

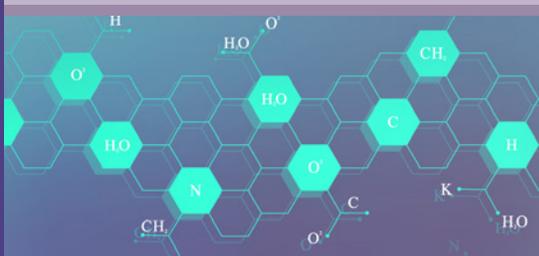


CHE NEWSLETTER

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HIGHLIGHTS

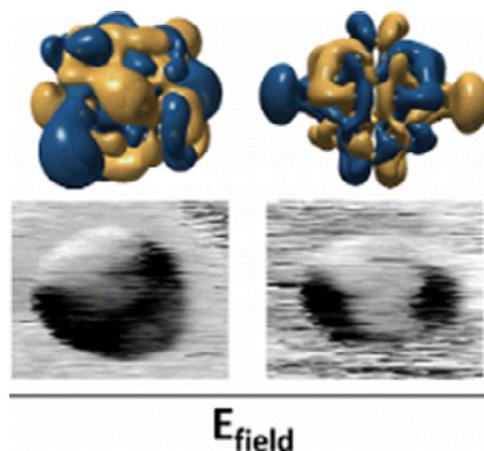
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CHE COMMUNICATION LISTSERV SIGN-UP

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IN THIS ISSUE



*Martin Gruebele, co-PI: Joseph Lyding
Beckman Institute, University of Illinois at Urbana-Champaign,
CHE-1307002*

SINGLE-MOLECULE OPTICAL ABSORPTION IMAGED BY SCANNING TUNNELING MICROSCOPY.

The calculated (top) and experimental (bottom) absorption images of a single lead sulfide, PbS, quantum dot in an electric field reveal excited electronic structure with nanometer spatial resolution.

Light excitation of quantum dots and energy transfer between quantum dots and other molecules are important for applications in biological imaging, photocatalysis, and solar cells. The Gruebele lab uses single molecule absorption detected by scanning tunneling microscopy (SMA-STM) to study light absorption and intermolecular energy transfer between single quantum dots and carbon nanotubes.

The shape of the excited electron density in individual quantum dots varies significantly depending on dot orientation and defects in the dot. The absorption shape and intensity are also strongly dependent on the applied electric field, revealing different excited states. The image shows an example of a lead sulfide quantum dot on a gold surface. Evidence of energy transfer between quantum dots and carbon nanotubes is also observed. These data show what the excited states and energy flow in quantum dot assemblies actually look like.



UPDATE FROM THE DIVISION DIRECTOR

Dear Colleagues,

The Chemistry Division is working very hard to make recommendations on the 1,250 IIA proposals that were received by the Division during the September and October program submission windows. We would like to thank the chemistry community members who took time out of their busy schedules to review proposals either by mail or in panel (on-site or remotely). Your time and expert input is vital to the success of the peer review process.

Please note the Faculty Early Career Development (CAREER) Program's most recent solicitation has been published and we are looking forward to your proposals! The deadline for submission to the Chemistry Division is July 21, 2017; see: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf17537.

Awardees from the CAREER program are eligible for the Presidential Early Career Awards for Scientists and Engineers (PECASE). This program recognizes the most meritorious recent CAREER awardees *who are nominated by the NSF*. Last year two of the 21 NSF PECASE award recipients for 2016 were funded by the Chemistry Division: Erin Carlson from the University of Minnesota (CAREER award in the Chemistry of Life Processes Program) and David Masiello from the University of Washington (CAREER award in the Chemical Theory, Models and Computational Methods program). Congratulations to both of them!

The 2017 NSF Chemistry Early Career Investigator Workshop was held on March 20-21, 2017 and 99 junior faculty from the chemistry community participated. Professors Katherine Plass (Franklin and Marshall College) and Thomas Miller (California Institute of Technology) did a wonderful job organizing this second workshop and I thank them for their outstanding efforts. Please see the article later in this newsletter for details - CHE is looking forward to planning another productive workshop in March 2018.

I enjoyed meeting many of you at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon) from March 5-9, 2017. This year's meeting attendance was estimated at over 14,000 people. I hope many of you were able to meet the other NSF staff members as well: Drs. Michelle Bushey, Kelsey Cook, and Lin He from CHE's Chemical Measurement and Imaging (CMI) Program (CMI), as well as Dr. Raj Mutharasan from the Nano-Biosensing Program in the Division of Chemical, Bioengineering, Environmental, and Transport Systems (CBET). The NSF staff presented at a networking symposium on Defining, Refining, and Advancing Chemical Measurement and Imaging. The program officers also presented two posters on NSF Chemistry Programs, Funding Opportunities and Broader Impacts in NSF-CHE Proposals. The symposium was summarized in Chemical and Engineering News.

Finally, I would like to call your attention to the 254th American Chemical Society (ACS) National Meeting & Exposition that will be held on August 20-24, 2017 in Washington, D.C. We are currently planning some of the Presidential Events scheduled for Tuesday, August 22. The morning session on The World of Funding Opportunities in Chemistry will include a poster session on opportunities (for funding and/or resources) from federal agencies, industry, government labs, private foundations, and international groups. The early afternoon session will feature presentations by Federal agencies engaged in funding the chemical sciences – learn about their current budget status and funding initiatives, and meet the program officers. In the late afternoon, we will have our usual one-on-one Speed Coaching session where all ACS attendees are invited to drop by, ask questions and get personalized advice. Thanks to ACS President, Allison Campbell, and her staff for making these special sessions possible!

Best regards,

Angela K. Wilson
Division Director, CHE

THE DIVISION WOULD LIKE TO CONGRATULATE THE FOLLOWING STAFF MEMBERS



Timothy Patten

Timothy Patten is currently on a 120-day detail as the Acting Deputy Division Director in the Directorate of Engineering's Division of Chemical, Bioengineering, Environmental and Transport Systems (CBET). Thank you Tim for taking on this leadership role!



Marla Stewart

Marla Stewart is currently on a 120-day internal developmental detail as a Program Specialist for the Centers for Chemical Innovation (CCI) and Chemical Synthesis (SYN) Programs.



Eric Pfeiffer

Eric Pfeiffer is currently on a 120-day internal developmental detail as a Program Specialist for the Chemical Catalysis (CAT) and Chemistry of Life Processes (CLP) Programs.

RELOCATION OF THE NATIONAL SCIENCE FOUNDATION (NSF)



NSF is moving to new office space in Fall 2017. The new space is designed to be highly flexible, adaptive, collaborative, and technologically-advanced. It will also meet Federal standards for security and environmental sustainability and support the mission of NSF and the recruitment and retention of a high quality workforce.

The new headquarters will reflect NSF's role nationally and internationally in the science and engineering community. The goal is to create a total operational environment that integrates people (culture), tools (technology), and place (work environment) in a manner that reflects NSF's position as the premier science agency for the government.

We anticipate roughly 50% greater seating capacity in the new Panel/Conference Center with state-of-the-art infrastructure to support IT and communications. NSF will occupy approximately 95% of the newly constructed building, which is located on 2 acres of the Hoffman Town Center, directly across from the Eisenhower Avenue Metro Station. The new building consists of 19 floors: Program offices are located on floors 5 through 19. Floors 1-4 contain various support spaces.

The Division of Chemistry will be moving to the new headquarters in early September so we look forward to inviting you to serve on a panel using our new facilities.

New NSF Headquarters Address:

National Science Foundation | 2415 Eisenhower Avenue, Alexandria, VA 22314
(phone numbers will remain the same)

THE FACULTY EARLY CAREER DEVELOPMENT (CAREER) PROGRAM

THE DEADLINE TO APPLY TO THE DIVISION OF CHEMISTRY IS JULY 21, 2017

CAREER: The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. Activities pursued by early-career faculty should build a firm foundation for a lifetime of leadership in integrating education and research. NSF encourages submission of CAREER proposals from early-career faculty at all CAREER-eligible organizations and especially encourages women, members of underrepresented minority groups, and persons with disabilities to apply.

PECASE: Each year NSF selects nominees for the Presidential Early Career Awards for Scientists and Engineers (PECASE) from among the most meritorious recent CAREER awardees. Selection for this award is based on two important criteria: 1) innovative research at the frontiers of science and technology that is relevant to the mission of NSF, and 2) community service demonstrated through scientific leadership, education, or community outreach. These awards foster innovative developments in science and technology, increase awareness of careers in science and engineering, give recognition to the scientific missions of the participating agencies, enhance connections between fundamental research and national goals, and highlight the importance of science and technology for the Nation's future. Individuals cannot apply for PECASE. These awards are initiated by the participating federal agencies. At NSF, up to twenty nominees for this award are selected each year from among the PECASE-eligible CAREER awardees most likely to become the leaders of academic research and education in the twenty-first century. The White House Office of Science and Technology Policy makes the final selection and announcement of the awardees.

Please click here for further instructions on how to apply for the CAREER program:

https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf17537

Important Information for Proposers: A revised version of the *Proposal & Award Policies & Procedures Guide* (PAPPG) (NSF 17-1) (see: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=pappg), is effective for proposals submitted, or due, on or after January 30, 2017.

Frequently Asked Questions (FAQs) for the Faculty Early Career Development (CAREER) Program for Submission in Years 2017 - 2019 (NSF 17-050) (see: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf17050).

COLLABORATORS AND OTHER AFFILIATIONS INFORMATION

On April 24, 2017, the National Science Foundation (NSF) initiated a new pilot requiring the use of a spreadsheet template for identifying Collaborators and Other Affiliations information for Principal Investigators (PIs), co-PIs, and other senior project personnel identified on proposals.

The NSF *Proposal and Award Policies & Procedures Guide* (PAPPG, NSF 17-1) (see: https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf17001) requires PIs, co-PIs, and other senior project personnel identified on NSF proposals to individually upload Collaborators and Other Affiliations information as a Single Copy Document (see PAPPG Chapter II.C.1.e).

NSF uses this information during the merit review process to help manage reviewer selection. To expedite identification of potential reviewers, having a standard, searchable format for this information is essential. The new pilot standardizes Collaborators and Other Affiliations information across the Foundation and ensures that the information is submitted in a searchable format. Results from the pilot will be assessed and will determine how to proceed with this section of the proposal in the future.

Please note that the spreadsheet template:

- Has been developed to be fillable. However, the content and format requirements must not be altered by submitters.

- Must be saved in .xlsx or .xls formats and directly uploaded into FastLane as a Collaborators and Other Affiliations Single Copy Document.
- Will be converted by FastLane from an .xlsx or .xls file to a PDF file.
- Has been tested in Microsoft Excel, Google Sheets, and LibreOffice.
- Will enable preservation of searchable text that otherwise would be lost. Must be uploaded in .xlsx or .xls formats only. Uploading a Collaborators and Other Affiliations Single Copy Document in any other format may delay the timely processing and review of your proposal.
- Will be directly linked in FastLane. The template and associated instructions may also be accessed directly at: <https://www.nsf.gov/bfa/dias/policy/coa.jsp>.

In addition to the merit review process benefits, the Collaborators and Other Affiliations template will reduce administrative burden and improve efficiencies by providing submitters with a compliant and reusable format to maintain this information for use in subsequent proposal submissions to NSF.

Please be advised that the new Collaborators and Other Affiliations pilot will only be for FastLane proposal submissions. Grants.gov proposal submissions will continue to follow the instructions in *NSF Grants.gov Application Guide* (see: <https://www.nsf.gov/pubs/policydocs/grantsgovguide0117.pdf>) Chapter VI.2.4.

For system-related questions, please contact FastLane User Support at 1-800-673-6188 or fastlane@nsf.gov. Policy-related questions should be directed to policy@nsf.gov.

2017 NSF CHEMISTRY EARLY CAREER INVESTIGATOR WORKSHOP



On March 20-21, 2017, Professors Katherine Plass (Franklin & Marshall College) and Thomas Miller (California Institute of Technology) hosted the second NSF Chemistry Early Career Investigator workshop

in Arlington, VA. The workshop brought together 99 junior faculty from a broad range of academic institutions to discuss steps in preparing a research proposal, specifically to the NSF Early Career Development (CAREER) Solicitation. The group discussed strategically crafting research ideas, planning educational and outreach activities, and assessing and evaluating project aims. Nearly all of the program officers and administrative professionals from CHE also participated.

The workshop agenda included presentations from both NSF and non-NSF program officers as well as from leaders in the chemical community. Program officers led small group breakout sessions, such as a mock panel review, as well as a “speed coaching” session. The highlight of the workshop was a series of excellent presentations from CAREER award recipients who shared their experiences on preparing an NSF CAREER proposal and how it can form the basis of successful scientific and outreach programs. We thank four CAREER award recipients for sharing their experiences with the audience: Professors Gordana Dukovic (University of Colorado Boulder), Matthew Whited (Carleton College), Luis Campos (Columbia University), and Shekhar Garde (Rensselaer Polytechnic Institute). We thank them for their excellent, motivational talks. Also presenting at the workshop were six non-NSF program officers from the National Institutes of Health (NIH), Department of Energy (DOE), Army Research Office (ARO), Air Force Office of Scientific Research (AFOSR), and Office of Naval Research (ONR). The Division of Chemistry’s program officers and administrative staff provided talks about funding programs, proposal preparation, merit review criteria, and the panel review process. I thank all the staff members, especially Tim Patten, for participating in the workshop. Job well done!

Note: The Chemistry Division is planning another workshop in March 2018 – hope to see you (or your new faculty members, postdocs seeking employment in academics or senior graduate students) there!

Resources from the Workshop are available online: <https://tinyurl.com/llhxsbd>

OUTREACH AT THE PITTSBURGH CONFERENCE ON ANALYTICAL CHEMISTRY AND APPLIED SPECTROSCOPY (PITTCON)



Members of the Chemistry Division's Chemical Measurement and Imaging (CMI) Program attended Pittcon (March 5-9, 2017, in Chicago, IL) – the world's leading annual conference and exposition on laboratory science with attendees from industry, academia, and government from over 90 countries worldwide.¹ This year's attendees (estimated at over 14,000 people²) included Drs. Michelle Bushey, Kelsey Cook, and Lin He, CHE's Division Director Dr. Angela Wilson, and Dr. Raj Mutharasan from the Nano-Biosensing Program in the Division of Chemical, Bioengineering, Environmental, and Transport Systems (CBET).

The NSF staff presented at a well-attended networking session on Defining, Refining, and Advancing Chemical Measurement and Imaging. This 90-minute session provided a unique opportunity for attendees to meet with one another and with NSF Program Directors to discuss their research fit in CHE programs, as well as research trends and cultures in various distinct, yet related, research sub-communities within the CMI and CBET funding purview. The program officers also presented two posters on the topics of National Science Foundation (NSF) Division of Chemistry Programs and Funding Opportunities and Including Broader Impacts in Your NSF-CHE Proposals. A Symposium on Mid-Scale Instrumentation Programs in the Chemical Sciences³ was organized by Paul Bohn (University of Notre Dame) and Robert Hamers (University of Wisconsin-Madison) to disseminate the findings of two related CHE-sponsored workshops. Dr. Wilson provided the CHE perspective. The symposium and workshops were summarized in Chemical and Engineering News.⁴

1 <http://pittcon.org/about-us>

2 *Chemical & Engineering News*, *Change comes to Pittcon*, p. 22-23, March 27, 2017.

3 <http://nsfmidscale.chem.wisc.edu>

4 *Chemical & Engineering News*, *What could chemistry do with more expensive instruments?* P. 24-26, March 27, 2017.

254TH AMERICAN CHEMICAL SOCIETY (ACS) NATIONAL MEETING & EXPOSITION

The 254th American Chemical Society (ACS) National Meeting will be held from Sunday, August 20 – Thursday, August 24, 2017. The meeting will take place at the Walter E. Washington Convention Center. The theme of the meeting is: Chemistry's Impact on the Global Economy.

Chemistry staff members will give a series of presentations focused on research opportunities, broadening participation, education, outreach activities and will also participate in workshops.

We are currently planning some of the Presidential Events scheduled for **Tuesday, August 22:**

9:00 am - 12:00 pm The World of Funding Opportunities in Chemistry will include a poster session on opportunities (for funding and/or resources) from federal agencies, industry, government labs, private foundations, and international groups. Looking for new resources? Hope you can join us!

1:00 pm - 2:30 pm Federal Funders Town Hall Meeting will feature presentations by Federal agencies engaged in funding the chemical sciences. Come to hear discussions of the current budget status, funding initiatives and new staffing assignments.

3:00 pm - 5:00 pm Speed Coaching with Federal Funders will feature one-on-one Speed Coaching session where all ACS attendees are invited to drop by, ask questions and get personalized advice.

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Chemistry Program Abbreviations			
Environmental Chemical Sciences (ECS)	Chemistry of Life Processes (CLP)		
CHE Centers (CCI)	Designing Materials to Revolutionize & Engineer our Future (DMREF)		
Chemical Catalysis (CAT)	Macromolecular, Supramolecular & Nanochemistry (MSN)		
Chemical Measurement & Imaging (CMI)	Undergraduate Programs in Chemistry (REU)		
Chemical Structure, Dynamics & Mechanisms (CSDM-A/B)	Chemical Theory, Models & Computational Methods (CTMC)		
Chemical Synthesis (SYN)	Centers for Chemical Innovation (CCI)		

DIVISION OF CHEMISTRY
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