

# Chesapeake Chemist

*Maryland Section  
American Chemical  
Society*

## MARYLAND CHEMIST OF THE YEAR 2013



**Dr. Paul Mahaffy**

Goddard Space Flight Center

**“Exploring Ancient and Modern Mars with the Curiosity Rover:  
Early Results from the SAM Investigation at Gale Crater”**

Wednesday, December 11<sup>th</sup>

6:00-9:00 pm

Notre Dame of Maryland University, Baltimore, MD

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*Student Awards* – George Farrant, Retired, [gfarrant@yahoo.com](mailto:gfarrant@yahoo.com)

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*Braude Award* – Louise Hellwig, Morgan State University, [louise.hellwig@morgan.edu](mailto:louise.hellwig@morgan.edu)

*Maryland Chemist Award*–Angela Sherman, Notre Dame of Maryland University, [asherman@ndm.edu](mailto:asherman@ndm.edu)

**Maryland Section on the Web:**

[maryland.sites.acs.org](http://maryland.sites.acs.org)

**Webmaster:**

Holly Cymet, [holly.cymet@gmail.com](mailto:holly.cymet@gmail.com)

**Chesapeake Chemist Editor-in-Chief:**

Holly Cymet, [holly.cymet@gmail.com](mailto:holly.cymet@gmail.com)

**Contact us at:**

[contact-us@mdchem.org](mailto:contact-us@mdchem.org)

# MARYLAND CHEMIST OF THE YEAR DINNER

*“Exploring Ancient and Modern Mars with the Curiosity Rover:  
Early Results from the SAM Investigation at Gale Crater”*

~ **Dr. Paul Mahaffy** ~

Goddard Space Flight Center

Wednesday, December 11, 6:00 – 9:00 pm

**Knott Science Center**

**Room Knott 311**

**Note Dame of Maryland University**

4701 N Charles St.

Baltimore, MD 21212

6:00 – 6:45 pm	Registration / Networking and Hors d'Oeuvres
6:45-7:45 pm	Presentation
7:45-8:45 pm	Refreshments / Networking
Price	\$20 for members/nonmembers, \$10 for students
RSVP (by December 9 <sup>th</sup> )	<a href="mailto:contact-us@mdchem.org">contact-us@mdchem.org</a>

## Directions to Notre Dame of Maryland University

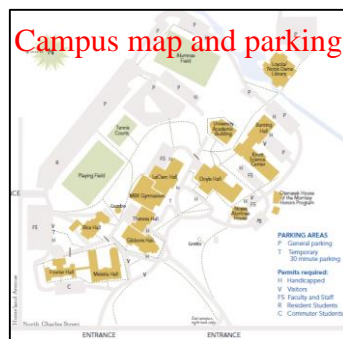
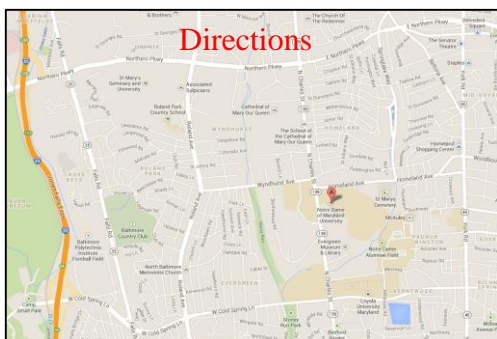
### From the north:

- Take the Baltimore Beltway (I-695) to North Charles Street (exit 25).
- Drive 4.6 miles south on Charles Street
- The University entrance is on the left, immediately past Homeland Avenue but before Cold Spring Lane.

### From the Inner Harbor

- Take I-83 north 4.4 miles to Cold Spring Lane East (exit 9A).
- Drive 1.3 miles on W. Cold Spring Lane
- Turn left onto North Charles Street. The University entrance is 0.4 miles on the right.

**Please click on the maps below for directions, campus map and parking information or go to:**  
<http://www.ndm.edu/admissions/visit-campus/maps-directions-and-parking/>



## Abstract

A prime goal of the Mars Science Laboratory Mission is to explore the habitability of ancient Mars. The Sample Analysis at Mars (SAM) instrument suite of instruments on the Curiosity Rover contributes to this study with (1) a search for organic compounds in ancient rocks and soils, (2) measurements of the composition of inorganic volatile compounds in the atmosphere or extracted from solid materials, and (3) a determination of the isotopic composition of several of these volatiles. The Yellowknife Bay region near the landing site revealed sedimentary layers and clay minerals and the several months spent in exploration of this site have already realized primary mission goals. A prime exploration target for this rover is still the central mound (Mt. Sharp) in Gale crater that shows a diverse mineralogy from orbital infrared spectroscopy and the Curiosity Rover is now making steady progress toward that target.

Early results from SAM will be discussed. These include: new volume mixing ratios for the 5 major atmospheric constituents showing Ar approximately equal to N<sub>2</sub>; a new upper limit for the volume mixing ratio of methane; C and O isotope ratios both showing heavier than terrestrial averages; D/H in water more than 5 times terrestrial; and the <sup>40</sup>Ar/<sup>36</sup>Ar and <sup>36</sup>Ar/<sup>38</sup>Ar ratios in good agreement with gases trapped in glasses of EETA79001 Mars meteorite values. Major evolved gases from fines scooped from an eolian drift that are likely characteristic of average martian dust are H<sub>2</sub>O, CO<sub>2</sub>, O<sub>2</sub>, SO<sub>2</sub>, H<sub>2</sub>S, and HCl. Chlorine containing compounds in this material were tentatively identified as perchlorates. Gases evolved from the first drilled samples revealed the presence of clays and the presence of both oxidized and reduced volatiles.

## Speaker Biography



Paul Mahaffy is the Chief of the Planetary Environments Laboratory in the Solar System Exploration Division at NASA Goddard. He has participated for many years at Goddard Space Flight Center in study of planetary atmospheres and development of space qualified instrumentation. His main research interests are: (1) Planetary science, especially chemical and isotopic composition of planetary atmospheres and comets, (2) Advanced instrument development for organic and light isotope analysis in planetary targets, and (3) Analog studies for martian and cometary materials including both laboratory and field work.

## 2014: The Maryland Section turns 100!

Next year, the Maryland Section will reach a major milestone: 100 years of service to chemists and the chemical industries in Chesapeake region. We are planning a number of ways to revel in this momentous occasion. Stay tuned for further information...

We are seeking **volunteers** to help with a number of planned events. Contribute as much or as little time as you may-we welcome it all! We also encourage you to share any **information** or **documentation** you may have about our Section's history. Please contact Holly at [holly.cymet@gmail.com](mailto:holly.cymet@gmail.com)

## ANNOUNCEMENTS

### Undergraduate and Graduate Student Travel Grants

Undergraduate and Graduate students may apply to the ACS Maryland Section to receive up to \$500 for travel and expenses to attend a National ACS Meeting. This is open to ACS members who are enrolled full time in a college or university in the Maryland Section.

The application should include:

- The meeting you plan to attend along with location and dates
- Your ACS membership number
- An estimated budget (cost for travel, registration, lodging, and meals)
- A 250 word essay describing your motivation for attending the meeting
- A copy of your abstract and the abstract number ACS gave it when your abstract was accepted
- A letter of support from your faculty advisor
- Please state what would be the most convenient way for the check to be made out, in the event you are awarded a travel grant.

We will begin accepting applications beginning November 15 for the 247th ACS National Meeting & Exposition (Dallas, TX, March 16-20, 2014) with decisions announced in January 2014. To a certain extent the decisions will be made on a first come, first served basis, however the goal is to allow students from as many schools as possible to attend, so special consideration will be given to the first student who applies from each college/university. *We especially encourage schools which have never had a student apply for a travel grant, to consider applying for a travel grant this year.*

**Submit your application to Louise Hellwig by e-mail**

([Louise.Hellwig@morgan.edu](mailto:Louise.Hellwig@morgan.edu)).

If you are awarded a travel grant, the following items need to be submitted after the meeting:

- Photocopies of receipts totaling the amount of the award.
- Trip report summarizing your experience at the meeting and photos of yourself at your poster at the meeting so we can proudly post them on the section website.

## RECENT EVENTS

### November Dinner Meeting

At the November 14<sup>th</sup> meeting of the Maryland Section of the ACS, Professor Katherine Seley-Radtke, professor of Chemistry & Biochemistry at the University of Maryland, Baltimore County (UMBC), spoke about her *Adventures in Science, Policy, and Diplomacy*, sponsored by the Women Chemists Committee. She began by describing her ongoing research in the design and synthesis of flexible nucleoside and nucleobase inhibitors. These inhibitors use the principle of mutually induced fit to achieve high affinity for their targets and retain that high affinity in the face of “escape mutations” that would confer resistance to conventional inhibitors. She talked about how her scientific work led to a long term and still continuing collaboration in Russia, and how her





resulting interest in international science policy inspired her to spend a year in the State Department as a Jefferson Science Fellow, a program for tenured faculty from academic institutions to serve as science advisors for foreign policy issues. As a Jefferson Fellow, she worked on the Biosecurity Engagement Program in Indonesia, and provided analysis and reporting on the rapidly changing science landscape in Russia. Though she has returned to her drug design research at UMBC, she still works on behalf of the State Department, and showed photos of recent trips to Russia, Italy, Slovenia, and more. She provided information on the wide variety of science policy fellowships available to scientists at different stages of their careers, and spoke passionately about the importance of scientists' providing expertise to policy makers who must make crucial decisions impacting science in the U.S. and around the world.

*-Contributed by Elizabeth Petro*

## **Braude Award**

On Thursday, October 24<sup>th</sup>, the Maryland section held the Braude Award dinner meeting at Morgan State University. Each year the Braude Award honors a professor with a successful research program who involves undergraduates as researchers. The recipient receives a framed certificate and a check to support his/her research. This year's awardee was Dr. Alexis Nagengast, Associate Professor of Chemistry and Biochemistry at Widener University in Chester, PA. Dr. Nagengast was honored for her extensive work with undergraduate students, both in her own research lab and also as co-Director of the Arts and Sciences Summer Research Program at Widener. At the award ceremony, she presented her studies on the role of resveratrol on lifespan and nutrient storage. We congratulate Dr. Nagengast on her accomplishments!



Louise Hellwig presents the Braude Award to Dr. Alexis Nagengast

## REMINDER: Receiving the Chesapeake Chemist

Hopefully, if you are reading the Chesapeake Chemist this month, you are receiving it via e-mail from us. We went to electronic-only mailings to our MD ACS membership in October 2006.

**Changing your e-mail address? Moving out of the MD ACS area?** E-mail changes can be updated either by:

- E-mailing us at [contact-us@mdchem.org](mailto:contact-us@mdchem.org) – give us your member #, full name, and e-mail changes and we can ensure that your records are updated with National ACS.
- **Contacting the National ACS membership division: 800-333-9511 (US only)** or [service@acs.org](mailto:service@acs.org)

To ensure that you receive the Chesapeake Chemist, please add the MD ACS e-mail ([contact-us@mdchem.org](mailto:contact-us@mdchem.org)) to your accepted e-mail address list IF you have a spam filter.

If you are a member who currently doesn't receive the Maryland ACS Chesapeake Chemist but download it from our website, it is possible that National ACS does not have your e-mail address on file. If you want to receive the Chesapeake Chemist via e-mail, please e-mail us at [contact-us@mdchem.org](mailto:contact-us@mdchem.org) – give us your member #, full name, and e-mail address and we can ensure that your records are updated with National ACS.

The current edition and previous editions of the Chesapeake Chemist can ALWAYS be obtained via our website: [www.mdchem.org](http://www.mdchem.org) – please see the Newsletter Archive link on the left-hand side of the website.



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3815 LANCASTER PIKE, WILMINGTON, DE 19805  
Phone: 302-998-1184, Fax: 302-998-1836

E-mail: ([micronanalytical@compuserve.com](mailto:micronanalytical@compuserve.com) )  
Website: (<http://micronanalytical.com/>)

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