

**John Mercer to Address CSW December Meeting; Topic: Chemical Security**

John W. Mercer, a retired chemist with extensive background in the science of security monitoring of official documents, will speak at the CSW December Dinner meeting at Alfio's Cucina Italiana in Chevy Chase, MD. Details of the dinner meeting are on page 2. The dinner will also honor the recipients of CSW's Gordon and Schubert awards, and Project SEED mentors.

John was born in Sewickley, PA and raised in western Pennsylvania. He holds a B.S. in Chemistry from Geneva College in Beaver Falls, PA and an M.S. in Chemistry from Case Western Reserve University in Cleveland. After grad school he worked in tech service for Shell Chemical, began his Federal career with two unplanned years in the US Army Chemical Corps, and four years in quality control for Frito-Lay.

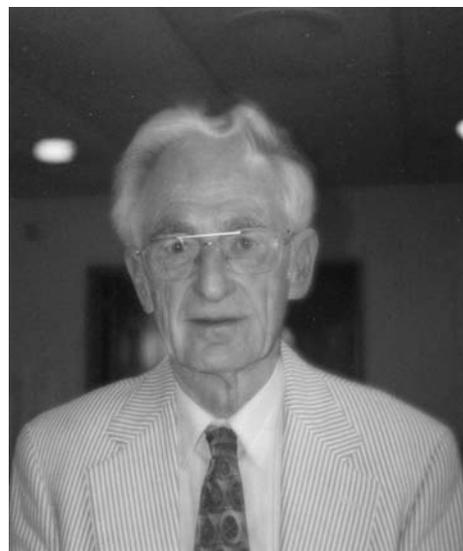
John began his Federal Civil Service career in 1975 as a chemist for the Treasury Bureau of Engraving & Printing, Office of Research & Technical Services. Beginning in the Paper Lab, he quickly transitioned into the science of materials used for security printing. At various times, he worked in Quality Assurance and Contract Support as COTR, and first and second line supervision. In the lab he wrote several durability test methods for currency, versions of which are still in use. He worked in the BEP Advanced Counterfeit Deterrence effort from its beginning in the early 1980's until 1994. He worked on currency, postage stamps, food coupons and other security printed products. He was selected for the OPM Executive Potential Program in 1988 and spent a year on details to other agencies. This included stints at the State Department, working on passport security; the Smithsonian Institution Museum of American History, conserving Confederate currency and preparing condition reports for the Universal Postal Union exhibit; and the NSF working with the database for principal investigators. He was also chosen for the Treasury Reinvention Team.

In 1994, he became the Projects Officer for the State Department Bureau of Consular Affairs in charge of the security features of US passports, visas and other security documents. In this capacity, he identified security countermeasures that would improve the fraud resistance of passports & visas, and then oversaw the deployment of the selected features. He led the Document Design team for the first US digital photo passport in 1998 and the design team for the current electronic "American Icon" passport. *(Continued, page 3)*

***Dr. James E. Cassidy Receives CSW's  
2009 Gordon Award for Service***

Dr. James E. Cassidy is to receive the Charles L. Gordon Award for exemplary service to the science of chemistry and to CSW at the December 10th awards dinner. Dr. Cassidy contributed long and continuous service to CSW as a Manager and as a member of many committees. He was responsible for National Chemistry Week, established the CSW web site, organized Career Jobs Club, judged science fairs and arranged CSW meetings. He continues to serve as Secretary and Luncheon Chair of the Retired Chemists Group.

Dr. Cassidy worked as a research chemist for three different companies from 1958 to 1995 determining the metabolisms of pesticides in plants, animals, soil and fish; most of the reports were for EPA registrations, though he and members of his group published in scientific journals in the 70s and 80s. His career and service exemplify the spirit of Charlie Gordon. *Contributed by Dr. Fred Metz, CSW Awards Committee*



# The Capital Chemist™



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## THE CHEMICAL SOCIETY OF WASHINGTON PRESENTS: *1091st Dinner Meeting*

Thursday, December 10th  
Alfio's Cucina Italiana  
4515 Willard Avenue  
Chevy Chase, MD 20815  
[www.alfios.com](http://www.alfios.com)

6:00 pm SOCIAL HOUR (Cash Bar)  
7:00 pm DINNER  
COST \$25.00 Members and Guests  
\$12.50 Students

**Menu:** Fettuccini Marinara; Chef salad; Choice of one of the following four entrées: Veal Piccata, Chicken Francese, Eggplant Parmigiana, Broiled Filet of Flounder. Broiled fresh vegetables, bread with butter. Dessert: Spumoni or cake, coffee or tea

Make reservations by **Monday 12:00 noon, December 7, 2009**, to the CSW office: [csw@acs.org](mailto:csw@acs.org) or 202-659-2650. Please designate the names in your party. The public is invited to attend. You may attend the talk only, but reservations are appreciated. **Those who make a reservation but are unable to attend should send a check for the cost of their meal to the CSW office.**

**Directions:** From I-270 or the beltway, take Route 355 South (Wisconsin Ave.) From the beltway or I-270, proceed about four miles on Wisconsin Ave. Turn right onto Willard Ave., just before the intersection with Western Ave. Valet parking is available. **METRO:** Friendship Heights station on the red line. (Restaurant site is marked with an "A", map on page 3.)

**8:00 p.m. Featured Speaker: John W. Mercer, Consultant (retired).**

**Abstract: The Chemistry of Security in Currency, Passports and Visas**

In the last 20 years, there has been a revolution in the substance, design and materials used in US currency and passports. Currency has gone from a purely ink-on-paper document to a sophisticated multi-level carrier of information. Passports have gone from an offset ink-on-paper sewn book with an attached cut photograph, to a complex book with a digital portrait and embedded contactless chip. Visas have gone from a multi-color stamped image with hand-written data to security printed labels with digital portraits and additional levels of security.

Changes to these security products were accomplished within the context of continued production as well as product improvement. One consequence of this is that the new documents are for the most part backwards-compatible. This means that previous methods of production, issuance and handling of currency still work for the new currency, even as new features have been added for validation and security. Former passports already met international data content and display standards, while newer passports have an additional level of data storage and retrieval, based on adapting existing ISO standards for contactless chip performance to the passport realm.

The reason behind all these changes is that fraud never sleeps, and that altered or counterfeit documents are necessary enablers of other crimes. In order to ensure that our nation's currency remains secure, and that our travel documents remain widely accepted as trusted tokens of nationality and identity, changes had to be made to the documents. This requires fraudsters to master new technologies in order to emulate genuine documents, and provides opportunities to add new levels of security.

This talk discusses many of these changes from a chemical and materials sciences standpoint, and includes some adventures in trouble shooting and unintended learning.

## Carol Gregory of Magruder High School is CSW Schubert Award Recipient

The 2009 Leo Schubert Memorial Award for the Outstanding Teaching of High School Chemistry will be presented to Mrs. Carol L. Gregory of Col. Zadok Magruder High School in Rockville, MD, at the CSW December dinner meeting. The award consists of a framed certificate and a \$500 honorarium. She will present a short talk on her experiences as a chemistry teacher during the meeting.

Mrs. Gregory has taught for 16 years for Montgomery County Public Schools (MCPS), including six years at Magruder High School. She incorporates her ten years of experience as an analytical and environmental chemist into her lessons. At Magruder she has inspired more than 20 students to major in chemistry in college. Her AP

chemistry students score highly on the College Board AP test, and most receive some chemistry credit towards their college studies. Her students have won awards at Chemathon, Chemistry Olympiad, and the DuPont Essay competitions. She presently teaches one class of AP chemistry to 11th and 12th grade students, and three classes of Honors Chemistry to 10th, 11th, and 12th grade students, and was instrumental in the development of both of these courses, as well as others. She continues to be involved in ongoing



curriculum development and writing assessments for MCPS, Prometheus computer training and mentoring new teachers at Magruder.

Mrs. Gregory applies for and receives grants to enrich her students' lab experiences, such as a \$1500 grant from the Hach Chemical Company for field equipment to implement a stream water quality study, using the new equipment. Many of her students have written enthusiastic testimonies in their appreciation of Mrs. Gregory as a teacher, some of which include:

*"I'm currently taking a bioanalytical chemistry course at Maryland and it is practically like an AP Chem re-run. I find myself using much of what I learned two years ago to get myself through this class and I just wanted to thank you for teaching chem. in a way that I still seem to remember it."*

*"Thank you for being such an amazing teacher. Having two class periods with you every day was an honor. I will never forget AP chemistry and how much fun you made it for us. I hope that all of my professors in college are just like you."*

CSW congratulates Mrs. Gregory on her accomplishments and invites all to attend the December dinner meeting to participate in her honors.

**Contributed by Dr. Fred Metz, CSW Awards Committee Chair.**

### Chemistry of Secure Documents is the Theme For CSW December Dinner Meeting

*(Continued from page 1)* An important part of the State Department job was to represent the US at the International Civil Aviation Organization (ICAO) Technical Advisory group for Machine Readable Travel Documents (TAG-MRTD). Within that group, he chaired the Document Content and Format Working Group (DCFWG) for seven years. DCFWG was responsible for the writing and maintenance of the international standards for passports, visas and official documents of identity (cards). He wrote over two dozen Working Papers and chaired over 20 DCFWG meetings while chair of this ICAO committee. On 9/11, he was in New York as part of the ICAO team that obtained changes in the EU visa. He provided technical evidence to the INS prosecution of a Cuban spy ring. He also had a short tour as a visa Consular Officer in Seoul, Korea.

Since retirement, he has been a Senior Associate with Kelly-Anderson &

Associates and has consulted with the International Organisation for Migration (IOM) and the Organisation for Security and Cooperation in Europe (OSCE) on identity documents and issuing systems. The work with the international organizations has taken him to a number of developing countries.

John is married and lives in Alexandria, VA. He has three grown daughters. He recently completed his 35th year as a docent at the National Air & Space Museum.



**Map of Alfio's Cucina Italiana, Chevy Chase, MD, site of December CSW Dinner meeting**

## CSW and ACS 2010 Project SEED - Planting the Seeds Today for the Next Generation of Scientists, Researchers and Teachers

CSW has been invited to participate in the ACS 2010 Project SEED Program. This program places economically disadvantaged high school students in a variety of research environments (academic, industrial, and governmental) for a period of 8 - 10 weeks during the summer months. For the past 41 years, Project SEED has helped high school students expand their education and career outlooks by providing opportunities for students who historically lack exposure to scientific careers.

Under Project SEED, high school students participate in a scientific research project in chemistry under the direct supervision of a mentor scientist. If selected, these students are offered two exciting research opportunities:

- The Summer I program will provide first-time participants (rising juniors and seniors) a fellowship award of \$2,800.

- The Summer II program will provide Project SEED Summer I students with an additional summer of scientific research. These students will receive a fellowship award of \$3,300. Additionally, Summer II students will be eligible for a travel grant of up to \$100 to present their research at an ACS or other scientific meeting contingent on availability of funds.

High School science teachers are needed as sponsors to identify excellent chemistry students to participate in Project SEED and assist in the application process. These students must be economically disadvantaged, must be enrolled in high school and must have taken one year of high school chemistry. Applications for Project SEED Summer I or II program/Student Financial Statement are due June 1, 2010 and are available on the ACS Project SEED Web site ([www.acs.org/projectseed](http://www.acs.org/projectseed)). Completed applications should be sent to Dr. Walter Benson ([WBenson270@aol.com](mailto:WBenson270@aol.com)).

*(Continued on page 6)*

### The Retired Chemists Group

offers a social program of luncheons and outings available to all. Check [www.csw-acs.org/retired.html](http://www.csw-acs.org/retired.html)

### CSW to Recognize Researchers and High School Teachers for 2009 Project Seed Participation

At the December 10 dinner meeting, CSW will honor the 2009 chemistry sponsors and mentors with an evening dinner and lecture in appreciation of their efforts in allowing 9 high school students to participate in Project SEED. Without these volunteers serving as sponsors and mentors, this program would not be possible.

The high school teachers who sponsored students for the 2009 program :

Mark Agnew of Rockville High School, MD  
John Bois of Northwestern High School, Hyattsville, MD  
Cathy Duff of Eleanor Roosevelt High School, Greenbelt, MD  
Sister Catherine Hill of Bishop O'Connell High School, Arlington, VA  
Mandi Jacobson of Banneker Academic High School, Washington, DC  
Kendal Orenstein of Thomas Jefferson High School, Alexandria, VA  
Marta Walter of High Point High School, Beltsville, MD

The scientists that served as mentors for the 2009 program were:

Prof. Changwoo Ahn of George Mason University  
Prof. Lawrence Sita of University of Maryland  
Prof. Sarah Stoll of Georgetown University (2 students)  
Dr. Mary Tucksess of CFSAN, FDA (2 students)  
Dr. Shio Wang of ARS, USDA  
Prof. Richard Weiss of Georgetown University  
Dr. Debra Yourick of Walter Reed Army Institute for Research

The CSW Board of Managers appreciates the effort of these individuals in making the 2009 program for Project SEED a success and encourages them, and others, to volunteer for the 2010 program.

### DC Area Chemistry Seminar Schedules

With the abbreviated seminar schedules resulting from exams and holiday breaks, this month's seminar listing is similarly brief. Check web sites for times and locations. Contact the department to find out about general public admission, directions to campus, and parking. **Viewing the PDF? Just click!**

**Maryland Chem:** Professor Sarah Woodson, Johns Hopkins University, Department of Biophysics: "RNA folding in ribozymes and ribosomes," December 8.

**Maryland Chem:** <http://www.chem.umd.edu/seminars>

**Carnegie Institution:** Dr. Liping Qin, Department of Terrestrial Magnetism: "Isotopic Heterogeneity in the Early Solar System: The Chromium Story," December 21

**Carnegie Institution of Washington:** <http://www.gl.ciw.edu>

# ACS Honors Nobel Recipient Marshall Nirenberg for Deciphering Genetic Code; Lab at NIH is Designated Historic Chemical Landmark



Photos from the November 12 ceremony at Masur Auditorium on the NIH campus.

**Photo above:** Dr. Thomas Lane, ACS President, left, presents the Historic Chemical Landmark plaque to Dr. Nirenberg. **Photo at left:** (l to r) Dr. Nirenberg; Janan Hayes, ACS Board; Carol Henry, President, CSW; Ted Becker, NIH and CSW; Alan Schechter, NIH symposium organizer; Thomas Lane; Marinda Wu, ACS Board, Raymond Gesteland, University of Utah, symposium speaker.

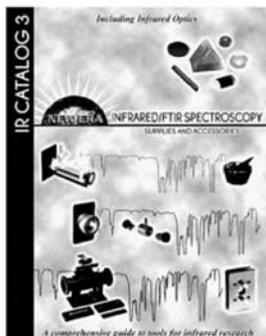
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## CSW and ACS 2010 Project SEED - Training the Next Generation of Scientists

*(Continued from page 4)*

Please note that while the researchers/mentors under Project SEED receive no financial remuneration from ACS, many chemists and chemistry departments have been willing to participate in the Project SEED experience nonetheless. Their willingness is derived from the positive aspects that Project SEED creates in terms of developing scientific understanding in young people from diverse cultural backgrounds, the enthusiasm that the young student brings to the research group themselves, and the opportunity to serve the community in which their institution is located.

CSW members can participate in this program by donating funds (matched by the ACS), informing local High School teachers about this

program, or volunteering to mentor a student in their lab during the summer of 2010. Those interested in participating as mentors for the 2010 program need to send research proposals to Dr. Benson before January 30, 2010 (proposals are sent to CSW, but are approved by a national Project SEED committee).

*Contributed by Rob Wiacek,  
CSW Public Relations Committee*

### CSW Calendar

**January Dinner Meeting**  
**Speaker: Dr. Joseph Francisco**  
**ACS President-Elect**  
**Thursday, January 14**  
**Location: Marvel Hall,**  
**ACS Hach Building**

### CSW Considerations for an Electronic *Capital Chemist*

*(Continued from page 8)*

- Member satisfaction. Would CSW members who are not presently inclined to receive emailed versions be unhappy with the change, to the point where their membership might be at risk?

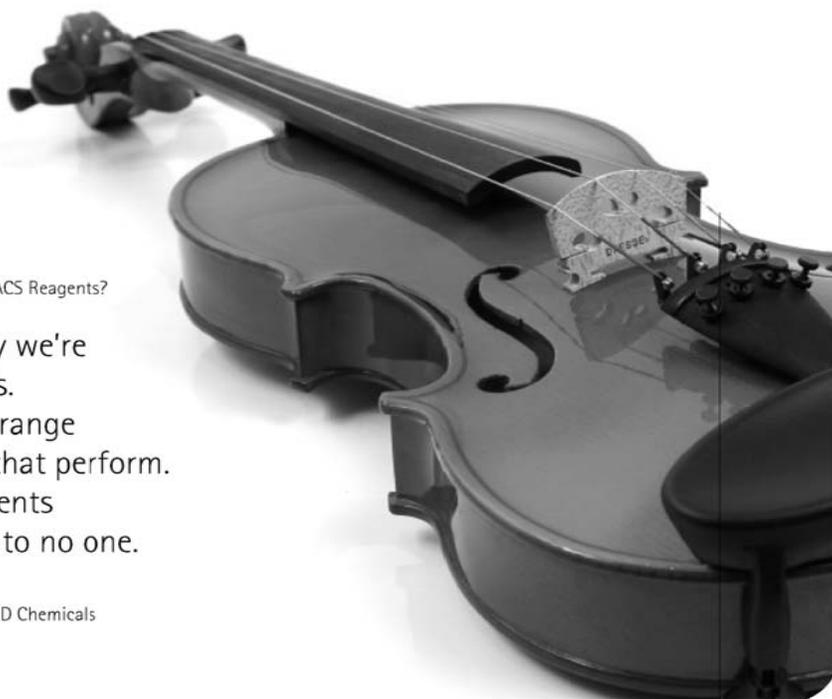
- Election nominations and ballots. Since CSW elections are carried out using the printed newsletter as ballots and nomination forms, how would the movement to a more electronic distribution change nominations and elections? A few possibilities are: a) keep the processes essentially the same, and require electronic recipients to print their own ballots and forms (would this adversely impact the number of voters?); b) mail separate forms and ballots to all CSW members; c) move to an electronic or mostly electronic voting system (as ACS has done).

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- [www.mboservices.net](http://www.mboservices.net)
- <http://membership.acs.org/W/WashDC/career.html>

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## CSW is Considering Switching to a Primarily Electronic Format for *The Capital Chemist* - Your Input is Welcome and Necessary

*Jeffrey A. Smiley, Editor*

The CSW Publications Committee and CSW officers are considering changing the distribution of *The Capital Chemist* to make the electronic (internet accessible) version the more predominant form of the newsletter, and decrease the number of paper copies.

Some ACS local sections across the country, especially larger sections like CSW, have moved toward greater electronic distribution in order to cut costs, and make information more timely. Members of some local sections only receive paper copies of their respective newsletter if they elect to do so, and may be required to pay an extra fee with their annual membership dues for the paper issues. In lieu of the printed issue, members are offered the option of receiving periodical e-mails, containing links to the local section's web site that posts the new electronic versions. Usually, the recipient can link to the new issue of the newsletter with a single click on the email message. In surveys of ACS local sections by CSW officials, some local sections report that the vast majority of members choose to decline the paper copies in favor of the electronic version of the newsletter.

**CSW wants your input.** What suggestions would you make to contribute to this decision? What factors are most important to you, and to the entirety of CSW, concerning the newsletter? Please send your comments to [csw@acs.org](mailto:csw@acs.org). CSW does not anticipate a change to be enacted within the next 8-9 months, but will be considering options at upcoming board and Publications Committee meetings.

In order to best serve its members, CSW is carefully considering the factors involved in a change in its newsletter. Many factors have been discussed at Publications Committee meetings, and in correspondences among committee members and CSW officers. The factors involved in such a decision

include:

- Lowering expenses. At over \$16K per year, *The Capital Chemist* is CSW's biggest expense, and printing and mailing costs may be lowered by 50% or more with widespread acceptance of the electronic version. Needless to say, the savings would translate into more funds available for other CSW programs.

- Using less paper. ACS is committed to the cause of preserving resources and minimizing waste; CSW should be poised to follow that lead.

- Enhanced format. A web version could be produced with color, animation, embedded videos, links to other web sites, less restriction on the number of pages, etc., with essentially no added cost to CSW.

- Effect on advertising revenues. Would advertisers pay the same rate for ads in an electronic version, versus ads in print format, where the ad can be

readily seen on a CSW member's desk or coffee table at home? CSW officials have communicated with MBO Services, the advertising agency CSW currently uses, and the trend seems to be, so far, that advertisers are willing to pay the same rate for local section newsletter advertising that is changing to more widespread electronic distribution.

- ACS currently has a policy that restricts ACS-affiliated web sites from containing links to other organization's web sites – importantly in this context, the web sites of newsletter advertisers. However, in 2010, local section web sites will be more independent, not hosted on the ACS Membership Division server. When this is finalized, the possibility of producing an electronic newsletter with links to advertisers' corporate web sites will be explored.

*(Continued, page 6)*

*CSW: Celebrating over a Century of Service to Washington DC Area Chemists*

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