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## WHEN RESONANCE MADE WAVES .....5

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**October  
2004**

**PERIODICAL**

# FIFTY YEARS AGO IN *THE SOUTHWEST* *RETORT*

Fort Worth will be the site of the Southwest Regional ACS Meeting to be held Dec. 2-4 at the Hotel Texas. The General Committee for the meeting consists of **E. W. Nance** from Armour & Co., **A. F. Whipple** from Globe Labs, and **Norris Brown** from Industrial Scientific Co. The Awards Committee Chair is **Price Truitt** and the Technical Program Chair is **Harold Jeskey**.

The featured speaker at the meeting will be **Dr. Joel H. Hildebrand** of UC-Berkeley and President of the ACS. Among the visiting chemists are **John C. Bailar, Jr.** of the University of Illinois and **Philip W. West** of LSU. Speakers at the Symposium on Petroleum Chemistry include **Nelson P. Stevens** of Magnolia Petroleum, who will talk on "Origin of Petroleum—A Review" and **Norman Hackerman** of the University of Texas in Austin, who will speak on "Corrosion in the Petroleum Industry." **E. S. Lewis** of Rice will chair the Symposium on Organic Reactions.

The October tour speaker for the Southwestern ACS sections will be **Dr. Paul Delahay** of LSU. His lecture will be on "New Instrumental Methods in

Electrochemistry."

New faculty members at the Texas State College for Women (now Texas Woman's University) are **Dr. Harold T. Baker** and **Dr. William L. Mecay**. **Helen Ludeman** earned her Ph.D. in textile technology at TSCW this summer. **Dr. C. T. Kenner** of SMU went to Oak Ridge this summer to participate in a course on Radioisotope Techniques.

A new member of the Texas A&M chemistry department is **Dr. Ralph A. Zingaro**. **Drs. Robert Thompson, Tom Burkhalter, Henry Rakoff** and **Furman Isbell** all worked in industry last summer.

In June Baylor University granted the first Ph.D. degree in the history of the school. The degree was given to **Joe Johnson**. His thesis was titled "Catalyzed Acid Hydrolysis of *trans*-1,3-Dichloro-2-butene Containing Radioactive Chlorine" The work was carried out under the direction of **Professor Virgil Tweedie**. Dr. Tweedie and a group of 17 students recently made a two day tour of chemical plants in the Houston area. Dr. and Mrs. Tweedie are the proud parents of a daughter born on August 11.



# Southwest Retort

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# Southwest Retort

FIFTY-SEVENTH YEAR

OCTOBER, 2004

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## WHEN RESONANCE MADE WAVES

By István Hargittai, Budapest University of Technology and  
Economics

P. O Box 91, H-1521 Budapest, Hungary

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*Editor's Foreword. I first saw the late, lamented magazine The Chemical Intelligencer at the Spring, 1995 ACS meeting at which Springer-Verlag was giving away free copies. I read the article we are now reprinting by Editor István Hargittai and was hooked. I promptly subscribed to the magazine, and I was sorry when the publishers discontinued the magazine after a few years. The magazine was not intended to be a research journal but rather an informative and entertaining publication for chemists similar to The Mathematical Intelligencer.*

*The very youngest chemists today have no memories of the cold war between the Soviet group and the western powers, and even chemists of an intermediate age may not recall the rivalries. However, chemists "of a certain age" remember the intense political and military rivalries which carried over into other areas. In the Soviet system everything, including science, had to be subservient to Communist political theory. In music during the Stalinist era, the greatest Soviet composers such as Prokofiev, Shostakovich, Khatchaturian, and Miaskovsky were subjected to attacks by party hacks in 1948 for "decadent formalism" and for being infected by Western musical*

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*thinking, "resulting in music far removed from the masses." In the '30's T. D. Lysenko caught the ear of Stalin, and he exercised a pernicious control over biology. Biologists who espoused Mendelian genetics could wind up in forced labor camps, lose their positions, and, in a few instances, lose their very lives. Chemistry was not immune to these problems, as the reprinted article shows.*

*Is this just an interesting tale about a decadent system long gone, or are there any lessons for the present day U.S.A? Are we scientists immune from such outside pressures? Look at the efforts exerted to prevent evolution from being taught in secondary schools. Are scientific results on global warming being deliberately downplayed by governmental bodies? The potential for scientific results being trimmed to conform to prevailing thought will always be with us. We must be alert to this pressure and never give in to it.*

I was appointed University Professor in 1991. The Diploma of University Professor was signed by the President of Hungary, and it was handed to me by the Secretary of State for Education and Culture. The brief formal ceremony was followed by an informal reception.

It was obvious that the Secretary, himself a former college professor, had read my curriculum vitae. He knew that I had done years of study in Moscow and later spent years at various U.S. universities as well. He asked me whether it was depressing to look back to the darkness of my Moscow years as compared with the freedom I must have experienced in the American laboratories. It was a leading question. In 1991, so soon after the great political changes of 1989-90, many people tried to dissociate themselves from past Soviet connections. This made me feel a little defiant. I told the Secretary that, regardless of the external political system, inside the laboratory I did not feel any difference. In fact, my four years at Moscow State University, 1961-1965, were during Khrushchev's "thaw." That period carried the promise of change. Also, Moscow

State University was a great school with excellent teachers and students and with often vibrant discussions in the laboratory. Besides, I was in my early twenties at the time.

All that I told the Secretary was true. Eventually, however, I have felt that my response to his question was not quite complete. Even during the sixties, ideology was penetrating the laboratory. A case in point was the nonacceptance of the concept of electronegativity. It was nothing like what had happened with regard to the theory of resonance, though, during the early fifties in the Soviet Union.

#### **An Episode**

Sometime during the late eighties during a molecular structure meeting in Austin, Texas, we were having a late-night conversation, and the theory of resonance came up. A Soviet colleague and I quite surprised our Western colleagues when we mentioned the ostensibly grave ideological implications of this theory. In the fifties this theory was heresy in the eyes of Soviet officialdom. For me it was only history, but I remembered that I had read a whole volume about it, containing the minutes of a big

meeting against resonance. I mentioned this book and painted a rather gloomy picture of the whole affair. The Soviet colleague tried to soften our Western colleagues' surprise. He told us that none of the proponents of the resonance theory had lost his or her life for advocating this theory. At most, some may have lost their jobs. The atmosphere froze immediately in that warm Texas night.

A little while later, I received two letters about that Texas encounter. An American friend wrote that he found the joke cruel and not funny at all. Obviously, he did not think that the story was true. The Soviet colleague also sent a letter. He apologized for having sounded as if he were belittling the situation, but, he continued, surely I must have known that ideological differences did cost lives in other branches of science, so chemistry did not fare so badly, after all.

There seems to be a widespread ignorance of the resonance controversy in Soviet chemistry among most in the West and among the younger generation of chemist in Russia as well. I don't even know whether the story can teach us anything today. They say, however, that "those who cannot remember the past are condemned to repeat it."<sup>1</sup> Having this in mind and in view of the inherent historical interest of the story, I thought it worthwhile to bring it up in these pages. Hence, I will present here a brief review of the minutes of that ominous meeting I had referred to in our Texas conversation. I have inserted only a few of my own comments in braces.

#### **The Minutes of the Meeting**

The minutes of the meeting were published in *Sostoyanie Teorii*

*Khimicheskogo Stroeniya v Organicheskoi Khimii (The State of Affairs of Chemical Structure Theory in Organic Chemistry)*. Izdatel'stvo Akademii Nauk SSSR (Publishing House of the Soviet Academy of Sciences): Moscow, 1952; 440 pp. This volume is not a light booklet. It is a heavy, hardbound volume of densely printed pages. (It makes heavy reading, too.) The title page is shown in Fig. 1 (**Note from ETS. No figures from the article are reproduced herein.**)

The Chemistry Division of the U.S.S.R. Academy of Sciences held a four-day, all-union conference between June 11 and June 14, 1951, in Moscow. The subject of the meeting was the structure theories of organic chemistry. Four hundred and fifty chemists, physicists, and philosophers attended. They represented major centers of scientific research and higher education all over the Soviet Union. A report entitled "The State of Affairs of Chemical Structure Theory in Organic Chemistry," compiled by a special commission of the Chemistry Division, was presented, followed by 43 oral contributions. An additional 12 contributions were submitted in writing. The conference adopted a resolution and sent a letter to I.V. Stalin.

The letter to Stalin expressed self-criticism for past deficiencies in appreciating the role of theory and theoretical generalizations in chemical research. This has resulted, the letter added, in the spreading of the foreign concept of "resonance" among some Soviet scientist. This concept was an attempt to liquidate the

materialistic foundations of structure theory. However, the letter continued, Soviet chemists have already started their struggle against the ideological concepts of bourgeois science. They have unmasked the falseness of the so-called "theory of resonance" and would cleanse Soviet chemical science from the remnants of this concept, the letter concluded.

During the meeting, there were repeated references to Stalin's teachings on the importance of the struggle between differing opinions and of the freedom of criticism. [George Orwell's doublespeak of 1984 pales by comparison.]

The report of the Chemical Division was submitted to the meeting by Academician A. N. Terenin on behalf of the special commission. [The names of the members of this commission and many of the names of the speakers participating in the subsequent discussions read like a who's who of Soviet chemistry. There were many academicians among them and also many future academicians.] The report consisted of the following chapters:

1. Butlerov's teaching and its role in the development of chemistry
2. The development of structure theory during the second half of the nineteenth century and the first half of the twentieth century
3. Advances of Soviet organic chemistry
4. Quantum chemistry and structure theory
5. About the so-called "theory of resonance"
6. On the mistakes of some Soviet chemists
7. Current state of Butlerov-Markovnikov's teaching on the

intramolecular interactions of atoms and on reactivity.

8. Perspectives on further development of structure theory.

These are telling titles and I mention a few points from Chapter 6 only. Here we learn that Professor G. V. Chelintsev had criticized actively the concept of "resonance" in the press. It was mainly owing to him that Soviet scientific society had turned to this question. It was noted, however, that the basis of his criticism was his own "new structure theory," which completely contradicted the modern theory of chemical structure and was contrary to the experimental facts and theoretical foundations of quantum physics.

Ya. K. Syrkin and M.E. Dyatkina were named as the main culprits in disseminating the theory of resonance in the Soviet Union. They were accused of having even further developed the erroneous concepts of Pauling and Wheland, of ignoring the works of Soviet and Russian scientists, of idolizing foreign authorities, and of quoting even works of secondary importance by American and English authors.

Others were mentioned, among them the organic chemist A.N. Nesmeyanov. He, along with R. H. Freidlina, interpreted the diverse reactivity of chlorovinyl compounds of mercury and other quasicomplex compounds in terms of the "resonance" between their covalent and ionic structures. These lesser sinners, along with many others, however, had eventually repented and had themselves become critics of the application of "resonance."

The report, as well as the

subsequent contributions, was followed by questions and answers. Perhaps the most important question was about the idealism of the concept of resonance. The answer to this question started with a quotation from V.I. Lenin, according to which philosophical idealism was a one-sided exaggeration of an insignificant feature of the cognitive process. Such a feature was then detached from the matter and from nature and made into something absolute. The answer then turned to the concept of resonance, where the insignificant features of the cognitive process were specified to be the individual components of the approximate computation techniques employed in the calculation of the molecular wave function. They were made into something of primary importance, as if objectively existing in the molecule, and as if determining a priori the molecular properties. In reality, it was further explained, the resonance structures and their resonance were torn from the matter, and the theory of resonance became an absolute above the matter.

[If it sounds complicated, it is complicated. The sentences were formulated very carefully as the matter was extremely sensitive. The atmosphere was like that of a trial rather than that of a scientific discussion. The problem was not that the theory of resonance was criticized. There are chemists who do not like the description of a molecular structure by a series of resonance structures. What is frightening and mind-boggling is that such a dislike was made into an official dogma with philosophical justification.]

Only a small, although very vocal, group of chemists attacked blindly the theory of resonance and even more those whom they declared to be its proponents. They also attacked quantum chemistry and all of the science of the West. They advocated a return to historical Russian results and suggested that their own theories be used. These theories, however, had been shown to be worthless nonsense by many. However, all those present painstakingly dissociated themselves from the theory of resonance. At times the self-criticism of some excellent scientists was humiliating in the extreme.

It was characteristic of the atmosphere of the meeting that a philosopher (B.M. Kedrov) declared Schrödinger to be a representative of modern "physical" idealism. This made Schrödinger a relative of Pauling's. Furthermore, he stated that Dirac's superposition principle was as idealistic as Heisenberg's complementarity principle and even more idealistic than Pauling's theory of resonance.

Another speaker, a writer (V.E. L'vov), criticized the report for a serious political error, namely, that the protagonists of the theory of resonance were equated with the greatest Soviet scientists. These protagonists had been unmasked as spokesmen of the Anglo-American bourgeois pseudoscience by the press and Soviet society. According to L'vov, the report was vague about the main thrust of the ideological struggle taking place in theoretical chemistry. He also quoted, as a positive example, the criticism of Mendel by T.D. Lysenko, who proved that Mendel's work had nothing to do with the

science of biology. Furthermore, L'vov attacked fiercely the theories of Heisenberg as well as those of Heitler and London. He protested the report's view of quantum mechanics as a development of Butlerov's teaching. The most important political task of Soviet chemistry, he declared, was the isolation and capitulation of the insignificant group of unrepenting proponents of the ideology of resonance.

[To me it is a great puzzle why a concept as innocent as the resonance of chemical structures triggered a reaction of such enormous proportions. I cannot offer any rational explanation. An important contributing factor, though, may have been the fear of foreign ideas. The story of resonance should not be viewed in isolation from the rest of Soviet life in the early fifties, the last years of Stalin's reign. To me a question that is most telling was that asked of M.E. Dyatkina: "How do you explain that you are so conspicuously familiar with the teachings of foreign scientists? May it be that you, along with Professor Syrkin, are intentionally bowing to foreign scientists?"

Reading this accusation brings back some personal memories. In 1965, as a Master's student at Moscow State University, I traveled every week to the Institute of Inorganic Chemistry of the Soviet Academy, where Professor Dyatkina was giving a not-for-credit course, something like Structural Inorganic Chemistry. The large auditorium was always packed with research workers and graduate students. Professor Dyatkina would basically tell us about her readings

of the previous week and her interpretation of recent literature. She was not a colorful lecturer, yet she held our attention fully. She was also our living library, library facilities being scarce.]

The last entry in the minutes of the meeting is a dissenting opinion in the form of a short letter by E.A. Shilov, member of the Ukrainian Academy of Sciences. He was critical of the report and the resolution of the meeting for looking so much backward rather than forward. He suggested concentrating on new results and new teachings instead of conducting scholastic debates about questions such as where does resonance end and mesomerism and how does the "healthy" mesomerism of Soviet authors differ from Ingold's "erroneous" mesomerism and how can ideal structures be considered real at the same time. The result of ending such debates would be, Shilov added, that the efforts and time of Soviet organic chemists could be devoted to valid and productive work. This contribution was not delivered as an oral presentation during the meeting.

#### **A Final Note**

It is an irony of history that in 1952 the already world-famous Linus Pauling was denied a passport by the U.S. State Department based on his leftist politics.<sup>2</sup> This happened exactly at the time when the theory of resonance, associated primarily with Pauling's name, was vehemently attacked in the Soviet Union. The attackers might have asked Professor Pauling himself about the ideological implications of his chemical resonance theory. He could have explained that "the several structures that are used in the description of a molecule such as

benzene by application of the theory of resonance are idealizations, and do not have existence in reality.”<sup>3</sup> Such an interpretation would have taken the ostensibly alien and harmful edge off the theory of resonance, had the accusers been interested in his explanation. According to a later Soviet evaluation of the affair, “The minutes of the meeting is one of the most shameful documents ever created by a collective effort of scientists, and God only knows when it will be possible to wash off this disgrace”.<sup>4</sup>

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#### **ACKNOWLEDGMENT**

Professor J. E. Boggs’ (Austin, Texas) comments on this manuscript were very helpful.

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*Chemical Bond*, 3<sup>rd</sup> ed; Cornell University Press: Ithaca, NY, 1960; p 287.

4. Okhlobystin, O. Yu. *Zhizn’ i Smert’ khimicheskikh idei (Life and Death of Chemical Ideas)*; Nauka: Moscow, 1989; p 184.

[Fox Scientific Ad]

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2. Serafini, A. *Linus Pauling. A Man and His Science*. Paragon House: New York, 1989.

3. Pauling, L. *The Nature of the*

# RIBBON-CUTTING FOR NEW UNT CHEMISTRY BUILDING!!

The official ribbon-cutting for the new Chemistry Building at UNT will be Homecoming Day, 3:00 p.m., Oct. 23, with a reception and tours following from 3:30-5:30 p.m. The new Chemistry Building is located at the corner of Hickory and Avenue C. Among the many outstanding and modern features of

the building will be Welch Professor Borden's facilities and a Donor Periodic Table inlaid in the courtyard. Also, leading up to the building will be Element Discovery Timeline stones (East Terrace) and Chemical Historical Event Timeline stones (West Terrace).

## CEPA AND GLOBALIZATION

Globalization, offshoring, insourc-ing, outsourcing, jobless recovery. You have heard *all* these terms. The ACS Committee on Economic and Professional Affairs (CEPA) has formed an active Task Force on Globalization Issues to "monitor, communicate, coordinate, and cooper-ate" with others on globalization and how it relates to employment in the chemical industry. The task force includes liaisons from Corporation Associates, Committee on International Activities, Committee on Science, Divisions of Professional Relations, Business Development and Manage-ment, Small Chemical Businesses, and other interested parties. At the ACS meeting in Philadelphia, CEPA hosted a successful first Open Forum for all ACS members to voice their views on globalization issues, and

different perspectives were shared.

Please visit the CEPA website, <http://www.chemistry.org/committees/cepa/index.html>, for more details on the activities of this task force, a bibliography with abstracts of pertinent publications on globalization, CEPA symposia, and presentations related to globalization. Coming soon is a Message Board where you are invited to enter your opinions and comments on globalization issues, especially as they relate to your job and career!

[Chemir Ad]

## MARSHALLS WIN HISTORY

# AWARD

One of the high points in the Sept. 30 SWRM 2004 symposium on "Perspectives in the History of Chemistry" was the awarding of a prize to UNT Chemistry Professor Jim Marshall and his wife Virginia Marshall for the best paper published in the 2003 *Bulletin for the History of Chemistry*. The Marshalls won for their paper "Ernest Rutherford, the 'True' Discoverer of Radon," published in Volume 28, pp. 76-83. After the morning session of the symposium, ACS History Division Chair Dr. David Lewis gave each of them a \$100 check and certificates for \$150 worth of books from the Chemical Heritage Society. At the symposium dinner that evening, each received a plaque as well. The Marshalls' paper made the point that Ernest Rutherford rather than Ernst Dorn should be given the credit for the discovery of radon. Their discovery was a spin off of their "Rediscovery of the Elements" project. They have been traveling to the various sites of the original discoveries of the chemical elements for nearly six years. When they traveled to Halle, Germany, they

were able to examine the original report of Dorn's work. Dorn clearly made no speculation regarding the radioactive emanation that turned out to be radon gas.

The Marshalls were featured in



the Aug. 23, 2004, issue of *Chemical and Engineering News* (pp. 28-29), and present plans are that science writer Alexandra Witze will publish a piece on them in an October issue (maybe Oct. 18) of *The Dallas Morning News*. Since Jim was Managing Editor of *The Southwest Retort* for eight years, your *Retort* staff takes particular pleasure in this prestigious award. It couldn't happen to a nicer pair of people. □



I think that I had better remain as I am. I had better follow the light of my reason, be true to myself, express my honest thoughts, and do the little I can for the destruction of superstition, the little I can for the development of the brain, for the increase of intellectual hospitality and the happiness of my fellow-beings. One World at a Time. --Robert G. Ingersoll

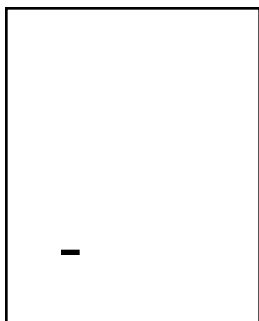


# YOU CAN GO HOME AGAIN TRINITY VALLEY'S PAUL PRICE WINS SCHULZ AWARD

By E. Thomas Strom

At the risk of contradicting Thomas Wolfe, the career of high school chemistry teacher Paul Price shows that "You Can Go Home Again" and sometimes quite success-fully, too. This one-time Trinity Valley High School graduate is now teaching at his alma mater, and his efforts have resulted in his winning the 2004 Schulz Award for Outstanding High School Chemistry Teachers. Paul will receive his \$1500 honorarium and plaque at the D-FW ACS Section's November meeting to be held Nov. 9 at Trinity Valley High School (see November meeting notice on p. 27).

Paul Price was born in Fort Worth in 1970 and graduated from Trinity Valley in 1988. Both



parents were math professors at the Southeast Campus of Tarrant County Community College.

They felt that more one-on-one interaction was possible in private schools than in public schools, so Paul attended Arlington Country Day School through 8<sup>th</sup> grade and then

high school at Trinity Valley. Because the AP program in chemistry was new at that time, Trinity Valley was actually stronger in math and biology back then rather than chemistry. Paul feels that one strength of private schools is that teachers are allowed to teach a student what ought to be taught rather than having to follow some state-decreed mandate. That ability to learn how to learn is critical, and Trinity Valley does a great job of teaching that.

After graduation, Paul went to Southwestern University in George-town with the idea of being a biomedical engineer. He had had three years of biology at Trinity Valley with his only chemistry being taken his junior year. At Southwestern he took chemistry, physics, and calculus his freshman year. He enjoyed the mathematical aspects of chemistry a great deal and decided to take a double major in chemistry and mathematics with a minor in physics. Ironically, he never took another biology course in college.

Paul graduated in 1992 *summa cum laude* with a 4.0 average, one of three valedictorians. He decided he wanted to work in theoretical physical chemistry, so he entered the University of Wisconsin. He wanted to be at the interface of chemistry, mathematics, and physics. At that

time computer power had evolved, so one could hope to study multiatomic systems at the *ab initio* level. There was a fine theoretical chemistry tradition at Wisconsin, but good experimental opportunities were there as well. Paul wanted the option of going either way, but he wound up doing theoretical research with Ned Sibert. Then the hand (or perhaps foot) of fate intervened via a basketball injury. Paul is six feet five inches tall, and he loved playing intramural basketball. He suffered a severe fracture to his foot in an intramural game, and it set back his research program.

During the time he was healing from his injury, he accessed his job opportunities. He had wanted to take an academic position. However, the improved academic job market ACS thought would occur in the late '90's wasn't happening, probably because of increased use of adjunct professors. Also, Paul was interested in small liberal arts schools, and they probably wouldn't be interested in theoretical physical chemists. Since he always had been interested in teaching, he decided to end his graduate studies with a master's degree and look into teaching at secondary schools.

Paul obtained his master's degree in May, 1997, and then taught for the summer at Tarrant County Community College. He then signed a contract to teach at the Hockaday School, replacing previous Schulz Award winner Dr. Bob Roe, who was retiring. After one year at Hockaday, a position opened up at his alma mater, Trinity Valley. Hockaday generously released him from his contract, so he did come home again. He was fortunate, because

independent schools, such as Trinity Valley, have long-tenured faculty. He had always wanted to teach AP chemistry, and after one year he was able to do so.

In contrast with some past Schulz Award winners, Paul's students do not do science fair projects. The mission of Trinity Valley is college preparatory, involving well-rounded students who take part in extracurricular activities. Consequently, there is very little free time for science fair projects. However, judging by the scores on AP tests, Paul's students have clearly learned their chemistry. Scores on AP tests range from 1 to 5. These scores very roughly coincide with the F to A range for freshman chemistry. If a student gets a 4 or 5 on the AP test, good schools will give them credit for freshman chemistry. In the last few years 23 of 31 students in Paul's AP classes have made 5's with the rest getting 4's. Some of his students have moved directly into organic chemistry and done well.

A high school chemistry teacher has no support staff. He/she has to prepare labs, run the stockroom, prepare new labs, and, oh yes, prepare the lectures and grade the tests and the homework. Good time management is a must.

When queried about block scheduling, Paul emphatically said "Block is horrible!" Students are not ready to be lectured to 80-90 minutes a day. Of course, block would be nice for labs, so you really have to be creative with just five 50 minute periods a week. For the sophomore chemistry course, not the AP course, you have to serve two masters. This may be the last

chemistry course the student will ever have. On the other hand, he/she may wind up taking chemistry in college. What do you teach? Paul does not think the ACS Chem Com (Chemistry in the Community) sequence is a suitable terminal chemistry course. Many of the topics are chemical technology rather than chemistry.

What **do** you teach in the sophomore chemistry course? Ultimately you want to teach students how to think through the medium of a chemistry course. First, you present some of the history of the subject. Then you look at some of the fundamental problems of chemistry, which includes the language of chemistry. Also, a fundamental molecular basis is needed, so they can understand the mole concept and what happens in chemical reactions. Paul also spends a lot of time on gases. He then moves from the Law of Definite Proportions to the periodic table. He does **not** teach electron configuration first. Relative mass is defined, and that leads you into the mole concept. Overall, he shows them the “hows”

first, and then you go back in to show them the depth, the “whys.”

Unlike many high school chemistry teachers, Paul is an ACS member. He joined in graduate school, and he believes that ACS membership connects you to the larger community of chemists. He also enjoys *C&EN*. One of Paul’s hobbies is travel. Sometimes he just has to get away. He is interested in the history of science including chemical history. He collects old science books such as the boy scientists books of the ‘20’s, and he still plays basketball. Paul met his wife Lenore when she was an undergraduate biology major at Wisconsin. Lenore has a biology degree and in the past has worked for pharmaceutical companies in the Metroplex. Currently she is a graduate student at UT-Arlington working on a master’s degree in biology.

Paul will receive his honorarium and plaque on November 9 at Trinity Valley School. I hope many of us will be there to hear what this master teacher has to say. I think we could all learn a lot.□

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# CHEM GEMS & JOULES

## NATIONAL CHEMISTRY WEEK

### TOUTS HEALTH AND WELLNESS

*Editor's Foreword. Clearly you readers will receive the following item from Jane Smith after the due date for grant applications. However, we are printing Jane's message in its entirety so that our readers will be aware of the activity planning for National Chemistry Week.*

This year National Chemistry week will be celebrated October 17-23, and the theme is "Health and Wellness." The focus is on the



impact of chemistry on good nutrition, fighting infection, preventing skin cancer and dental disease and diagnosing illnesses. The American Chemical Society is encouraging groups to host community health fairs to educate participants while also having fun with chemistry. Although their suggested activities are not posted yet, you can visit the National Chemistry Week link from my website: <http://cfbisdstaff.cfbisd.edu/smithj> to find out what is available from the American Chemical Society page, <http://www.chemistry.org/ncw>, as well as information on our local section's activities as they develop.

If you access the Electronic Resources page you'll find a wide variety of websites related to this year's theme. Many of these can be directly linked to current issues in the news: childhood obesity, increasing numbers of juvenile diabetes cases, Norwalk virus, Atkins and low fat diets, hazards of tanning beds. This would be a great

opportunity to educate your community or classroom on one of these topics.

Want to share some chemistry fun with your own children or perhaps children in your neighborhood at a community center or day care center? Check out the Celebrating Chemistry PDF file that contains a variety of hands-on activities and articles to use in the classroom or as outreach activities.

Know a Boy Scout or Girl Scout troop leader? Their scouts can participate in National Chemistry activities and earn a special NCW youth activity patch. Help them out by visiting the educator resources page and printing off the Youth Activity Patch guidelines.

For high school teachers, this is a nice opportunity to use some of those enrichment resources we don't always find time to include. For example, if you're using the Modern Chemistry textbook, have your students explore the health applications in the elements handbook. Or if you're using ChemCom, you could do a stand-alone activity from the food unit. You could do a calorimetry lab and determine the energy released when you burn a nut, a vitamin C titration, food dye chromatography,

or density and sweetener analysis of beverages. You could also take a group of your students to an elementary or middle school and do some of the Celebrating Chemistry activities.

In addition, the DFW section will be hosting a K-12 poster contest that gives students a chance to show what they have learned as a result of their own National Chemistry Week exploration. The DFW Local Section Board has approved the following cash prizes for the winning entry in each group: each group: K-2<sup>nd</sup> \$50; 3<sup>rd</sup> - 4<sup>th</sup> \$50; 5<sup>th</sup> - 8<sup>th</sup> \$75; 9<sup>th</sup> - 12<sup>th</sup> \$100 as well as being forwarded to the national competition. Posters must be submitted by **January 7<sup>th</sup>** and contest guidelines (on the website) must be followed for the entry to be considered.

When you've had a chance to check out my website and make some plans, you might want to

apply for a National Chemistry Week grant from the DFW section. Grant application forms (look on the website) are due electronically to Sean O'Brien by **Thursday, October 7<sup>th</sup>**. Be sure to let me know how you and yours celebrated National Chemistry Week this year: I'd like to include you in our Local Section's activity report!

Jane Smith  
National Chemistry Week  
Coordinator - DFW  
[smithj@cfbisd.edu](mailto:smithj@cfbisd.edu)  
<http://cfbstaff.cfbisd.edu/smithj>

*Column editor Robyn Shipley-Gerko of Plano High school welcomes future material for this column that would be of interest to chemical educators. Send your material by e-mail to Robyn at [Rshiple@pisd.edu](mailto:Rshiple@pisd.edu).*

## CHEMISTS SWARM TO SWRM 2004

Preliminary indications are that SWRM 2004 in Fort Worth was a resounding success. Perhaps as a result of many more chemists now living in the Southwest, the results for SWRM 2004 were bigger in every category than those for SWRM 1994, the last time the Southwest Regional ACS Meeting was in Fort Worth. In 1994, there were 364 papers accepted, 18 exhibitors, and 604 attendees. In 2004 there were about 500 papers

accepted, 30 exhibitors, and 850 attendees.

ACS national staff member Peggy Smith manned the registration booth much of the time. She said that she kept overhearing participants commenting on what a terrific meet-ing this was. Kudos go to SWRM general chair Dr. Denise Merkle and her "band of brothers" (and sisters) for organizing one fabulous meeting.

# Around-the-Area

## EAST TEXAS

The East Texas Section had their September meeting at the Devall Student Center at Kilgore College in Kilgore. The lecture was given by ACS tour speaker **Professor John Verkade** of Iowa State University. His topic was "Molecular Orbitals Made Friendly-- A No Math, No Group Theory Approach." The October meeting is scheduled for Oct. 14 at the UT Health Sciences Center in Tyler. Speakers **Ms. Laura Hedrick** and **Dr. Mike Pangburn** will talk on "Biotechnology Today."

## UNIV. OF ARKANSAS

**Dr. Z. Ryan Tian** has joined the department as Assistant Professor of Inorganic Chemistry. He holds a bachelor's degree in catalytic chemistry from Fudan University on China and a Ph.D. in inorganic chemistry from the University of Connecticut. His research interests are the surface and interfacial chemistry of nanostructures for the development of new biomedical materials, biochemical sensors, and catalysts. In addition, he will explore the new chemistry of nanoscale architecture.

**Derek Sears** received a \$500,000 challenge grant from the W. M. Keck Foundation of Los Angeles to investigate how liquid water forms on Mars and to examine the existence of considerable amounts of near-surface ice all over the planet. A lab in the renovated

Chemistry Building will be named the W. M. Keck Laboratory for Space Simulation.

A number of faculty received grants from the Arkansas Biosciences Institute. Following is a list of the faculty and the titles of their grants: **Neil Allison**, "Transition Metal Complexes as Model Compounds for a New Class of Antitumor Agents;" **Bill Durham**, "Central Liquid N<sub>2</sub> System;" **Don Davis**, "Cation-Pi Interactions in Two Distinct Cytochrome Systems;" **Ingrid Fritsch** and **David Paul**, "Detection Using Low-Temperature Co-fired Ceramic Probes for Nitric Oxide, Dopamine, and Oxygen in Rat Brain in Response to Nicotine;" **Ingrid Fritsch**, "Monitoring of Uptake and Release of Vanadium Compounds with Insulin Action from Cells using Scanning Electrochemical Microscopy;" **Bob Gawley**, "Dendritic Chemosensors for Seafood Poison;" **Denise Greathouse** and **Roger Koeppe**, "Protein Interactions with Lipid Rafts;" **Matt McIntosh**, **Bob Gawley**, **Neil Allison** and **David Vicic**, "High Throughput Synthesis Core Facility Phase 3;" **Matt McIntosh**, "Claisen and Aldol Approaches to Medicinal Natural Products;" **Xiaogang Peng**, "Colloidal Nanocrystals as Standard Biomedical Reagents;" **David Vicic**, "Synthesis of Artificial DNA Bases for Diagnostic Applications;" **Chin Yu** and **Suresh Kumar**, "Understanding the Mechanism of Inhibition of Acidic Fibroblast Growth."

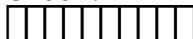
Faculty members **Peter Pulay** and **David Vivic** presented papers at the August ACS National Meeting. **Charles Wilkins** also attended the meeting. Undergraduate **David J. Deitz** gave a poster presentation at the ACS meeting. **Neil Allison** attended an August meeting of the Arkansas Osteopathic Association. **Roger Koeppe** presented a paper at the 58<sup>th</sup> annual meeting of the Society of General Physiologists, in Woods Hole, Mass., Sept. 8-12. **Jack Lay** was invited to serve on the editorial board of *Journal of Microbiology Methods*.

Ten new chemistry graduate students have been accepted for the fall semester. Graduate student **Daniel Lincoln** represented the U.S. at the Olympic Games. He was the only American to advance to the finals of the 3000 meter steeplechase, finishing 11<sup>th</sup>. Junior chemistry major **Drew Cogbill** spent two months in Regensburg, Germany, investigating amino acid synthesis.

### Wichita Falls-Duncan

#### Halliburton Energy Services.

A paper on the topic "A Comparative Study of Mechanical Properties of Density-Reduced Cement Compositions" was given at the SPE Annual Meeting held in Houston Sept. 26-29. The authors were **Kris Ravi**, **David E. McMechan**, **B. R. Reddy**, and **Ron Crook**.



Who gossips with you, gossips of you. –  
Irish Proverb



### South Plains

Texas Tech. Professor **Dominick Casadonte** has received one of the first six Discovery Corps Fellowships from NSF for 2004-2005. These fellowships recognize that expertise in scientific research can give value to our society in many ways. Casadonte plans to connect senior citizens in Lubbock with elementary and middle school students in the local public schools. His strategy is to train a group of senior citizens, age 65 and up, in both pedagogy and general chemistry principles. The seniors will then volunteer as teacher's aides, mentors, or resource persons in the schools. During the course of the program Casadonte will work with gerontologists, sociologists, and other specialists to evaluate the effectiveness of the program for the volunteers, the students, and the students' education.

Back in April Professor Casadonte was a plenary speaker at the European Sonochemistry Society Conference in Badajoz, Spain.

### HEART O' TEXAS

Baylor University. During the May 19-24 time period, the Welch Chair group attended the Boron in the Americas IX Conference held at Texas State University in San Marcos. **Dr. Thomas McGrath** gave an oral presentation on "Building Butterflies on a Rhenium-Monocarborane Substrate." Poster presentations were given by **Drs. Kengkaj Sukcharoen-phon**, **Bruce Hodson**, **Xiu Lian Lu**, and **Peng Lei**. Dr. Sukcharoenphon

received the award for the best poster at the Conference.

**Dr. Mary Lynn Trawick** attended the joint meeting of the International Union for Biochemistry and Molecular Biology and the American Society for Biochemistry and Molecular Biology in Boston June 12-16. She presented a poster entitled "Analogues of Combretastatin A-1 and A-4 as Tumor Vascular Targeting Agents. Coauthors were **Benon E. Mugabe, Keith A. Monk, Charles M. Garner, Kevin G. Pinney, Rogelio Siles, and Phyllis Arthasery**. Dr. Trawick was awarded a Faculty Research Investment Program Grant titled "Design, Synthesis and Biochemical Evaluation of Novel Compounds as Inhibitors of Cruzain" to run from June, 2004 through May, 2005. This research is a collaborative project with Rogelio Siles, Kevin Pinney and Sam Chen of Baylor and Elizabeth Hansell and James H. McKerrow, of the Tropical Disease Research Unit/Department of Pathology at the University of California at San Francisco.

**Dr. Kenneth Busch** served as a panel member for the Texas Commission on Environmental Quality. The panel met in Austin on Aug. 30.

**Dr. Kevin Pinney** has received an NIH grant for \$172,299 to run from June 23, 2004 until June 22, 2006 to study "Novel Serotonin Reuptake Inhibitors for Autism Treatment." Dr. Pinney gave a presentation at the 2<sup>nd</sup> International Vascular Targeting Conference in May.

The Gooch-Stephens Lectures will be presented April 7-8, 2005. The lecture will be **Dr. Barry Trost**

of Stanford University.

Colloquium speakers were: Sept. 3, **Mohammad Omary**, UNT; Sept. 10, **David Minter**, TCU; Sept. 17, **C. Buddie Mullins**, UT-Austin; Sept. 24, **Candace Coyle**, UT-San Antonio.

## **DALLAS-FT WORTH**

*Professor Mike Lattman at SMU is the D-FW local section correspondent. Send items directly to him: [mlattman@smu.edu](mailto:mlattman@smu.edu), fax 214.768.4089, or phone 214.768.2467.*

**Call for Nominations for Doherty Award.** Nominations are invited for the 2005 Wilfred T. Doherty Award. Nomination forms may be obtained from and should be submitted to the D-FW Awards Committee Chair, Dr. Jeffery Coffey, Department of Chemistry, Texas Christian University, TCU Box 298860, Fort Worth, TX 76129. Jeff may also be contacted via e-mail at [j.coffey@tcu.edu](mailto:j.coffey@tcu.edu) or by phone at 817-257-7195. Nominations are due by January 24, 2005. Nominations may be accompanied by seconding letters. Each nomination should contain a cover letter that carefully highlights the nominee's accomplishments in more detail than is possible on the nomination form. Nominations remain active for five years, but nominators should consider updating their past nominations annually.

**Purpose of the Award.** The purpose of the award is to promote the advancement of chemistry and chemical engineering, to emphasize the contributions to modern society of those fields of science, and to recognize publicly the contributions of chemists and chemical engineers

in the Dallas-Fort Worth area.

**Requirements for Receiving the Doherty Award.** Excellence in chemical research or chemistry teaching, meritorious service to the ACS, establishment of a new chemical industry, solution of pollution problems, advances in curative or preventative chemotherapy; these are some possible fields for consideration. The impact of these accomplishments may be either of local or national significance. Nominees may come from industry, academia, government, small business, etc. The nominee shall be a member resident in the area assigned to the D-FW ACS Section. The work on which the award is based usually should have been done in this area.

**Character and Presentation of the Doherty Award.** The W. T. Doherty Award consists of a \$1500 honorarium and an engraved plaque. A photograph of the awardee will permanently reside in the Gallery of Doherty Award Winners in Berkner Hall at the University of Texas at Dallas. The winner will normally receive his/her award at a fall D-FW ACS Section meeting at which time he/she will present an award address.

**SMU. Patty Wisian-Neilson** was awarded a research grant from The Welch Foundation. **Mike Latman** and **Rick Kemp** (from Sandia National Laboratories/University of New Mexico) organized the symposium, "Modern Aspects of Main Group Chemistry" at the spring ACS meeting in Anaheim. Dubbed "Cowley Fest," the symposium was held in honor of Professor Alan Cowley on the occasion of his 70th birthday. Over 30 invited speakers from North America and Europe participated. In addition, there were

about 30 contributed posters. Patty Wisian-Neilson presented a talk in the symposium entitled, "Cyclic and Polymeric Phosphazenes." **John Buynak** has founded his second company, Design Therapeutics Inc., and that company already has received a Phase I STTR grant from NIH.

**Ling Hua** has joined the faculty as an assistant professor. She received her Ph D in Biological Chemistry at Rice in 2000, did an internship at DuPont CR&D, then took a position at BioCatalytics in California where she became Director of Molecular Biology. Her research focuses on the discovery and development of new enzyme catalysts relevant to organic synthesis.

**UNT. Susan Brockington**, Staff Assistant in the Chemistry Department, who is familiar to many D-FW chemists for her yeoman work in helping in many ACS functions, has received an Outstanding Staff Contribution Award from UNT. This award includes a \$1000 honorarium and a plaque. **Dr. Bill Acree** was awarded the McNair Scholar Program Service Award at UNT. This is the highest honor that this program bestows.

New Welch Professor **Weston Borden** has received an ACS Arthur C. Cope Senior Scholar Award. This award, which includes a \$5000 award and a \$40,000 research grant, will be presented at the 2005 Fall ACS Meeting in Washington, D.C., where Dr. Borden will present a lecture.

Attendees at the Fall ACS Meeting were **Drs. Diana Mason, Jim (and Jenny) Marshall, Muhammed Omary, Angela Wilson, and Paul Jones.**

**Dr. Angela Wilson** was a

Visiting Scientist at Oak Ridge in August. The Wilson group gave four presentations at the Annual Meeting of the South-east Theoretical Chemistry Association held in May at the University of Mississippi. The co-authors along with Dr. Wilson were **Ray D. Bell, Scott Yockel, Benjamin Mintz, and Xuelin Wang**. The group also gave three presentations in June at the ACS-PRF Summer School held in June at St. John's College in Santa Fe, NM. The Wilson group also gave five presentations at the Molecular Quantum Mechanics International Conference held at Cambridge, UK,

in July, in honor of Professor Nicholas C. Handy. Besides Bell, Yockel, Mintz, and Wang, Dr. Wilson's co-authors were **Pankaj Sinha, Paul S. Bagus, Mohammad Omary, and Nick X. Wang**. She also gave two presentations at the ACS Philadelphia meeting co-authored by **Benjamin Mintz, Kristin P. Lennox, Leo Radom, Michael B. Sullivan, Naomi L. Haworth, Larry A. Curtiss, and Jan M. L. Martin**. The NSF REU Summer 2004 program, led by Angela Wilson and **Tom Cundari**, had 12 participants.

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**UT-Arlington.** The UTA Office of the Academic Vice-President (**Ron Elsenbaumer**) hosted a dinner at UTA on Sept. 30 for participants in the symposia on Calixarenes, Organic Synthesis, and History of Chemistry held at SWRM

2004. These symposia were partially sponsored by Alcon Labs, Access Pharmaceuticals, the Division for the History of Chemistry, and ACS President Charles Casey. At the dinner, acting UTA Dean of Science **Paul Paulus** gave a virtual tour via

power point of the new UTA Chemistry and Physics Building and **Jim and Virginia Marshall** gave a brief multi-media overview of their project "Rediscovery of the Elements." The Calixarene symposium was in honor of retired TCU Welch Professor **David Gutsche**. Finally Professor Gutsche gave a historical overview of calixarene chemistry, an area which he essentially pioneered.

**UT-Dallas.** The chemistry department welcomes **Assistant Professor Jung-Mo Ahn** to the faculty. Jung-Mo is an organic chemist who completed a postdoc with Professor Kim Janda at Scripps and was awarded his doctorate with Professor Victor Hruby at the University of Arizona.



## NOVEMBER METROPLEX SEMINAR SCHEDULES

*These times and dates are accurate at the time of writing. However, seminars are occasionally cancelled or postponed. Check departmental websites for the most up-to-date information.*

**UT-Arlington. Nov. 5**, Patrick Cassidy, Texas State University, "Fluoropolymers--Synthesis and Applications." **Nov. 12**, Morgan Alexander, University of Nottingham, UK, "Plasma Polymer Chemical Gradients and Automated XPS as a High Throughput Means to Investigate Chemical Reactions at Surfaces." **Nov. 19**, Krishnan Rajeshwar, UT-Arlington, "Combining Electrochemistry and Photochemistry: The Sun's the

Limit." Seminars are normally at 2:30 p.m. in Room 114, Chemistry Research Building.

**UT-Dallas. Nov. 3**, Gregg Dieckmann, UT-Dallas, "The Noncovalent Functionalization of Carbon Nanotubes with Designed Amphiphilic Peptides." **Nov. 17**, Mohammad Omary, UNT, TBA. Seminars are normally at 3:30 p.m. in Room JO4.614 Jonson Academic Center.

**University of North Texas. Nov. 5**, Pete Wolczanski, Cornell, "Metal Olefin to Alkylidene Rearrangements: Mechanism, Energetics and Related Reactions." **Nov. 12**, James Penner-Hahn, Michigan, "Characterization of "Spectroscopically Challenged" Metals: Zinc in Biological Systems." **Nov. 19**, Krishnan Raghavachari, Indiana, "Electronic Structure Studies of Materials Chemistry using Cluster Models." Seminars are normally at 3:30 p.m. in Room 324, Masters Hall.

**Texas A&M -Commerce. Nov. 4**, Dr. Alton Hassell, Baylor University, Watermarks in Antique Books. **Nov. 11**, Dr. Ben Shoulders, University of Texas Austin, NMR Solitaire: A Game for Learning Proton NMR. **Nov. 18**, Dr. Ray Schaak, TAMU-College Station, Hierarchical Nanomaterials: New Strategies for Controlling the Structure and Assembly of Complex Solid-State Materials. Seminars are normally at 4 p.m. in Room 138, Hall of Sciences.

**Texas Christian University. Nov. 4**, Patty Wisian-Neilson, SMU, TBA. **Nov. 9**, Welch Foundation Lecture, Richard Larock, Iowa State University, TBA. Seminars are normally at 11 a.m. in Lecture Hall 3, Sid Richardson Science Building.

**UT-Southwestern Biochemistry.** Nov. 4, Virginia Cornish, Columbia, "Chemical Complementation: A Genetic Assay for Protein Evolution and Proteomics." Nov. 18, Miles Wilkinson, M. D. Anderson Cancer Center, "Nonsense Codons, Splicing, and the Nucleus." Seminars are normally at noon in Biochemistry

L4.176.

**UT-Southwestern Biological Chemistry.** Nov. 9, Richard Taylor, Notre Dame, TBA. Seminars are normally at 6:30 p.m. in Biochemistry Conference Room L4.162.

## TEACHING OPPORTUNITY

### Texas A&M – Commerce

### SPRING 2005

I need some help this spring semester. Below is the teaching load that I must have people to help teach. If you have any people that might be able to help, please contact Dr. Kenneth Ashley via e-mail [ashleyk@tamuc-commerce.edu](mailto:ashleyk@tamuc-commerce.edu) ASAP.

This spring semester the following courses will be taught:

1. Graduate Inorganic Chemistry 3 SH. Taught at night
2. Undergraduate Inorganic Chemistry with laboratory 4 SH.  
Could be taught at night.
3. First semester General Chemistry      Lecture MWF 9:00-9:50 AM  
    3 *laboratory* sections with GA's  
        6:00 – 10:00 PM Monday  
        1:30 – 5:30 PM Tuesday  
        1:30 – 5:30 PM Tuesday  
    3 *recitation* sections  
        5:00 – 5:50 PM Monday  
        12:30 – 1:20 PM Tuesday  
        1:00 – 1:50 PM Wednesday



## November 2004 DFW ACS Meeting

Tuesday, November 9th

### SCHULZ AWARD BANQUET

**Paul D. Price**

Trinity Valley School, Fort Worth

### Helping Students See the Invisible: Developing a Lucid View of the Molecular World

**Abstract:** In an era when decreasing science enrollment is the norm at all levels of education, the role of the secondary school chemistry course has become even more vital. How do we spark interest in our students while at the same time developing the critical thinking skills necessary for advanced coursework and overcoming many misconceptions common to those studying chemistry for the first time? Through demonstrations and critical questioning, I will discuss some techniques that have proven valuable in both nurturing student interest in chemistry and promoting molecular-level problem-solving skills.

**Bio:** Paul D. Price is the Science Department Chairman at Trinity Valley School in Fort Worth, where he has taught chemistry, AP chemistry, and Physics since 1998. He earned a B.S in Chemistry and Mathematics from Southwestern University in Georgetown, Texas and an M.S. in Chemistry from the University of Wisconsin – Madison. Rumor has it that Paul's courses are difficult because he is a stickler for understanding "the why" in chemistry. Fortunately, students say his classes are always entertaining. Away from school, Paul enjoys sports and traveling with his wife, Lenore. He can be reached anytime at [pricep@trinityvalleyschool.org](mailto:pricep@trinityvalleyschool.org).

**Schedule:**

6:30 – 7:00 pm	Social
7:00 – 8:00 pm	Dinner
8:00 pm	Presentation

**Reservations:** Buffet dinner with chicken entree, \$17 per person. Make reservations with John St. John by **noon**, Monday, November 8<sup>th</sup>: 214-905-5100 or [jvs@accesspharma.com](mailto:jvs@accesspharma.com). Everyone is financially responsible for reservations. *ACS membership is not required to attend.*

**Directions:** Trinity Valley School is located in southwest Fort Worth. From Fort Worth or Dallas get on I-20 west and take the Bryant-Irvin road exit. Turn left onto Bryant-Irvin road (going south) and continue approximately 2 miles. You will see the entrance to the school on the left (the cross street is Mira Vista Blvd.) Turn into the entrance and follow the on-campus signs to the Theater. The school's web address is [www.trinityvalleyschool.org](http://www.trinityvalleyschool.org) and the physical address is: Trinity Valley School, 7500 Dutch Branch Road, Fort Worth, TX 76132

