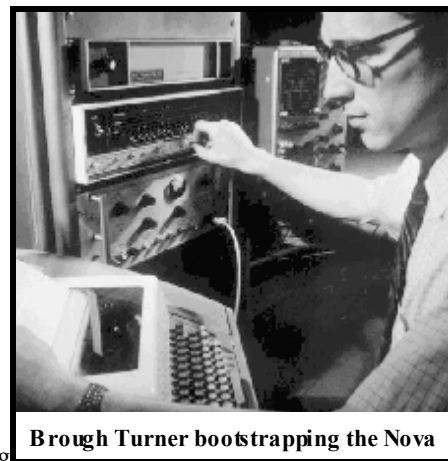
The air bearing with hovercraft type pads had been developed earlier. We chose the cylindrical form for easy manufacture with the tooling used to make rotating thrust bearing. The solutions generated a sequence of difficulties that proved to be long lasting.

The linear motor had to move a 0.5 Kg mass more than 10 mm and have small velocity errors. The solution was to use the magnet and voice coil for the largest loudspeaker built locally. An accelerometer was used to reduce the effect of large external vibrations.

The controller for the interferometer was built mostly with technology developed earlier, extended for the new mechanical and optical requirements.

All the system specs were met or exceeded, and resulted in a system that was manufacturable. We got 0.5  $\text{cm}^{-1}$  resolution that was comparable to that of the better analytical dispersive spectrometers of the day, and the sensitivity was orders of magnitude better.

The commercial version of this interferometer was named the 296. The 296 interferometer had two Michelson interferometers



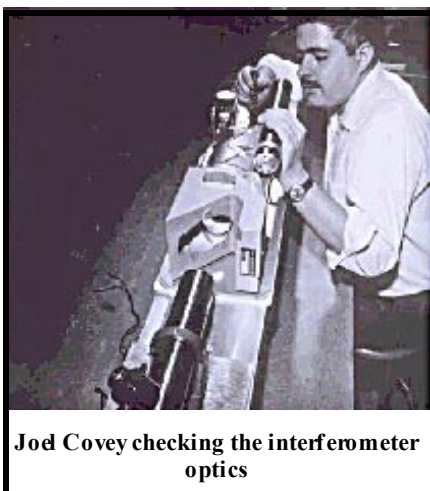
Brough Turner bootstrapping the Nova

(Continued on page 3)

(Continued from page 2)

sharing the moving mirror. The reference interferometer used a portion of the rear surface of the moving mirror to generate two reference interferograms, from a laser and a white light source respectively. Wyntjes, using a neon bulb for the monochromatic source, had developed this technique in 1962. He used two identical interferometer cubes assembled back to back, with the moving mirrors connected by a rigid rod through the common linear motor. The same mechanical arrangement was used in the 1966 eclipse interferometer.

The 296 interferometer casting was made massive in search of stability, but we had departed from the cube topology used by Mertz and Young. The open V was designed for easy beamsplitter change, but worked as a chimney for the heated air and we could see the effect of the rising air bubbles in the output signal. A roof on top of the V reduced the problem to an acceptable level. Moreover, the thermostated interferometer resulted in a temperature gradient in the 1" thick aluminum fixed mirror support, until we found the right location for the heating pads.



Jod Covey checking the interferometer optics

The performance of the 296 interferometer and the availability of 16-bit minicomputers at a reasonable price made it obvious that a commercial FTIR spectrometer could be built to compete with the better dispersive spectrometers available.

The FTS-14 optical head was designed to emulate the dual-beam dispersive spectrometers we hoped to replace. This was a single-beam spectrometer, and the sample and reference beams had to be measured in sequence. The foci in the sample compartment were near the exit ports, as in the dispersive spectrometers, so we could use the existing accessories for dispersive spectrometers. The resolution was controlled with an aperture at the focus of the source paraboloid, which determined the solid angle through the interferometer, and it used all the luminosity advantage of the interferometer. The location of the sample after the interferometer eliminated the sample radiation from the measured spectrum, which could be the only source of something like the stray light in dispersive spectrometers, and at the same time minimized sample heating because the visible radiation of the source with a MIR beamsplitter was stopped by the beamsplitter coating. But now the user did not have a visible beam to aid in positioning samples. A source of visible light (a surplus collimator) was added to aid in the placement of samples and alignment of sample compartment accessories.

Two prototypes were built in early 1969 on large Formica tables. Don Graham of CSPI helped us with the programming of a Varian 620i to collect the interferograms and compute the Fourier transform. These instruments were exhibited at a conference at the Ohio State University (OSU), and later at the Anaheim Conference Center. Tom Dunn, then President of Digilab, was the driving force in marketing.

The optical head controller evolved from the 296 controller, adding computer control of the interferometer scan, the mirror flippers, and the resolution aperture, and monitoring of internal diagnostic signals.

The production data system was designed around the Nova. The Nova CPU had cycle time of 2.6 microseconds (0.38 MHz!).

The system was first built with a minimum of 8K words of magnetic core memory (made up of 4K boards), of which 4K were used for programs and the rest used for data. This restricted the resolution in MIR to  $2\text{ cm}^{-1}$  for a single-beam spectrum. Soon 8K boards became available allowing 32K memory in the same chassis.

For  $0.5\text{ cm}^{-1}$  resolution we resorted to optical filters that allowed undersampling without aliasing. The list price of the system was about \$74,000. About 25 core systems were sold.

We described the system at the Aspen International Conference in March 1970.

The FTS-14 system was a large instrument. The optical head was on a freestanding cabinet 38" wide by 45" high. The computer, and the optional high-speed paper tape reader and punch and later the disk, occupied the middle bay of the data system cabinet. This cabinet was big, 63" wide x 36" high, with the Teletype (TTY) and digital plotter on top. The spectrometer interface was built in a vertical rack, in the right-hand bay of this cabinet. It included the 15-bit A/D converter, the digital interface between the Nova and the optical head, the plotter and the TTY, and the hardware multiply and divide needed for acceptable computation times. A  $2\text{ cm}^{-1}$  single-beam spectrum was computed in 30 seconds.

The Analogic A/D converter was a five or six small-card assembly on its own back plane, with a 15' signal cable from the spectrometer. Think about the noise pickup, which had a substantial effect on the S/N of the result. The first improvement was a low pass filter at the input of the A/D. The actual I/O interface was 19 cards. The Nova bus was extended 15' to reach the I/O rack! In a second row, we had the plotter and paper tape interfaces. The lower row was the signed multiply and divide with 16 cards. This was a very low volume production; therefore the I/O rack was wired-wrapped manually.

We got some of the first Novas shipped by DG. They had no software at all. To start the system, you had to enter a four-instruction bootstrap loader program using the front panel switches in the Nova. With that program in memory, you loaded a binary loader with the paper tape reader, and then you could load your programs. This procedure remained true after we developed our spectrometer programs, because the memory was not retained on power off.

Charlie Foskett developed the software for the early systems with part-time help from Brough Turner. The software was developed in the target system, the one and only, with an assembler that showed up soon after delivery of the first computers. This was a standard two-pass assembler; therefore, after you punched the source code tape, you passed it through the reader twice, all at ten

(Continued on page 4)

(Continued from page 3)

characters per second.

No operating system was available. Foskett built a 400-word supervisor program to connect the different tasks, which was used until the RDOS operating system became available (~1974).

The data file size was specified beforehand and assigned to absolute addresses in memory. Data was lost when a different file size was specified.

The only user interface was the TTY and its built-in paper tape reader and punch. By this time the TTY was a very reliable machine except for the mechanical tape reader.

A debugger allowed insertion of break points (up to a maximum of 4) where the program halted and the TTY printed the contents of the 4 accumulators. Typing an address would return the content of that location. To this date, Foskett remembers 054, the address of the I/O errors.

The FFT was coded in mixed radix (four/two) to optimize performance. Block floating point was used to maintain precision with the 16-bit word. Double precision software was introduced in 1974.

The IR Executive was built with three-letter commands, so three commands or parameters could be packed in a 16-bit word. The sign bit identified commands or parameters.

An important feature was the plotting of the frequency axis with the spectrum to take advantage of the precision of the laser reference, as opposed to the common practice in dispersive systems, which used a chart recorder with preprinted wave number scale. A less welcome feature of the plotter was the sampled appearance of the spectrum (a staircase of 200 steps per inch), that "everybody" knew was not real. It took some time for users to understand the information content, and it took faster computers that allowed enough interpolation for a better appearance of the digital plot.

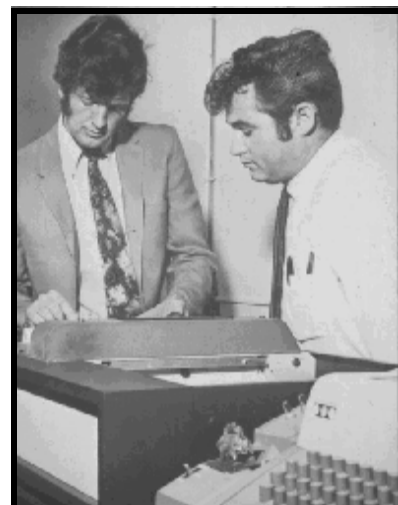
Another problem we had was that the ratio of the sample and the reference spectra sometimes exceeded unity. Mrs. Sadtler educated me that all transmission values had to be less than 100%. She demonstrated running a spectrum in a dispersive spectrometer of a sample she may have seen before, because at a certain point in the plot, she moved her hand and placed her thumb to prevent the pen from going over 100%.

In mid 1970 with the addition of a 128K disk, the FTS-14 could achieve full MIR coverage at  $0.5\text{ cm}^{-1}$  without under-sampling.

Brough Turner, who had joined us full time, implemented the software. Brough developed the programs that coadded interferograms to the disk and did the FFT in place in the disk. All this development had to be repeated for three different disks in a period of two years. These small disks (12" high by 50" deep in a 19" rack) were not very reliable then. The progress in memory capacity of the disk, and the increased flexibility of the operating system came at the expense of extra overhead, which slowed things down. This process still continues today, but we have always been saved by faster silicon.

The software continued to grow, providing more data processing features. The number of three letter commands and parameters grew with each release of the software.

The spectrometer resolution and sensitivity improved, leading to the development of a family of spectrometers, but that is another story.



**Peter Griffiths and Service Engineer using the DPI plotter**

### **Editor's Musings: Technology costs in 1970, a Vignette, and epipolic dispersion.**

This issue's lead article is Raul Curbelo's Reminiscence of engineering the first commercial FTIR, the Digilab FTS-14, a companion piece to Myron Block's Reminiscence in the last issue. The time was 32 years ago, and it should be especially informative for the majority of our readers, who were not then technology users. The mention of adding a 128K disk to a computer isn't a typographical error. As I recall, 1Mb was state of the art for a hard drive, and a drive that large was very costly. Minicomputer memory then cost \$4000 for 4Kb. I recently added 128Mb of memory to my computer for \$21; the same memory is now advertised at \$17. Computer memory in 1970 was about 75 million times as costly as it is today, byte vs. byte; and today's memory is faster by a huge margin. The Microcomputers allowed commercial computer-controlled laboratory instruments to be made, for those who could afford the best. During my year at Block Engineering, we tried to come up with a design for an FTIR to sell at a price comparable to dispersive IR spectrometers, but the expense of the computer and associated hardware made it unfeasible.

Elsewhere in this issue there is a companion piece by Paul Wilks, on the marriage of the FTS-14 to a GC. It is shorter than a Reminiscence. When Paul submitted it, I said I'd have to find a new word to describe a shorter memory piece. Paul came up with "Vignette", and that is what we will call it. It happened to be submitted in time to be included with Curbelo's Reminiscence, but it would have been worth publishing even if it had come in later. More short memory pieces would be welcomed. Send yours to me by e-mail to SASNews@telocity.com, or on paper to 25 Maple Ave., #3B, Hastings-on-Hudson, NY 10706.

In the last issue, I asked what 19th century scientist coined the term "epipolic dispersion", and what term is now used in its place. It

(Continued on page 16)



## Minutes and Reports from the October 2001 Meeting of the Governing Board

Minutes	p. 5	Committee Reports		Delegates' Reports	
<b>Reports</b>		Local Section Affairs	p. 13	FACSS	p. 15
President	p. 8	Publications	p. 13	Chemical Heritage Foundation	p. 15
Treasurer	p. 8	Tour Speakers			
2002 Budget	p. 9	2001	p. 13		
Executive Director	p. 8	2002	p. 14		
Journal Editor	p. 11	Meggors Award	p. 14		
Newsletter Editor	p. 12	Strock Award	p. 14		
Membership Education	p. 12	Lippincott Award	p. 14		
Web Editor	p. 12	Teller's Report	p. 14		

### GOVERNING BOARD MEETING MINUTES TUESDAY, OCTOBER 9, 2001, 8:00 PM DETROIT MARRIOTT RENAISSANCE CENTER, DETROIT, MI - JOLIET B ROOM

I. Call To Order Vasilis Gregoriou  
President Vasilis Gregoriou called the meeting to order at 8:00 P.M.

II. Roll Call Jon Carnahan  
President (VEC) Vasilis Gregoriou  
President-Elect (VEC) Rachael Barbour  
Past-President (VEC) Rina Dukor  
Treasurer (VEC) Mary Carrabba  
Journal Editor-in-Chief (EC) Joel Harris  
Journal Editor Paul Farnsworth  
Secretary (VEC) Jon Carnahan  
Web Editor (EC) Pete Poston (not present)  
Newsletter Editor (EC) Marvin Margoshes  
Parliamentarian (EC) Augustus W. Fountain III  
Member Education (EC) Chris Hassell (not present)  
(Steve Barnett represented Member. Ed.)  
Executive Director Bonnie Saylor  
Society Office Assistant Barbara Stull  
Administrative Affairs Associate Victor Hutherson  
VEC - Denotes voting Executive Committee Member  
EC - Denotes non-voting Executive Committee Member

#### 3 year Governing Board Members

Steve Barnett  
John Chalmers  
Kathryn Lee  
Cynthia Mahan  
David Moore

#### 2 year Governing Board Members

Brian Buckley  
Clara Craver  
Wolfgang Keifer  
Don Pivonka  
Rock Vitale (not present)

#### 1 year Governing Board Members

Steve Bialkowski (Paul Farnsworth represented)  
Peter Griffiths  
Eileen McClendon  
Doug Schrader

Truman Waugh  
Local Section Representatives  
Sara Freeman - Cleveland  
Sue Evans-Norris - New England  
John Jackovitz - Pittsburgh

III. Introductions  
Gregoriou introduced the members of the Executive Committee.

IV. Meeting Rules of Order  
Fountain noted that Robert's Rules of Order would be followed.

V. Approval of minutes from September 26, 2000 Governing Board Meeting  
It was moved by Griffiths and seconded by Moore that the minutes be accepted. The motion passed.

VI. Reports  
The following notes include highlights of the reports as well as comments at the meeting.

A. President Report Attached  
President Vasilis Gregoriou. It was noted that the goal of making the SAS website an international spectroscopic portal is becoming a reality. The value of the society journal was emphasized. It appears that membership numbers have stabilized and the society did not experience a statistically significant decrease in membership this year. Efforts to further internationalize the society appear to be making progress.

B. Secretary Report Attached  
Secretary Jon Carnahan. These minutes of the meeting previous meeting constitute the Secretary's report.

C. Treasurer Report Attached  
Treasurer Mary Carrabba. Figures show a surplus of approximately \$44,555 in 2001. It was noted that approximately \$24,000 of that figure represented submissions from chapters (previously denoted local sections) in account consolidation efforts. Lower than projected journal expenses and the cancellation of the "Lab Guide" also augmented the surplus. The budget report follows in section IX-A.

D. Executive Director Report Attached  
Executive Director Bonnie Saylor. It was noted that, as of the time of

(Continued on page 6)

(Continued from page 5)

the Governing Board Meeting, the SAS has 2408 members. These numbers represent slightly less than a 0.5% decrease from the year-2000 figure of 2420. The number of library journal subscriptions dropped slightly to 981 in 2001, from 1013 in 2000. A list of non-renewing members was distributed and these members were contacted to facilitate renewals. The secured server was seen as a plus in terms of ease of renewal. The number of student resumes on the site is low, at 9. Barbara Stull's husband, Wayne Stull, should be thanked for his assistance with the SAS mailings.

#### E. Journal Editor Report Attached

Journal Editor-in-Chief Joel Harris. The journal impact factor is still solid and Applied Spectroscopy maintains the number one ranking in the Instruments and Instrumentation category. The articles on careers in spectroscopy have been especially popular. Sandy O'Neill is retiring as the Production and Composition Editor. Rebecca Airmet has been assuming those duties and is doing quite a nice job. The editor's office budget surplus was due to, in large part, operating for approximately five months entirely from an accumulated balance in the account in Utah and not drawing funds from the national office. Additionally, operating costs have been substantially reduced. The office is specifically avoiding the use of expensive overnight mailing services. In the future, mailing costs of reviewing manuscripts could be further reduced by forwarding manuscripts to reviewers in Adobe Acrobat format.

#### F. Newsletter Editor Report Attached

Newsletter Editor Marvin Margoshes. Success has been seen in gathering Reminiscences for The Spectrum. It is possible that the works may result in a book in the future. Margoshes is now updating links on the opening page of the website that connects to the newsletter area, instead of asking Web Editor Pete Poston to make the changes.

G. Membership Education Coordinator Report Attached  
Member Education Coordinator Chris Hassell (not present). Chris Hassell will step down and Steve Barnett has agreed to assume duties as the Membership Education Coordinator. Following a successful set of short courses at FACSS in Nashville (2000), a number of 2001 Detroit FACSS short courses were canceled due to low registration. This may be caused by a combination of reduced attendance and weak advertisement strategies. Barnett noted that he will continue to explore on-line courses for SAS.

#### H. Web Editor Report Attached

Web Editor Pete Poston (not present). The report was given by President Vasilis Gregoriou. Topics included the searchable online membership database, trying to enhance on-line student job listings and resumes, the low response rate on the forums page, and the electronic preprint archive. All were impressed with the progress of the web site.

All reports were filed with secretary.

### VII. National SAS Committee Reports

#### A. Awards No Report

Awards Chair John Hellgeth (not present).

#### B. Constitution and Bylaws No Report

Constitution and Bylaws Chair Rachael Barbour.

#### C. Local Section Affairs Report Attached

Local Sections Affairs Committee Chair Sue Evans-Norris. The report notes the Graduate Student Award winner was Christine Hughey and the Poehlman Award winner was the Chicago Local Section.

#### D. Membership No Report

Membership Committee Chair Matt Smith (not present). A bar graph chart depicting membership numbers from 1986 to present was submitted.

#### E. Nominating No Report Nominating Committee Chair Nancy Miller-Ihli (not present).

F. Publications Report Attached  
Publications Committee Chair Mark Porter (not present). Farnsworth noted that the report statement concerning the lab guide was incorrect as the lab guide has been discontinued.

#### G. Publicity No Report Publicity Chair Bob Williams (not present).

H. Tour Speaker Report Attached  
Tour Speaker Chair Dave Lankin (not present). Report were composed by Becky Dittmar and Dave Lankin. A list of 2002 speakers is being compiled and the 2001 speakers were listed.

I. Meggers Award Report Attached  
Meggers Award Chair Richard Palmer (not present). The Meggers Award winner was Larry Nafie.

J. Strock Award Report Attached  
Strock Award Chair Bruce Chase (not present). The Strock Award winner was John Olesik.

K. Lippincott Award Report Attached  
Lippincott Award Chair Yuki Ozaki (not present). The Lippincott Award winner was Lester Andrews.

L. Tellers Report Attached  
Tellers Committee Chair Stephen Anderson (not present). Voter participation was high among SAS members. All SAS amendments passed by substantial majorities (>92%).

Reports were filed with the secretary.

### VIII. Delegate Report

A. FACSS Report Attached  
Rachael Barbour and Rina Dukor attended the March 8, 2001 FACSS Governing Board Meeting in New Orleans. The Nashville meeting was financially successful, with a surplus in the range of \$70,000. Due to low projected attendance, this may not be the case in Detroit. FACSS may form a program advisory board for program continuity. A reduced registration fee was established for retired attendees. Because FACSS assets exceeded the prescribed value, discussions have been initiated to determine whether FACSS will disperse funds to member organizations. Mary Carrabba will participate in these discussions. It was noted in the report Mary Carrabba was volunteered for this assignment by Rina Dukor.

B. Chemical Heritage Report Report Attached  
Chemical Heritage Representative Marvin Margoshes. A gift from Perkin Elmer will make the Chemical Heritage Foundation the world's largest collection of laboratory instruments. A \$5,000,000 gift for the museum has been received. The facility is housed in Philadelphia. Interested persons are advised to examine updates on the SAS web site.

### IX. Old Business

A. Budget Report Attached

(Continued on page 7)

(Continued from page 6)

Deborah Bradshaw will take over as the SAS Treasurer in 2002. Mary Carrabba presented this report concerning the 2002 budget proposal. Dues reductions resulted in a \$17,000 projected income decrease in 2002. Awards and Executive Committee expenses increased. Miscellaneous Income revenue increased. National Office and Membership Education expenses are down. The new accounting software system to be put in place is "Quick Books."

Schrader moved and it was seconded that the 2002 budget, with a \$1,200 surplus, should be passed. The motion passed.

#### X. New Business

##### A. Internationalization/Sister Societies Reports/Documentation Attached

Dukor introduced the topic of SAS internationalization and facilitating SAS growth. Highlighted was a major report compiled by Tony Davies. Issues included in discussions encompassed: membership expenses in "lower-income" countries, criteria defining "low-income", awarding free memberships to "low-income" international spectroscopists, effects of technical sections on the structure of local international sections, the cost of the printed journal and shipping the journal overseas, as well as other topics.

A motion passed during the October 7 Executive Committee meeting was discussed. Verbiage of that motion follows. *As an outreach, the SAS will allow members of societies with which agreements have been reached to become SAS members for \$60. They will not receive a printed copy of the journal, but will receive electronic journal access. The Executive Committee will screen and approve the societies. Individuals may do this as well if approved by an Executive Committee appointed ad-hoc committee. This will be a one-year initiative.*

It should be made clear that the above proposal was only discussed, and not moved, during the Governing Board Meeting.

By general consensus (a formal motion was not filed and a vote was not taken), it was agreed that the topic of SAS internationalization and reduced fees for affiliated societies is referred back to the Ad-Hoc Internationalization Committee. The committee should produce a report and/or a formal proposal to be considered at the SAS Executive Committee meeting at the 2002 Pittsburgh Conference in New Orleans.

The report of the ad hoc Internationalization Committee was accepted by the board.

Following further discussion, the following motion was moved by Dukor and seconded by Barbour. *The Governing Board empowers the Ad-Hoc Internationalization committee to come up with a list of approved individuals who will get a free one-year membership with online access to the journal on a case-by-case basis in the low-income countries.* Griffiths proposed a friendly amendment to remove the phrase "in the low-income countries." The friendly amendment was accepted. *The Governing Board empowers the Ad-Hoc Internationalization Committee to come up with a list of approved individuals who will get a free one-year membership with online access to the journal on a case-by-case basis.*

Following further discussion, the modified motion was tabled. Further points were brought forth as to implementing this approach in spirit. The following motion was made by Dukor and seconded by Davies: *The Governing Board agrees to allow each SAS member the opportunity to nominate one needy individual per year to the Executive Committee for a free one-year membership with on-line access only.*

The motion passed.

It was further understood and discussed that the Ad-Hoc Internationali-

zation Committee would draft a proposal dealing with international members and societies.

##### B. FACSS

Barbour gave an outline of issues regarding FACSS.

Barbour reported that FACSS has invited two societies, one from Taiwan and one from Korea, to become FACSS affiliates. These organizations would receive status which is less than the normal FACSS affiliate. They would receive only one delegate on the FACSS Governing Board, rather than the two received by normal affiliates. It was felt that inclusion of these votes would dilute the influence of the SAS on the FACSS Governing Board. Because SAS members compose a large fraction of the attendance at FACSS, it was felt that the SAS would be underrepresented. The proposed sites for FACSS in 2005 are Memphis and Quebec City.

Farnsworth moved and Moore seconded the following motion. *SAS should recommend rejection of the proposed FACSS change in governance.*

The motion passed.

Farnsworth moved and Buckley seconded the following motion. *An ad hoc committee consisting of one delegate from each FACSS member society will be formed to examine and recommend changes, if warranted, in the governance of FACSS. John Koropchak be asked to serve as committee chair.*

The motion passed.

Farnsworth moved and Schrader seconded the following motion. *SAS recommends that the 2005 FACSS meeting be held in Memphis.*

The motion passed.

##### C. Student Representation on the Governing Board

Saylor posed the issue of providing students a voice on the SAS Governing Board. This is an outgrowth of meetings with students which took place in New Orleans.

Based upon the Executive Committee's report, the following motion was forwarded. The SAS student members will elect a non-voting student Governing Board member for a two year term. This will be done in the November/December election following a nomination process. The SAS will pay the student Governing Board member's travel to FACSS and PittCon.

The motion passed.

##### D. Passing of Jerry Kacsir

It was noted that long time Governing Board member Jerry Kacsir of Meinhard Associates passed away. Joseph Kacsir, his son, attended FACSS. On behalf of the Society for Applied Spectroscopy Executive Committee and Governing Board, we express our deepest condolences to the family.

##### E. Thank you

Gregoriou thanked outgoing officers Dukor and Carrabba for their excellent service.

##### XI. Time and Place of next meeting.

The next SAS Governing Board meeting is tentatively scheduled for Tuesday, October 15, 8:00 PM in Providence, Rhode Island.

##### XII. Adjourn

Respectfully submitted, Jon W. Carnahan, Secretary

(Continued on page 8)

(Continued from page 7)

## PRESIDENT'S REPORT TO THE EXECUTIVE COMMITTEE OF SAS

Vasilis Gregoriou

October 2001

I am very happy to report that our attempts to make our website an international spectroscopic portal is becoming a reality day by day. Pete Poston will go over the details of the transformation of the web page but I believe that we are on the right track regarding the goals that we set earlier in the year. The traffic of the site has increased significantly and we should expect a continuation of this trend as more content is added to the site. We need to go on a massive emailing campaign to advertise the existence of features like the forum etc., where people can use the power of concentrated spectroscopic information. In addition, we need to talk about the ways to significantly increase our advertising revenue with the inclusion of online advertisement.

I also want to thank Joel Harris, Paul Farnsworth and the rest of the editors once more for the outstanding job that they are doing with our Journal *Applied Spectroscopy*. The quality and the prestige of the Journal is increasing year by year and since the Journal is the most valued part of the membership, this trend has definitely a very positive effect on the Society and the membership.

Regarding membership, Bonnie Saylor will analyze our current situation but it seems that we have stabilized the numbers or at least slowed the erosion and hopefully we will end up with a par year. Our goal of course remains to increase them back again and we should all concentrate our attention to this goal.

Publicity for the Society: This is a major area and the FACSS award session is a good opportunity to present the history and role of the Society to FACSS attendees. In addition, I believe that the role of the publicity committee is very important and I intend to work closely with Mark Porter and his team on that front.

### Internationalization

Rina Dukor and Tonie Davies are heading this task and we will be anxiously waiting for their report on that front. Again, I want to emphasize that growth for the Society will come primarily from the International (Europe, Asia) as well as the Student arena so we need to cater to the needs of these two groups. It is a matter of time till we become a truly international Society and we need to invest considerable time to attract and retain International members.

### Student membership

Student membership remains relatively low and the student section on the web site has attracted few resumes so far. We could actively solicit the resumes of our student members in a direct mailing campaign to them later in the year. We also need to pay attention in collecting all the academic positions and post-doc postings that we can in addition to the industrial jobs listed on the employment section. In addition, the academic SAS community should actively recruit student members from its own Institutions and an award should be established to recognize that effort. Finally, we need to discuss again the role of a student council that will handle the issues of the student members fast and effectively.

### Membership education

This is a very important service that we offer to our members and a potential high revenue source for the Society. Web-based courses are the future but till the arrival of broadband internet capability to the majority of the membership base we cannot hope that this will be our major offering. Chris Hassell is doing an excellent job on this front and we will be to an interesting discussion on what our options are in the near future.

## Treasurer's Report September 7, 2001

On an opening note, the Society has recently switched to a new accounting system. Thus, the new "look" of the detailed budget categories. With the completion of this transition, future financials should be more readily comprehensible.

The 2001 budget is currently, as of September 21, projecting a surplus of \$44,555.14 for the end of the fiscal year. Note that this figure includes the chapter money that is now held by the Society office to cover the Chapters' anticipated expenses. Revenues are projected to exceed predictions due primarily to decreases in Journal and Society office expenses. Other contributing items include greater than expected miscellaneous income and less-than-projected expenditures for the Lab Guide (cancelled), Internet and Member Services, Member Education, and Conferences.

The budget proposed for 2002 holds membership numbers flat, but the amount is decreased by \$17,000 because of the reduction in membership dues. Journal expenses were lowered to make up for lowered advertising costs. Society office expenses were also lowered. As Bonnie points out, soon she and Joel will be operating on nothing (keep up the great work!). Other changes include increases in Miscellaneous Income revenue, Awards and Executive Committee expenses, and reductions in Member Education expenses.

The proposed 2002 budget projects a slight surplus of \$1,200.

On a final note, as this is my last treasurer's report, I'd like to extend my thanks to Bonnie Saylor for all her help in making the treasurer's job practically effortless and to Joel Harris, for all the times he kept the Society in the black by his outstanding management of Journal expenses.

Mary Carrabba  
Treasurer

## Executive Director's Report October 2001

### Data

#### Membership

**2001 to date: 2391**

**This time last year: 2420**

**Membership Breakdown** USA 2044 International 347  
Academic Non-Student: 478 Student 201 Non-Academic 1712

**Total New Members for 2001** 354 **Total Student Members** 201  
**This Time Last Year** 303 **This Time Last Year** 199

**Total Not Renewed for 2001:** 453  
**Total Not Renewed Last Year:** 594

**Registered for Online Access** 289

#### Subscriptions

**2001 To Date:** 976

**Last Year This Time:** 1013

**Subscriber Breakdown** USA 673 International 303  
**Total Not Renewed for 2001:** 129 **Total New Subscribers for 2001:** 70  
**This Time Last Year:** 140 **This Time Last Year:** 59

(Continued on page 10)



	<b>2001 Budget</b>	<b>2001 As of September 21</b>	<b>Percent Used</b>	<b>Projec- tions Till Year End</b>	<b>Total Inc/ Exp Pro- jected</b>	<b>2002 Pro- posed Budget</b>
<b>REVENUES</b>						
Education Programs	\$10,000.00	\$0.00	0.00%	\$3,000.00	\$3,000.00	\$6,000.00
Membership Dir Adv	\$300.00	\$0.00	0.00%	\$0.00	\$0.00	\$0.00
Focal Point Book	\$500.00	\$1,544.00	308.80%	\$100.00	\$1,644.00	\$500.00
Member Dues	\$185,000.00	\$185,782.90	100.42%	\$500.00	\$186,282.90	\$175,000.00
Journal Income	\$609,700.00	\$537,518.55	88.16%	\$29,500.00	\$567,018.55	\$590,500.00
Chapter Income	\$1.00	\$4,157.74	415774.00%	\$200.00	\$4,357.74	\$1,000.00
General Contributions	\$3,000.00	\$140.00	4.67%	\$100.00	\$240.00	\$3,000.00
Investment Revenue	\$30,000.00	\$22,678.78	75.60%	\$8,000.00	\$30,678.78	\$30,000.00
Misc. Income	\$599.00	\$24,858.33	0.00%	\$100.00	\$24,958.33	\$9,000.00
 Total Revenue	 \$839,100.00	 \$776,680.30	 92.56%	 \$41,500.00	 \$818,180.30	 \$815,000.00

**EXPENSES**

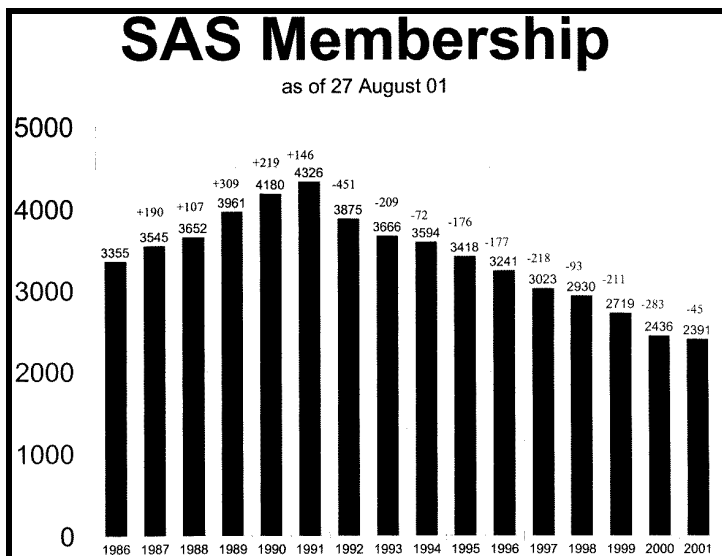
Salaries	\$110,000.00	\$79,527.48	72.30%	\$30,472.52	\$110,000.00	\$114,000.00
Pay roll Taxes	\$14,250.00	\$6,158.99	43.22%	\$8,091.01	\$14,250.00	\$15,400.00
Personnel Benefits	\$3,000.00	\$1,679.10	55.97%	\$1,320.90	\$3,000.00	\$3,000.00
Executive Committee	\$20,000.00	\$14,684.25	73.42%	\$12,000.00	\$26,684.25	\$25,000.00
Governing Board	\$3,000.00	\$0.00	0.00%	\$3,000.00	\$3,000.00	\$3,000.00
Membership Committee	\$200.00	\$0.00	0.00%	\$0.00	\$0.00	\$200.00
Other Committees	\$500.00	\$451.51	90.30%	\$200.00	\$651.51	\$700.00
Journal	\$501,700.00	\$275,956.44	55.00%	\$179,637.77	\$455,594.21	\$481,500.00
Newsletter	\$6,000.00	\$2,475.10	41.25%	\$2,500.00	\$4,975.10	\$5,000.00
Lab Guide	\$5,000.00	\$654.16	13.08%	\$0.00	\$654.16	\$0.00
Internet Services	\$4,000.00	\$1,377.40	34.44%	\$1,000.00	\$2,377.40	\$3,000.00
Member Services	\$11,000.00	\$5,881.63	53.47%	\$3,000.00	\$8,881.63	\$11,000.00
Member Education	\$15,000.00	(\$239.00)	-1.59%	\$6,000.00	\$5,761.00	\$6,000.00
Awards	\$10,000.00	\$2,271.31	22.71%	\$12,000.00	\$14,271.31	\$18,000.00
Sections	\$27,000.00	\$6,142.11	22.75%	\$20,857.89	\$27,000.00	\$27,000.00
Conferences	\$10,000.00	\$3,585.22	35.85%	\$3,000.00	\$6,585.22	\$10,000.00
Member Acquisition/Ret	\$10,500.00	\$8,554.08	81.47%	\$1,945.92	\$10,500.00	\$10,500.00
Society Office	\$78,000.00	\$62,769.37	80.47%	\$10,000.00	\$72,769.37	\$72,000.00
Financing Expenses	\$4,500.00	\$2,465.26	54.78%	\$2,034.74	\$4,500.00	\$4,500.00
Depreciation Expenses	\$4,000.00	\$1,194.68	29.87%	\$2,805.32	\$4,000.00	\$4,000.00

Continued on next page

Continued from previous page

Total Expenses:	\$837,650.00	\$475,589.09	56.78%	\$299,866.07	\$775,455.16	\$813,800.00
NET ORDINARY INCOME	\$1,450.00	\$301,091.21	20764.91%	(\$258,366.07)	\$42,725.14	\$1,200.00
OTHER INCOME/ EXPENSE						
SUSPENDED TRANS	\$0.00	\$1,830.00	0.00%	\$0.00	\$0.00	\$0.00
CHAPTER DIST ADD BACK	\$0.00	\$0.00	0.00%	\$0.00	\$0.00	(\$12,500.00)
TOTAL OTHER EXPENSES	\$0.00	\$0.00	0.00%	\$0.00	\$0.00	(\$12,500.00)
NET OTHER INCOME	\$0.00	\$1,830.00	0.00%	\$0.00	\$1,830.00	\$12,500.00
NET INCOME	\$1,450.00	\$302,921.21	20891.12%	(\$258,366.07)	\$44,555.14	\$13,700.00

(Continued from page 8)



Registered for Online Access: 273

**Members and Subscribers**

Renewal notices for members and subscribers have all been mailed. We are offering a discount for early bird renewals. We have been trying very hard to get back non-renewed members and subscribers. We have offered two email/fax comeback campaigns and have asked the Executive Committee to make personal phone calls to members to try and get them back.

**Marketing**

We have completed several mail marketing campaigns since PITTCON including mailings to non-member authors, EAS 2000, PITTCON 2001, *Applied Spectroscopy* Authors, *Spectroscopy Magazine* Subscribers, FACSS 2000 and *Laser Focus Magazine* Subscribers. Joel and I developed a member recommendation form for subscriptions to the journal. It is designed so members can easily submit information on why the library should subscribe.

To give you an idea of the numbers we get from various promotions, the following is a breakdown for 2000 and 2001 of what we have gotten so far (Please note that within the Secure Server and WWW are also renew-

**For 2000****For 2001**

PROMO CODE	Count	PROMO CODE	Count
1/2 Year	13	1/2 Year	69
A2LA	1	Brochure	20
Brochure	5	Come Back 01	3
Authors 00	2	Corp Sponsors Comp	29
Brochure	9	Corp Sponsors Comp	2
ChicagoSTD	21	FACSS	51
Christmas 2000	5	Laser01	11
Coblentz00	4	MGM	14
ComeBack00	5	PITTCON	30
Co S ons Corn	9	Secure Server	121
FACSS	42	SPECMAG 01	19
MGM	11	WWW	96
PITTCON	30		
Winter Plasma	2		
Short Course	9		
WWW	26		

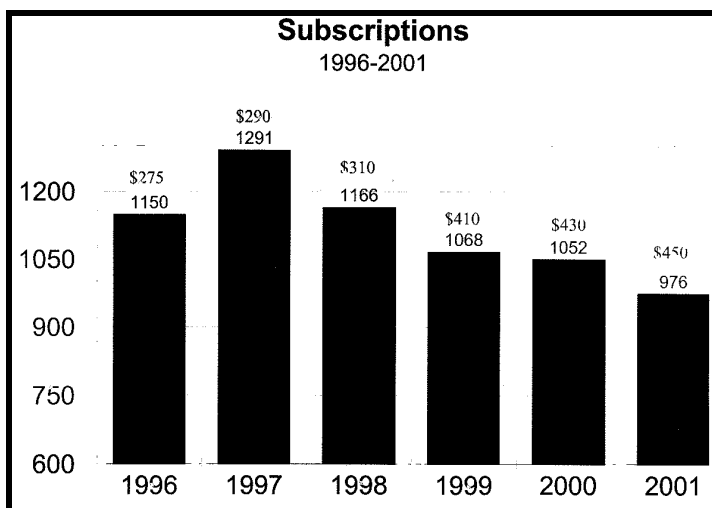
als);

**Corporate Sponsors**

We currently have 23 corporate sponsors which is one more than we had last year. A number of corporate sponsors upped their sponsorship level this year and we had a few new sponsors come on board from an email campaign we did to our members seeking new sponsors. In addition to the free memberships we give for various levels of sponsorship we offered our sponsors discounted memberships to see if we could attract any new members that way.

**Finances**

(Continued on page 11)



(Continued from page 10)

The budget has been prepared and will be presented by Mary Carrabba.

#### Local Sections

We are still working on cleaning up the local section issue and making our sections either chapters or affiliates. We still have few sections that are dragging their heels. Overall the new system of the office maintaining the local section accounts for chapters has gone well. No complaints so far.

#### Other

Resumes are now available online for students. We stuffed and mailed the student resume books, wine and cheese invites, election ballot material, final member and subscriber renewal notices, 2001 member and subscriber renewal notices, corporate sponsor promotion mailings, author mailings, and all other member marketing mailings. Once again, a special thank you goes to Volunteer Wayne Stull, Barb's husband, for his assistance with stuffing many of these mailings.

#### Journal Editor's Report Joel M. Harris, Journal Editor October 1, 2001

The operation of *Applied Spectroscopy* has run smoothly since our last meeting in October. We are currently holding the lead time from manuscript acceptance to publication at about 4.5 months. Our return/reject rate is competitive with other high quality journals, and averaged about 40% through last year. The production costs for the journal are staying within budget thanks to aggressive management of manuscript quality, length, and color production costs; in addition, we are now saving an additional — \$5,000/year in production costs by sending word processing files for initial typesetting of manuscripts. Last year, we published 238 regular articles, 13 Spectroscopic Technique papers, 12 Notes, and 6 Focal Point Articles.

The quality and impact of *Applied Spectroscopy* continue to rise as reflected in the citation statistics for articles that we publish. Quoting data from SCI's Journal Citation Reports for the most recent years available, *Applied Spectroscopy* received Citation Impact Factors of 1.848, 1.917, 2.084, and 1.948 for 1997, 1998, 1999, and 2000, respectively. This factor is the number of times that articles published in the past 3 years were cited during the year in question. The Citation Impact Factors from the last two surveys have ranked us #1 in the world for journals in the "Instruments and Instrumentation" Subject Category. The articles in *Applied Spectroscopy* have immediate impact as reflected in Citation Reports' Immediacy Index which averaged 0.29 for the past three years. This index indicates that 29% of the articles in the journal are cited dur-

ing the same year in which they are published. Despite the strong impact on current research, papers published in this journal do not lose influence over time. The citation half life of the journal is currently 6.7 years (up from 6.3 last year) meaning that scientists continue referring to our papers for many years following their publication.

Thanks to the persistent efforts of the Meggers Committee chair, Richard Palmer, the Meggers Award balloting was completed again in time to allow the year-2000 winner ("Dual Polarization Modulation: A Real-Time, Spectral-Multiplex Separation of Circular Dichroism from Linear Birefringence Spectral Intensities," Laurence A. Nafie, Syracuse University) to be featured in an award symposium at FACSS. This will continue to be a great promotion of the award-winning paper and of the Journal.

In the February issue, we published the first article of a series titled "Focus on Careers." The series is inspired by the success of a symposium at the 1999 FACSS meeting, organized by an energetic group of graduate students from the University of Florida. The series is intended to provide ideas for spectroscopists in developing and achieving their professional goals. The first article in the series is written by Wendy Cory from the University of Tennessee at Chattanooga. Wendy gave an energetic talk at the 1999 FACSS symposium on starting an academic career at an undergraduate institution, and the talk included some suggestions about how a graduate student or postdoctoral fellow could prepare for such a position. Her article in the February issue includes those ideas, as well as a clear picture of the working environment and expectations for success. I believe that this article will be a great help for students who are considering career opportunities at a 4-year college. In the August issue, Diane Parry from Proctor and Gamble wrote an article on careers in industrial spectroscopy. Diane regularly teaches a career short course at FACSS, and she drew from this course and her own experiences in writing this article. For the December issue, Nancy Miller-Ihli has written an article on careers in government laboratories. Watch for these articles and bring them to the attention of your students and colleagues.

With the help of our web-edition host, Catchword, *Applied Spectroscopy* has joined CrossRef, the major source for electronic reference linking. The Society for Applied Spectroscopy joins the publishers of more than 4,780 journals that currently participate, including the American Chemical Society, American Institute of Physics, American Physical Society, IEEE, The Royal Society and Royal Society of Chemistry, SPIE, and most major commercial publishers, to crosslink their references electronically. Citations to *Applied Spectroscopy* in electronic editions of these journals will be linked to our own web edition hosted by Catchword; from these links, readers can access our abstracts for free, and full articles by subscription or pay-per-view. Citations in our own web edition to other journals will be similarly linked to their respective web editions. This service should extend our impact and readership, and further increase the value of our web edition.

Finally, as many of you may know, several months ago, Sandy O'Neil began phasing out her work as Production and Composition Editor of *Applied Spectroscopy*, following nearly 18 years of faithful service to the journal and the Society. Sandy began working for the journal in 1984 with Bill Fateley at Kansas State University. As the Editorial Office moved to Texas and then to Utah over the past decade, oversight of the journal production and its copy editing remained in Manhattan, Kansas, under Sandy's careful management. The continuity of the journal style, format, and organization have survived the appointment of two new Editors-in-Chief, whom she has trained, cajoled, and badgered as needed. Sandy knows the journal, its history and policies. As Peter Griffiths once remarked, she is probably the only one on the planet who has read it

(Continued on page 12)

(Continued from page 11)

cover-to-cover (three times each month!). We will miss Sandy's outstanding professional contributions to the journal and her help to thousands of authors.

With the help of Jenny Jensen during a transition period, we have appointed Rebecca Airmet as the journal's new Production and Composition Editor. Rebecca graduated with honors from the University of Utah earning a BA in English, and has started a second undergraduate degree in Chemistry. She combines outstanding skills in writing and English with a background in the physical sciences.

### Newsletter Editor's Report Fall 2001

I have had good success getting Reminiscences for *The Spectrum*. The Fall 2001 issue has two such articles, one by Norman Colthup on how he created the original structure-IR spectra chart, and the other by Myron Block on the beginnings of the first commercial FTIR spectrometer. At Block's suggestion, I contacted Raul Curbelo, who was the Chief Engineer on that project, to write about the technical side of that instrument's development. Curbelo has already sent an excellent draft. Karl Norris was chosen by the New York Section for the 2001 SAS Gold Medal, and he has also agreed to write about how he developed NIR spectroscopy. I have the good fortune to know Colthup, Block, Curbelo, and Norris. There are many others with interesting stories to tell, and I ask for the help of each of you to identify them for me. It would be wonderful to collect enough of these Reminiscences to make up at least a small book. It has been my practice to have nearly all of the material for the newsletter online in .html format as soon as it is available to me. I also continued Mike Epstein's practice of putting back issues online in .pdf format. The Fall 2001 issue was put online in .pdf format at the beginning of August, at the same time that the camera-ready copy went to the printer. The .pdf version has one difference from the print edition; the SAS logo and the newsletter title on the front page are in color.

My coordination with Pete Poston on the Web site, which was already good, has been made better. Some material (e.g., the list of SAS award recipients) is repeated on the SAS Web site. Poston and I aren't trying to block duplication – which can serve a purpose – but we are doing our best to make sure that, when that material is updated in one place, it is also updated elsewhere. Poston is now allowing me to update links to the newsletter on the Web site's opening page, rather than asking him to do the updating.

Marvin Margoshes  
August 8, 2001

### SAS Membership Education Report 5 September 2001 Christian Hassell, ME Coordinator

#### New SAS Membership Education Coordinator

Steve Barnett will be assuming this position following FACSS. I have spoken with Steve several times, and am delighted to report that the Society will be gaining an enthusiastic new coordinator with many fresh ideas. I will remain available to assist as needed, but I anticipate a stronger program developing in the next year or so. He is already hard at work and has offered several ideas that are included in this report.

#### Short Courses at FACSS

For FACSS 2001 in Detroit, Jim Rydzak (FACSS Education Coordinator) and I have piloted an integrated Educational Program. The courses that would have been designated previously as "SAS Courses" have been titled "SAS/FACSS Courses", and all have been listed in all FACSS

mailings and on their website. Our hope was that this would result in better course offerings, better schedule coordination with the FACSS technical program, increased attendance, reduced operational costs, and smoother operation at the meeting. FACSS is handling advertising and registrations, and SAS will receive 40% of any net profits from joint SAS/FACSS courses.

Very few people registered for many courses at FACSS this year, and it was a struggle to proceed with the Education Program. Many courses were cancelled. For the SAS/FACSS jointly sponsored courses, we have proceeded with the following courses:

- ! Raman Imaging
- ! Chemometrics for Industrial Process Applications
- ! Process Analytical Chemistry

It is into clear whether lower registrations are related to the FACSS venue, competition with EAS and/or later registrations. We will analyze the situation in more detail following FACSS. We will also try to evaluate the relative merits of coordinating the joint education program with FACSS. Jim and I have already started working on the Educational Program at FACSS next year to tailor courses of particular interest to the pharmaceutical and biotechnology companies in the Providence area; Steve Barnett and I will work together to finish this effort.

#### Alternate Venues for SAS Courses

Steve will be exploring the possibility of holding SAS Courses at other scientific meetings. One "On The Road" course (Biological Infrared Spectroscopy) has been taught at the Biophysical Meeting, and the less than stellar reception there may have dissuaded us too much from exploring this avenue. Expansion of this idea would likely lead to new SAS members in the longer term.

#### Course Tuition

The tuition that SAS charges for courses is a frequent subject of discussion. Steve has proposed several ideas, such as offering a tuition differential equal to the cost of membership as a way to bring in new members. Another suggestion has been made to have the courses provided at no charge, or perhaps one free course per member per year.

#### Final word

It has been a privilege to serve on the Executive Committee and I look forward to serving the Society in other capacities in the future. I am confident that I leaving the Education program in better hands. Finally, I wish to express my deepest appreciation to the instructors who have so faithfully served SAS during my tenure: Peter Griffiths, Jim de Haseth, Chuck Miller, Pat Treado, Marc Lamoureux, Vahid Majidi, George Long, and Rina Dukor.

### Webpage Report FACSS 2001 Pete Poston

#### 1. Searchable Online Membership Database

Member's can now search the entire SAS membership directory online by entering a complete or partial last name. I hope to modify the current returned results to include interests. Additionally, I need to finish programming another search format that will return information sorted by local section, state, country, etc.

#### 2. Student Section and Job Listings

Students can now submit a resume and have it posted online, and there are now job postings submitted by industry. I receive approximately 3 to 4 job submissions per month.

#### 3. Forums Page

(Continued on page 13)

(Continued from page 12)

Basically a flop so far, members can engage in an online forum in various disciplines such as Atomic Spectroscopy, Raman, etc.

#### 4. Electronic Preprint Archive

Almost complete from a programming point of view. Using technical support and a Linux server at Western Oregon University, I almost have the preprint archive ready using freeware from ePrints.org. The remaining tasks include configuration of the registration page and setting up various PERL scripts to handle automated tasks such as email notification of new postings.

#### Report of the Local Section Affairs Committee August 22, 2001 Sue Evans Norris

##### Accomplished to date:

The Local Section Affairs Committee has selected both the Graduate Student Award and the Poehlman Award, which will be presented at the upcoming FACSS meeting.

Eight candidates were submitted for the Graduate Student Award, and all were impressive. In a very close vote, the committee selected Christine A. Hughey, a graduate student at Florida State University working with Dr. Alan G. Marshall, as the 2001 awardee. Christine's research has been in the field of positive ion electrospray ionization Fourier transform ion cyclotron resonance mass spectrometry (FT-ICR MS). Her work on determining elemental composition of petroleum compounds, including heavy crudes and unprocessed diesel fuels, helped to earn her this award. All candidates who are eligible next year will be urged to resubmit at that time.

Three sections were nominated for the Poehlman Award, which recognizes the Local Section that has contributed the most toward accomplishing the objectives of the Society during the preceding year. This year's winner is the Chicago section. The Chicago section had an extremely active monthly meeting schedule that was consistently well attended. Their local section newsletter and web site also were exemplary in content and informational value.

We have received no petitions for new Local Sections to date.

##### Scheduled for January, 2002:

Our second major function is to coordinate the election of the five Local Section Members to the Governing Board. This process is scheduled to commence in January 2002 and be completed by March 2002.

##### What still needs to be accomplished:

With respect to studying and making recommendations on problems affecting Local Section activities, our committee has worked on developing a local section handbook. We are compiling what has worked well for active sections to be used as guidelines for helping local sections in general. We are somewhat behind schedule and will most likely be completing this project closer to December of this year.

#### Report from the SAS Publications Committee Mark Porter

The following summarizes the activity of the Publications Committee this past year. It briefly details items of on-going business related to the Journal, the News Letter, the Web Edition, the Historical Archives, Electronic Publishing, and the Lab Guide.

Applied Spectroscopy. The Editor continues to investigate the use pdf files as galleys that can be sent to authors for proofing, as a way to even

further reduce the time between submission and publication dates. Efforts are also underway to expand the scope of the Journal in the biological and clinical areas.

Web Site. Approaches to develop an employment bureau on-line is being investigated. Searchable database (online) of membership is under development.

Electronic Publishing. The on-line usage of the Journal is increasing, and using on-line advertising has been approved.

Lab Guide. Ben Smith has taken the lead on furthering the Lab Guide development. Stay tuned.

Committee members, contributors, etc.: Mark Braiman, Martha Chapin, Paul Farnsworth, Gigi Gallinger, Vasilis Gregonou, Joel Harris, Marvin Margoshes, John Olesik, Pete Poston, and Marc Porter.

#### 2001 Tour Speaker Report Dr. David C. Lankin SAS Tour Speaker Coordinator for 2001

The 2001 Tour Speaker Program was quite successful although it was not without its interesting points. In December of 2000 all SAS sections were emailed requesting information about each section (times/dates/locations of meetings) and suggestions for speakers. The responding sections were 17/32 and only one or two provided any suggestions about speakers. Together with my resources and the suggestions from the sections, the Tour was planned. Due to time constraints it was not possible to offer choices of speakers. In fact in order to keep the Tour Program simplified I would recommend that offering choices for the sections be discontinued. It adds too much complexity to the Program.

The exchange with the Canadian Spectroscopy Society was factored in to the program although the timing was not in accordance with what I would have liked to see. Dr. Linda McGown (Duke University) gave several talks in Toronto and Ottawa and the presentations were very well received.

Several talks had to be cancelled at the last minute on due to low meeting registration and the other due to the riots in Cincinnati. Except for those two all presentations came off very well and were very well received. The technical presentations represented a broad cross section of spectroscopy applications and the speakers were very well known experts in their respective fields.

#### Society for Applied Spectroscopy Tour Speaker Program 2001

##### Dr. Robert Boto

Argonne National Laboratories

"Investigation of Structural Polymers and Nanoporous Aerogels by MRM"

"Molecular Architecture of Polymers by MRM"

"Structural Motif of Alzheimer's Beta-Amyloid by NMR and Scattering"

##### Dr. Joseph Caruso

University of Cincinnati

"Elemental Speciation into the Millennium"

"Plasma Sources for Mass Spectrometry"

##### Dr. Daniel Fiddheim

North Carolina State University

"Hybrid Organic-Metal Nanoparticle Composites for Nanoscale Elec-

(Continued on page 14)

(Continued from page 13)  
tronics and Biotechnology”

**Dr. Tim Keiderling**

University of Illinois at Chicago

“Protein and Peptide Conformational Studies with Vibrational Spectroscopy”

**Dr. Gary E. Martin**

Pharmacia Corporation

“Putting 15N NMR in Your Experimental Arsenal”

“15N - The Underutilized Structure Probe:  
Performing and Using Long-Range 1H - 15N 2D  
Experiments at Natural Abundance”

**Dr. Linda McGown**

Duke University \*

“Fluorescence Characterization of Inks for Forensic Analysis”

**Dr. Benoit Simard \***

NRC of Canada

“Laser Spectroscopy on Metal Complexes”

- Exchange speaker with the Canadian Spectroscopy Society
- 

**Society for Applied Spectroscopy  
Tour Speaker Program 2001 by Sections**

**SAS Section/ Speaker /Date**

Baltimore-Washington Section/ Joe Caruso /April 16, 2001

Chicago Section/ Joe Caruso/ April 11, 2001

Cincinnati Section/ Daniel Feldheim/ April 17, 2001 \*

Cleveland Section/ Daniel Feldheim/ April 19, 2001

Delaware Valley Section/ Joe Caruso /April 17, 2001

Detroit Section/ Gary Martin /April 23, 2001

Indiana Section /Daniel Feldheim/ April 16, 2001

Intermountain-Snake River Section /Robert Botto/ May 1, 2001

Mid-Michigan Section/ Gary Martin /April 25, 2001 \*\*

Minnesota Section /Gary Martin/ May 17, 2001

New England Section /Joe Caruso /April 19, 2001

New York Section /Benoit Simard /April 23, 2001 \*\*\*

No. California Section/ Robert Botto/ May 3, 2001

Ohio Valley Section (Dayton, OH)/ Daniel Feldheim/ April 18, 2001

Pacific Northwest Section /Robert Botto /May 2, 2001

So. California Section/ Robert Botto /May 5, 2001

(Lake Arrowhead Conference)

St. Louis Section /Tim Keiderling /April 18, 2001

\* Cancelled because of the riots in Cincinnati. \*\* Cancelled because of insufficient meeting registration; joined with Detroit section. \*\*\* Rescheduled by the section for May or June.

**2002 Tour Speaker Program - Committee Report**

**Members: Becky Dittmar, David Lankin, Patrick Limbach, Tess Freedman, John Reffner**

All SAS Sections and Tour Speaker committee members were contacted by email in April to enlist their ideas and preferences for tour speakers in 2002. A small response was received. The following speakers have agreed to participate in the Tour Speaker program. We are currently trying to find additional speakers to round out the list. Once the list of speakers is expanded (by Sept. 15), another email will be sent to the local sections to let them decide which speaker they would like to have

visit.

**Speakers - accepted Proposed Title of talk**

Dr. Brian C. Smith

*The Science and Business of Spectroscopic Consulting*

Dr. Richard Newmark

(1) *NMR of polymers*

(2) *NMR in an Industrial Analytical Laboratory*

Dr. Dan Higgins

*High Resolution Optical Microscopy and The Characterization of Thin Film Optical Materials*

Dr. Andre Sommer

*Evanescent Wave Imaging and Spectroscopy*

Dr. Susan Plunkett

*Multi-component analysis of Cigarette Combustion Gases Using a High Resolution Mid-Infrared Tunable Diode Laser Spectrometer*

Respectfully submitted,

Becky Dittmar

**Meggers Award Committee Report**

The Meggers Committee has considered the hundreds of excellent papers published last year in Applied Spectroscopy and has chosen as the one to receive the Meggers Award, the paper by Laurence A. (aka Larry) Nafie, "Dual Polarization Modulation: A Real-Time, Spectral-Multiplex Separation of Circular Dichroism from Linear Birefringence Spectral Intensities", Appl. Spectrosc., 54, 1634 (2000). Award to be given in conjunction with a symposium at FACSS.

**Strock Award Committee Report**

The Society for Applied Spectroscopy and the SAS New England Local Section has selected Dr. John Olesik to receive the 2001 Lester W. Strock Award in recognition of his outstanding work in ICP spectroscopy.

Number of votes cast for <b>President</b> (including all votes cast)	657
Necessary for election	329
Laurence A. Nafie	Winner by Majority
Thomas J. Vickers	
Jani Ingram (write-in)	
Illegal votes (vote cast for both candidates)	1
Illegal votes (no vote cast)	5
Number of votes cast for <b>Treasurer</b> (including all votes cast)	657
Necessary for election	329
Rebecca Dittmar	
Debbie Bradshaw	Winner by Majority
Jill Scott (write-in)	
Mike Epstein (write-in)	
Illegal votes (no vote cast)	16

(Continued on page 15)



**Amendments**

Number of votes necessary for adoption: 438

	Votes Cast	Yes	No	No Vote
Article IV - Membership	657	609	26	22
Article VI - Technical Sections	657	618	17	22
Article VII - Officers	657	623	10	24
Article VIII - Government	657	612	20	25
Article XVII - Amendments	657	618	15	24

(Continued from page 14)

**Lippincott Award Committee Report**

The Lippincott Award for 2001 is being presented to Dr. Lester Andrews. Lester Andrews has performed research in vibrational spectroscopy of reactive species for almost 40 years. Dr. Andrews' research in experimental measurements and quantumchemical calculations of vibrational frequencies characterizes important new chemical species such as free radicals, complexes, molecular ions, and metal-containing molecules and is one of the many reasons for his receiving this award.

**Tellers Committee Report**

**FACSS Report  
Spring 2001  
Rachel Barbour**

FACSS Governing Board met on March 8, 2001 in New Orleans, LA. Representing SAS were Rina Dukor and Rachael Barbour.

FACSS in Nashville 2000 did very well, making a \$72,000.00 profit, and was very well received by all attendees. Plans for the Detroit 2001 meeting were on track, although substantial increases in expense (especially for audio/visual and decorating) have consumed the built-in contingency funds. Concern was voiced over rising costs of the Providence 2002 meeting.

Formation of a program advisory board was discussed. It is felt that there should be a balance between making sure that programs have continuity and trying out new areas that may be of interest.

FACSS agreed to establish a reduced fee for retired persons attending FACSS that will be equal to that of the student registration.

Upcoming chairs, as far as they are known, are as follows:

	<b>Governing Board</b>	<b>General</b>	<b>Program</b>
<b>2001</b>	David Laude	Dave Coleman/Felix Schneider	David Butcher
<b>2002</b>	Mike Carrabba	Bob Michel	Mark Hayes
<b>2003</b>	Ron Williams		Jim Rydzak

The FACSS treasury was in very good shape at the time of the meeting, having a balance of \$242,383.00. Because this balance is estimated to about half the cost of the 2002 meeting, some felt that 50% of the amount could be distributed to member organizations. Others felt that, especially with costs rising, this would not be fiscally responsible. It was noted that at times during the year, FACSS could have obligations in excess of \$200,000. John Koropchac was appointed by the governing board chair to assess FACSS's long-term liabilities and what other conference policies are in terms of contingency funds. This assessment is to be presented at the fall meeting. Barry Streusand volunteered and Mary Carraba was volunteered by Rina Dukor to represent the Coblentz Society and the Society for Applied Spectroscopy, respectively, in working on this assessment.

The next Governing Board meeting will be held October 12, 2001, in Detroit.

**REPORT OF THE REPRESENTATIVE  
TO THE CHEMICAL HERITAGE FOUNDATION  
Fall 2001  
Marvin Margoshes**

Sometime this Fall, The Foundation will have the world's largest collection of laboratory instruments, thanks to a gift from Perkin Elmer. P-E's German branch has had a collection of instruments that is thought to be the largest. It includes many P-E products, and also a number of instruments from other companies. Importantly, the collection also has extensive documentation on the instruments. Operation and maintenance manuals are very useful to historians.

By late Summer, the entire collection will be sent at P-E's expense to a warehouse in Philadelphia that also houses the Foundation's instrument collection. After a brief stay there to meet the requirements for a deduction from U.S. corporate taxes, P-E will turn the collection over to CHF.

A new building is being built next to the CHF's location, which will include, *inter alia*, a museum for instruments, arts works (notable collections donated by Fisher Scientific and Dow Chemicals), and other displays. A gift of \$5 million for the museum has already been given to CHF.

The Bolton Society, an organization of collectors of antique scientific and technical books, has been formed as an affiliate of CHF. Any interested person may join.

**NEWS OF OUR MEMBERS**

Dr. Rina K. Dukor, currently Second Past President of SAS, has left her position as Senior Research Scientist / Project Manager at Vysis, Inc. after ten years of employment to devote her energies full time at BioTools, Inc. BioTools is a company she founded in 1996 with Professor Laurence A. Nafie of Syracuse University and current President-elect of SAS. BioTools, in partnership with Bomem Inc. in Quebec, Canada, sells the Fourier transform vibrational circular dichroism (FT-VCD) spectrometer known as the Chiralir. BioTools also consults with pharmaceutical companies on the determination of absolute configuration of chiral molecules with VCD and sells a variety of accessories for IR and VCD measurements of biological molecules including proteins. Last fall, BioTools announced plans to market a Raman optical activity spectrometer and plans to deliver its first system later this year. Rina says she started BioTools because she wanted people to fall in love with VCD, as she did herself in graduate school. She also mentions that her service of close to 6 years on the Executive Committee of SAS has well prepared her for the business world and most importantly for dealing with people.

We wish Rina much success in her new ventures!

## “GC and IR Make a Powerful Team”

Paul Wilks

Wilks Enterprise, Inc.

140 Water Street

Norwalk, CT 06854

In May of 1955, there was to be an American Petroleum Institute (API) meeting in St. Louis. A seminar on the composition of natural gasoline was scheduled, and I had been asked to give a paper on the use of infrared spectroscopy for this purpose.

Prior to this meeting, I spent two weeks touring North Texas oil fields that produced natural gasoline, and visiting sites where Perkin-Elmer IR instruments were being used to identify and quantify the major components that made up the material, which varied from field to field. I learned that natural gasoline, by definition, was composed of a mixture of aromatic and aliphatic components that were low-boiling, so that the material could be used directly in an internal combustion engine without further refining. I also learned that the single beam IR instruments then in use did identify the major components and provide quantitative information on the aromatic and aliphatic mix. Because a considerable amount of massaging of the rather crude spectral data they produced was necessary to convert it to useful compositional information, it took an hour or more to do a complete analysis. Another shortcoming was that IR tended to provide compositional information by molecular groups rather than by individual components.

When I arrived in St. Louis I met a friend from Baird Associates who was also giving an IR paper on the same program. As we shared a taxi from the airport into town, my friend told me he thought that our efforts in developing IR quantitative procedures for complex mixtures like crude oils were a waste of time.

“One of our group just came back from England and brought us news of a new technique called ‘Gas Chromatography’”, he reported. “It is a very simple device which consists of a column filled with an inorganic powder installed in an oven and a supply of carrier gas, like nitrogen, which passes through the column. When you inject a small amount of a liquid sample containing several components, the liquid vaporizes and its individual components are carried by the nitrogen gas through the column at varying speeds depending on their molecular weights. A conductivity detector at the end of the column detects each component as it passes by. The size of the peak measured by the detector can be used to quantify the components, and the length of time it takes for each peak to appear can give some approximation of the identity of the component.”

I gave my paper and returned to Norwalk, Connecticut. I found that the news of the new analytical method had preceded me. Harry Hausdorf, Perkin-Elmer application specialist, had also heard the paper in England and was very much intrigued by the new technology.

After some lengthy meetings on the subject we came to the conclusion that the new technology had a very large potential market but that the basic instrumentation was really only plumbing and so simple that any instrument company that wished to could bring out a gas chromatograph. We also decided that the potential market warranted a major effort to come up with a marketable instrument as soon as possible.

It was apparent to us that the term “gas chromatography” was a misnomer. Chromatography essentially means color mapping. The term came from the original use of the column to pass materials like dyes through. As the components separated they left distinctive color rings. And the materials sampled in the new system were not gases but the vapors that came from liquid as they were raised above their boiling point. Thus we chose the name ‘Vapor Fractometer’ for our instrument and introduced it at the 1956 Pittsburgh Conference.

We were right in that many other instruments rapidly entered the field, but we were wrong in attempting to correct the terminology – while GC instruments are everywhere today – some with Perkin-Elmer nameplates, the term “Vapor Fractometer” has disappeared.

As a dedicated infredder, I was convinced (wrongly!) that GC was more valuable as an adjunct to an IR spectrometer than as a standalone instrument. Every molecule has its own characteristic infrared spectrum and if you could get the spectrum of each peak produced by the chromatograph you could get a detailed identification of a mixture. This concept led to an article in the Perkin-Elmer Instrument News entitled “GC separates, IR identifies – together they make a powerful team.” Trouble is, it was and still is, not all that easy to put the two technologies together. The problem was, in those days, it took about 20 minutes to run even a low resolution spectrum and although it took an hour to run a chromatogram, each peak appeared for only a few seconds.

I continued to work on GC-IR methods at Connecticut Instrument Company (CIC) and later at Wilks Scientific. We built a turret with a series of cups into which we solidified individual peaks as they eluted from the chromatograph for later spectral evaluation. Another device held a cooled ATR plate at the exhaust port to collect a sample. We later improved this mechanism with thermoelectric coolers and valving to make it more automatic. The problem was, we collected

### Musings (Continued from page 4)

was a stumper; I only had one response, and it was wrong. I was surprised, because it is easy to find the answer. Just enter “epipolic dispersion” into Google and you’ll find the answer at <http://www.life.uiuc.edu/govindjee/biochem494/introandhistory.html>, along with other information on studies of fluorescence (which is the modern term) as early as 1565.

Why was the name of this publication changed? Simply to eliminate any confusion with other publications that have the word “spectrum” in their names. Rather than adding “SAS” to the existing masthead, I designed a new one in order to accentuate the change. Would some reader like to come up with a better design?

(Continued on page 17)

(Continued from page 16)

only one peak at a time and even though we could obtain a decent spectrum from a few micrograms of sample, if there were twenty peaks, you had to run twenty chromatograms in order to get infrared spectra of all twenty peaks.

The breakthrough came when we conceived of the light pipe approach. We had a rectangular tube electroformed that matched the cross section of the IR beam (about 5 by 25 mm), polished gold plated inside and long enough so that its volume would contain about a peak as it eluted from the chromatograph. At that time 1/4" i.d. columns were used. We placed the source optics of a Perkin-Elmer Infracord at one end of the light pipe and put the other end at the entrance slits of the monochromator. We speeded up the scanning speed of the spectrometer to about two minutes and slowed down the carrier gas flow of the chromatograph and were just about able to catch a spectrum of each peak on the fly.

About this time I got a call from Tom Dunn, who told me he was working on a new type of IR instrument and would like to apply our light pipe to it to produce an efficient GC-IR instrument. I went to his cellar laboratory in Maryland where I met Myron Block and received a demonstration of their prototype FT-IR spectrometer. I was intrigued by the fact that they could run several spectra per minute. Furthermore, it was easy to construct a circular light pipe that matched the instrument's optics (from gold coated glass tubing) that could be inserted into the instrument's optical system. The high speed interferometer and light pipe sample cells have finally brought GC and IR together into a effective and widely used quantitative/qualitative sampling system, bearing out the original premise that "GC separates, IR identifies – together they make a powerful team". And I guess I have to admit that GC, by itself, without IR, has found its own niche among analytical instrumentation.

---

## HOW TO CONTACT THE 2002 SAS EXECUTIVE COMMITTEE

### **PRESIDENT**

**Rachael Barbour**

Master Builders Technologies  
23700 Chagrin Blvd  
Cleveland, OH 44122  
ph: (216)-831-5500  
fax: (216)-831-6053  
barbour@mbt.com

### **TREASURER**

**Deborah Bradshaw**

PO Box 536307  
Orlando, FL 32853-6307  
ph: (407) 898-3823  
fax: (407) 228-9688  
70454.151@compuserve.com

### **NEWSLETTER EDITOR**

**Marvin Margoshes**

25 Maple Avenue, #3B  
Hastings-on-Hudson, NY 10706  
ph: (914) 478-0066  
SASNews@telocity.com

### **PRESIDENT-ELECT**

**Laurence A. Nafie**

Syracuse University  
Chemistry Department 1-044 CST  
Syracuse NY NY 13244-4100  
ph: (315) 443-5912  
fax: (315)-443-4070  
lnafie@syr.edu

### **PARLIAMENTARIAN**

**Augustus Way Fountain III**

US Military Academy  
Photonics Research Center  
West Point, NY 10996  
ph: (845) 938-8624  
fax: (845) 938-3062  
augustus-fountain@usma.edu

### **WEB EDITOR**

**Pete Poston**

Western Oregon University  
345 North Monmouth  
Monmouth, OR 97361  
ph: (503) 838-8218  
fax: (503) 838-8072  
postonp@wou.edu

### **PAST PRESIDENT**

**Vasilis Gregoriou**

FORTH/ICE/HT  
P.O. Box 1414  
GR 265 00 Patras  
Greece  
ph: 011 3061 965 205 fax: 011 3061 965 223  
gregoriou@terpsi.iceht.forth.gr

### **JOURNAL EDITOR-IN-CHIEF**

**Joel Harris**

University of Utah  
Chemistry Department  
315 South 1400 East  
Salt Lake City, UT 84112  
ph: (801) 581-3585 fax: (801) 581-8181  
harrisj@chem.utah.edu

### **MEMBERSHIP EDUCATION COORDINATOR**

**Steve Barnett**

8698 Elk Grove Blvd. Suite 3-219  
Elk Grove, CA 95624-3300  
ph: (916) 425-5212  
fax: (253) 322-6766  
SteveBarnettSAS@aol.com

### **SECRETARY**

**Jon Carnahan**

Northern Illinois University  
Department of Chemistry & Biochemistry-  
DeKalb, IL 60115  
ph: (815)-753-6879  
fax: (815)-753-4802  
jcarnaha@niu.edu

### **JOURNAL EDITOR**

**Paul Farnsworth**

Brigham Young University  
Department of Chemistry and Biochemis-  
try  
Provo, UT 84602  
ph: (801) 378-6502  
fax: (801) 378-9027  
paul\_farnsworth@byu.edu

### **EXECUTIVE DIRECTOR**

**Bonnie Saylor**

201B Broadway Street  
Frederick, MD 21701-6501  
ph: (301) 694-8122  
fax: (301) 694-6860  
exadsas@aol.com

## MEMBER-GET-A-MEMBER CAMPAIGN

**Save Money on Your Dues By Recruiting a Colleague!**



**Membership is the lifeblood of the Society. We need your assistance to help increase our numbers. As incentive, we are initiating a Member-Get-A-Member Campaign.**

**For each New Regular Member or for every three students you are able to recruit, we will give you a \$25 discount on your dues. There is a special member form on the opposite page that you can copy and pass out to new recruits. Just put your name on the form in the appropriate spot and when that person sends in his/her membership, we'll be sure you get the credit and dues discount.**

### SAS Seeks Governing Board Delegates

Have you always wanted to have a say in how your professional Society runs? If so, the Society for Applied Spectroscopy wants you to be a delegate to its Governing Board. SAS is seeking qualified individuals who are interested in being delegates to the Society's Governing Board meeting in Providence, Rhode Island on Tuesday, October 15, 2002 and at subsequent meetings which are held in conjunction with the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) meetings. If elected to the position, you will be required to vote on Society business at the meeting. A travel honorarium of \$200 per meeting served will be given to those who are elected.

Qualifications include being a regular member in good standing of SAS and having an interest in the well-being of the Society. All applications will be reviewed by the SAS Nominating Committee for eligibility. International members are encouraged to apply. Qualified candidates will be voted on by the membership at-large in July 2002. **Five delegates will be elected to serve for a total of two years. You MUST be able to attend both Governing Board Meetings (2002-2003).**

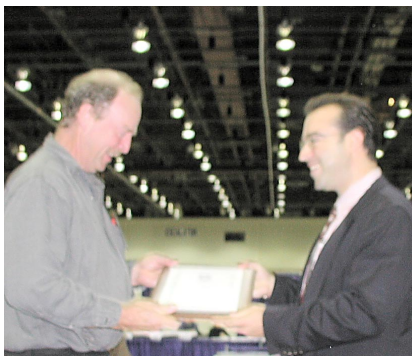
If you are interested in serving your professional society in this way, please submit your name, any relevant qualifications you feel would help the membership at-large determine whether you would be a good delegate, and the answers to the following question: **What are the challenges facing SAS and how can we meet these challenges?** Please limit your answer to 500 words.

Please send all nominations to [sasoffice@aol.com](mailto:sasoffice@aol.com) or, if you prefer to mail your nomination, please send a hard copy with a disk to Dr. Rina Dukor, Nominating Committee Chairman, c/o SAS, 201B Broadway Street, Frederick, MD 21701. **No nominations must be received by March 15, 2002.**

Please call the Society office at 301-694-8122 if you have any questions

### More Photos from FACSS 2001

Special appreciation awards were presented to outgoing officers Rina Dukor and Mary Carrabba, and to office staff member Victor Hutcherson



These are this year's winners of the SAS Student Poster Award: Len Harris, Christine A Hughey, Jitraporn Vongsvivut, and Eun Jeong Cho (not in order). Yes, that is the same Christine Hughey who is shown on p. 20 receiving the Graduate Student Award.

## Society for Applied Spectroscopy

201B Broadway Street  
Frederick, MD 21701-6501  
(301) 694-8122 Fax: (301) 694-6860



## 2002 MEMBER-GET-A-MEMBER

(Forms received after July 1 are entered for the following calendar year)

Sponsors Name:

Name

Organization

Street Address

City, State, Zip

Province/Country

Phone

Fax

E-mail

What are your areas of expertise? Please choose a **maximum** of five (5) techniques/methods and circle your **primary** area.

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Acoustic Measurements (QCM) | <input type="checkbox"/> Flow Injection Analysis (FA) | <input type="checkbox"/> Plasma Spectroscopy (PLA)         |
| <input type="checkbox"/> Acoustic Measurements (SAW) | <input type="checkbox"/> Fluorescence (FLR)           | <input type="checkbox"/> Raman/FT-Raman (RAM)              |
| <input type="checkbox"/> Atomic Absorption (AA)      | <input type="checkbox"/> ICP, ICP-MS (ICP)            | <input type="checkbox"/> Remote Optical Sensing (ROS)      |
| <input type="checkbox"/> Atomic Emission (AEM)       | <input type="checkbox"/> IR/FTIR (IR)                 | <input type="checkbox"/> Sample Preparation (SMP)          |
| <input type="checkbox"/> CD/VCD (CD)                 | <input type="checkbox"/> Mass Spectrometry (MS)       | <input type="checkbox"/> Scanning Probe Microscopies (SPM) |
| <input type="checkbox"/> Chemometrics (CHE)          | <input type="checkbox"/> Microscopy (MCS)             | <input type="checkbox"/> SFG/SHG (SFG)                     |
| <input type="checkbox"/> Chromatography (CHR)        | <input type="checkbox"/> Microwave Spectroscopy (MWS) | <input type="checkbox"/> Surface-Enhanced Raman (SER)      |
| <input type="checkbox"/> Colorimetry (COL)           | <input type="checkbox"/> Molecular Spectroscopy (MOL) | <input type="checkbox"/> Ultrahigh Vacuum Methods (UHV)    |
| <input type="checkbox"/> Electrochemistry (ELE)      | <input type="checkbox"/> Near Infrared (NIR)          | <input type="checkbox"/> UV-VIS (UV)                       |
| <input type="checkbox"/> EPR (EPR)                   | <input type="checkbox"/> NMR (NMR)                    | <input type="checkbox"/> X-Ray (XR)                        |
| <input type="checkbox"/> Far-IR (FIR)                | <input type="checkbox"/> Phosphorescence (PHO)        | <input type="checkbox"/> Other _____ (OT)                  |

Please check all application areas of interest to you.

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Analytical Chemistry (ANC)    | <input type="checkbox"/> Medicine (MED)            | <input type="checkbox"/> QA/QC (QA)                              |
| <input type="checkbox"/> Biochemistry/Biophysics (BIO) | <input type="checkbox"/> Metals and Alloys (MAA)   | <input type="checkbox"/> Semiconductors (SC)                     |
| <input type="checkbox"/> Chemometrics (CHE)            | <input type="checkbox"/> Nanotechnology (NAN)      | <input type="checkbox"/> Sensors (SEN)                           |
| <input type="checkbox"/> Clinical Chemistry (CC)       | <input type="checkbox"/> Organic Chemistry (OC)    | <input type="checkbox"/> Standards and Reference Materials (STD) |
| <input type="checkbox"/> Colloids, Emulsions (CEM)     | <input type="checkbox"/> Paints and Coatings (PAC) | <input type="checkbox"/> Surface Science (SS)                    |
| <input type="checkbox"/> Environmental Analysis (ENV)  | <input type="checkbox"/> Petrochemical (PET)       | <input type="checkbox"/> Surfaces & Interfaces (SAI)             |
| <input type="checkbox"/> Forensics (FOR)               | <input type="checkbox"/> Pharmaceuticals (PAR)     | <input type="checkbox"/> Toxicology (TOX)                        |
| <input type="checkbox"/> Inorganic Chemistry (INO)     | <input type="checkbox"/> Physical Chemistry (PC)   | <input type="checkbox"/> Trace Analysis (TRA)                    |
| <input type="checkbox"/> Instrument Development (INS)  | <input type="checkbox"/> Polymer (POL)             | <input type="checkbox"/> Other _____ (OT)                        |
| <input type="checkbox"/> Materials (MAT)               | <input type="checkbox"/> Process Control (PRC)     |  |

Please tell us your professional classification: (Please choose **only one**.)

- |  |  |                                     |
|--|--|-------------------------------------|
| <input type="checkbox"/> Clinical Laboratory or Hospital | <input type="checkbox"/> Academic/Non-Student                  | <input type="checkbox"/> Retired    |
| <input type="checkbox"/> Commercial Laboratory           | <input type="checkbox"/> Student                               | <input type="checkbox"/> Unemployed |
| <input type="checkbox"/> Consultant/Self Employed        | <input type="checkbox"/> Industry                              | <input type="checkbox"/> Other      |
| <input type="checkbox"/> Government Laboratory           | <input type="checkbox"/> Instrument Manufacturing or Marketing |                                     |

What is your current position?

- |  |  |   |                                      |  |
|--|--|---|--------------------------------------|--|
| <input type="checkbox"/> Faculty                     | <input type="checkbox"/> Academic Dept. Head | <input type="checkbox"/> Academic Dean                  | <input type="checkbox"/> Student     | <input type="checkbox"/> Post-doc or Research Fellow |
| <input type="checkbox"/> Scientist                   | <input type="checkbox"/> Technician          | <input type="checkbox"/> Engineer                       | <input type="checkbox"/> Lab Manager | <input type="checkbox"/> Instruments Applications    |
| <input type="checkbox"/> Consultant                  | <input type="checkbox"/> Technical Writer    | <input type="checkbox"/> Specialist/Technical Marketing |                                      | <input type="checkbox"/> Instrument Company Manager  |
| <input type="checkbox"/> Other Manager/Administrator |  | <input type="checkbox"/> Senior Officer or Owner        |                                      | <input type="checkbox"/> Not Currently Employed      |
| <input type="checkbox"/> Other                       |  |   |                                      |  |

## 2002 MEMBERSHIP CATEGORIES AND FEES (All memberships include both a print and online subscription to *Applied Spectroscopy*)

	USA	CANADA/MEXICO	ALL OTHER SURFACE	ALL OTHER AIR MAIL
Regular	<input type="checkbox"/> \$70.00	<input type="checkbox"/> \$85.00*	<input type="checkbox"/> \$110.00**	<input type="checkbox"/> \$130.00*** *Includes \$15.00 for postage and handling.
Interim	<input type="checkbox"/> \$40.00	<input type="checkbox"/> \$55.00*	<input type="checkbox"/> \$80.00**	<input type="checkbox"/> \$100.00*** ** Includes \$40.00 for postage and handling.
Student	<input type="checkbox"/> \$30.00	<input type="checkbox"/> \$35.00*	<input type="checkbox"/> \$50.00**	<input type="checkbox"/> \$80.00*** *** Includes \$50.00 for air mail and handling
Retired	<input type="checkbox"/> \$30.00	<input type="checkbox"/> \$30.00	<input type="checkbox"/> \$30.00	<input type="checkbox"/> \$40.00***

Students must provide student identification.

## ◆◆◆◆ Payment Information ◆◆◆◆

Total amount due: \$

☐ Enclosed is my check payable in US dollars, drawn on a US bank, to the Society for Applied Spectroscopy.

Charge to my ☐ VISA ☐ MasterCard ☐ Discover ☐ American Express

Account Number:

Expiration Date:

Cardholder's Name:

Signature:

If you have any questions, please call (301) 694-8122. Be sure to return this entire form with your membership payment to:  
Society for Applied Spectroscopy, 201B Broadway Street, Frederick, MD 21701-6501 or fax to (301) 694-6860 (MCM02)



## Some Views from FACSS 2001



President Vasilis Gregoriou presenting Honorary Membership plaque to Peter Griffiths.



Distinguished Service awardees Nancy Miller-Ihli and John Jackovitz



Laurence Nafie expressing his thanks for the Meggers Award



Lester Andrews accepting the Lippincott Award



John Olesik receiving the the Strock Award.



Graduate Student Award Winner Christine Hughey



Lars Magnusson (So. Illinois Univ.) proudly shows his Student Membership Card. He has already used the opportunity to post his resumé on the SAS Web site.



Doug Shrader accepting the Pochlman Award on behalf of the Chicago Section.

More photos from FACSS 2001 on p. 18