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ALUMNI NEWSLETTER

CU DENVER CHEMISTRY DEPARTMENT | SPRING 2019

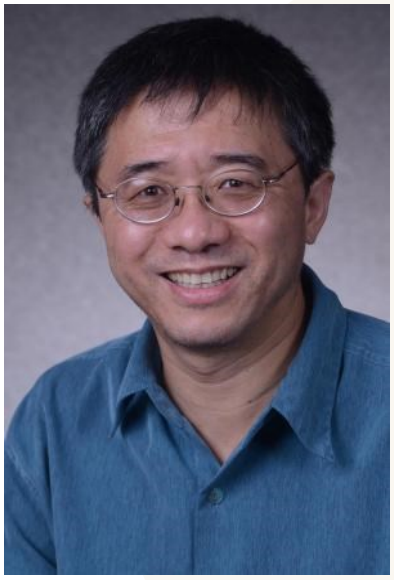
IN THIS ISSUE

A Word From the Chair

BY DR. HAOBIN WANG

It is again the end of an academic year. Following the tradition, the College of Liberal Arts and Sciences (CLAS) conducted an award ceremony to recognize special achievements of our students and faculty. This year from the Chemistry Department, Dr. Marino Resendiz received the CLAS award for Excellence in Leadership and Service, and Dr. Marta Maroń received the CLAS award for Excellence in Teaching. In addition, Marta won the campus award for Excellence in Teaching (Non-Tenure-Track) and was also the recipient of the Learning Resource Center's Annual Service Award. Dr. Xiaojun Ren was under the university spotlight for publishing a paper in Nature Communications. The article, titled "Live-cell single-molecule dynamics of PcG proteins imposed by the DIPG H3.3K27M mutation," was co-authored by graduate students: Roubina Tatavosian, Huy Nguyen Duc, and undergraduate chemistry student, Thao Ngoc Huynh. The team's multi-disciplinary research focuses on identifying genetic mechanisms in order to develop therapeutic treatments for children with pediatric cancer tumors called diffuse intrinsic pontine gliomas (DIPGs). They developed and used live-cell, single-molecule imaging to see how genetic processes lead to tumorigenesis – the formation of tumors.

A Word From the Chair (cont.)



During this academic year the three faculty members mentioned above have been promoted to higher ranks. Marta has been promoted to Associate Professor Clinical Track. Marino and Xiaojun have received tenure and were promoted to Associate Professors.

Outside of the university, Dr. Jefferson Knight has been named a 2018 Henry Dreyfus Teacher-Scholar by the Camille and Henry Dreyfus Foundation. This competitive award recognizes faculty from undergraduate-centered departments for their outstanding accomplishments in research and education in the chemical sciences. Jeff joins Dr. Hai Lin from this department as CU-Denver faculty who have received this distinction. Currently Jeff is on sabbatical leave on a prestigious Fulbright Scholarship through the U.S. State Department to support his research on molecular mechanisms of protein-membrane interactions, working in collaboration with Prof. Markus Zweckstetter at the Max Planck Institute for Biophysical Chemistry in Göttingen, Germany.

Three faculty members will be on sabbatical leave in the coming academic year. These include Professors Hai Lin and Xiaotai Wang, and Associate Professor Yong Liu. A senior colleague from this department, Bob Damrauer, has recently celebrated his 50th anniversary with the university. Bob was one of the earliest faculty members hired by the downtown campus, and still interacts regularly with other faculty members in the department. He and his wife Lennie have recently established a Distinguished Lectureship in Chemistry: the Robert Damrauer Lectureship. This lectureship provides funds for students to invite a well-known chemist to our campus for a two to three day visit. The first lecture is scheduled in the Fall semester of 2019.

The departmental undergraduate award ceremony was held on May 17. A list of our awardees and their group pictures are included in this newsletter. In addition, the American Chemical Society has presented to Austin Skinner the 2019 Undergraduate Award in Organic Chemistry and Tanja Kovacevic the 2019 Undergraduate Award in Physical Chemistry. I would also like to congratulate our MS student Selina Vong, who won the first ever CU Denver Three Minute Thesis Competition last November as well as the Inter-campus Three Minute Talks Competition in January.

In Spring 2019 the department has launched General Chemistry II for students pursuing science, technology, engineering, and mathematics (STEM) majors. This is part of the general chemistry course sequence that provides a foundation in quantitative science. It is relevant to the interests and educational needs of students who intend to engage in and pursue undergraduate and post-undergraduate STEM study. Two of the department's award-winning instructors, Peggy Bruehl and Marta Maroń, co-taught this course for the first time. The course enjoyed great success and will be continued in the following year. Another newly developed course (by Marta Maron), Chemistry 1494-001: Forensic Science, was also very successful and will be offered every semester from now on.

Next year will be my last year serving as the department chair. I have enjoyed my job and was also pleased with the progress made by my colleagues. I will do my best to complete my mission during the last year, and I am looking forward to the development under new leadership.

Haobin Wang

Haobin Wang
Chair

2018-2019 Department Awards Recipients

Pictured from left to right: Alexa Schwartz, Samantha Kent, Courtney Kiggins, Dmitri LeeNatali, Haoi Tieu Bao Pham, Baris Aydintug, Jake Baldasare, Austin Skinner, Madeline Glennon, Jillian Oviedo, Tanja Kovacevic, Julianna Oviedo, Casey Bergloff, Dr. Haobin Wang

DOUGLAS DYKES SCHOLARSHIP
Jillian Oviedo
(pictured with Dr. Haobin Wang)

ROBERT DAMRAUER SCHOLARSHIP
Baris Aydintug & Tanja Kovacevic
(pictured with Dr.Robert Damrauer)

MIKE MILASH TEACHING AWARD (GRADUATE)
Samantha Kent
(pictured with Dr. Haobin Wang)

MIKE MILASH TEACHING AWARD (UNDERGRADUATE)
Austin Skinner
(pictured with Dr. Haobin Wang)

OUTSTANDING GENERAL CHEMISTRY STUDENT
Casey Bergloff
(pictured with Dr. Haobin Wang)

OUTSTANDING ORGANIC CHEMISTRY STUDENT
Haoi Tieu Bao Pham
(pictured with Dr. Haobin Wang)

OUTSTANDING ANALYTICAL CHEMISTRY STUDENT
Dmitri LeeNatali
(pictured with Dr. Haobin Wang)

OUTSTANDING BIOCHEMISTRY STUDENT
Julianna Oviedo
(pictured with Dr. Haobin Wang)

OUTSTANDING B.S. CHEMISTRY STUDENTS
Jake Baldasare & Alexa Schwartz
(pictured with Dr. Haobin Wang)

OUTSTANDING M.S. CHEMISTRY STUDENT
Courtney Kiggins
(pictured with Dr. Haobin Wang

CU DENVER TRAVEL AWARDEE
Madeline Glennon
(pictured with Dr. Haobin Wang)

NOT PICTURED

Chase Barker—Marti Barrett Scholarship
Yonatan Wolde—Outstanding General Chemistry Student
Alexander Plonski—Outstanding Honors General Chemistry Student
Kristina Jessen—Outstanding Inorganic Chemistry Student

Chemistry Club

This year the Chemistry Club once again had a successful turnout for the Data Blast event. Students from chemistry labs presented their reseatch via posters and oral presntations and connected with other students on campus. They conducted monthly meetings where they discussed research opportunites, had pizza parties, played board games and overall encouraged bonding with other students who are interested in chemistry. They sold ACS Study Guides to students. They achieved a membership of 82 students, which included students from non-chemistry majors. Next year they hope to form a stronger collaboration with faculty, participate in November 2019's Data Blast, ecourage students to attend monthly club meetings, and promote research on campus. Most of all, they aim to serve by providing a positive environment for any student interested in chemistry.

Alumni Published

Hunter Cuchiaro, who graduated from the MS Chemistry program in the Summer of 2018, had their manuscript from research at NREL pulished in connection to their master's studies. It was published in the Journal of Agriculture and Food Chemistry and is titled: *"Total Protein Analysis in Algae via Bulk Amino Acid Detection: Optimization of Amino Acid Derivatization after Hydrolysis with O-Phthalaldehyde 3-Mercaptopropionic Acid (OPA-3MPA)".*

Student Recognitions

- *Baris Aydintug—2018 RaCAS Oral Presentation, 2nd Place*
- *Baris Aydintug—2019 RaCAS Award: Poster 3rd Place*
- *Baris Aydintug—MARC-USTAR Scholar*
- *Danielle Miller—2018 ACS Undergraduate Award in Physical Chemistry*
- *Jillian Oviedo—2019 UROP Award*
- *Jillian Oviedo—2019 EUReCA Scholar*
- *Mikias Negussie—2018 RaCAS Oral Presentation, 2nd Place*
- *Sahitya Talachutla—UROP Award*
- *Sahitya Talachutla—2019 RMACC Scholarship*
- *Shamik Bhat—2019 RMACC Scholarship*
- *Shamik Bhat—UROP Award*
- *Shamik Bhat—2019 EUReCA Scholar*
- *Tanja Kovacevic—UC Denver Academic Research Expo Poster Award*
- *Tanja Kovacevic—2019 ACS Undergraduate Award in Physical Chemistry*
- *Tanja Kovacevic—2019 RaCAS Award: Poster 1st Place*
- *Tanja Kovacevic—2019 RMACC Scholarship*
- *Tanja Kovacevic—2019 UROP Award*
- *Tanja Kovacevic—MARC-USTAR Scholar*

Recent Chemistry Faculty Publications

- Dissecting the Contribution of Release Factor Interactions to Amber Stop Codon Reassignment Efficiencies of the Methanocaldococcus jannaschii Orthogonal Pair. David G. Schwark,Margaret A. Schmitt and, **John D. Fisk.** 2018, Genes, volume 9, page 546. DOI: 10.3390/genes9110546.
- Mapping the Plasticity of the Escherichia coli Genetic Code with Orthogonal Pair-Directed Sense Codon Reassignment. Margaret A. Schmitt, Wil Biddle, **John D. Fisk**. 2018, Biochemistry, volume 57, pages 2762-2774. DOI: 10.1021/acs.biochem.8b00177
- Benchmarking the Effective Fragment Potential Dispersion Correction on the S22 Test Set. Shinae Kim, Chelsea M. Kaliszewski, **Emilie B. Guidez** and Mark S. Gordon,The Journal of Physical Chemistry A, 2018, 122(16),4076-4084
- Perspective:Ab initioForce Field Methods Derived from Quantum Mechanics. Peng Xu, **Emilie B. Guidez**, Colleen Bertoni and Mark S. Gordon, The Journal of Chemical Physics, 2018, 090901.
- Membrane Binding by Synaptotagmin-Like Protein 4: Site Directed Mutagenesis of the Lipid Interaction Surface. AAA Alnaas, J Oviedo, A Siriboe, S Tran, M Negussie, **H Lin**, **J Knight.** Biophysical Journal 116 (3), 518a.
- Membrane Binding of Synaptotagmin-Like Protein 4: Insight from Molecular Dynamics Simulations. M Negussie, S Tran, NL Chon, J Oviedo, A Alnaas, **H Lin, J Knight.** Biophysical Journal 116 (3), 372a.
- Duster, A. W.; Wang, C.-H.; **Lin, H**. "Adaptive QM/MM for Molecular Dynamics Simulations: 6. Proton Transport through a Biological Channel," Journal of Chemical Theory and Computation, 2019, 15, 892-905.
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- Ozone initiated heterogeneous oxidation of unsaturated carboxylic acids by ATR-FTIR spectroscopy. X Gao, C Leng, G Zeng, D Fu, Y Zhang, **Y Liu**. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 214, 177-183.
- Unusually sharp FTIR v (OH) bands and very weak OH F hydrogen bonds in M2 (H2O) 1, 2B12F12 hydrates (MNaCs). MR Lacroix, X Gao, **Y Liu**, SH Strauss. Journal of Fluorine Chemistry 217, 105-108.
- Computational study on the removal of photolabile protecting groups by photochemical reactions. CH Yang, J Denne, **S Reed**, **H Wang**. Computational and Theoretical Chemistry 1151, 1-11.
- Measurement and multilayer model of cooling of gold nanoparticles: Transient thermoreflectance experiments and multilayer analytical modeling. BG Green, SM Budy, **SM Reed**, ME Siemens. Journal of Applied Physics 124 (14), 144301.
- Nuclear condensates of the Polycomb protein chromobox 2 (CBX2) assemble through phase separation. Roubina Tatavosian, Samantha Kent, Kyle Brown, Tingting Yao, Huy Nguyen Duc, Thao Ngoc Huynh, Chao Yu Zhen, Brian Ma, **Haobin Wang**, **Xiaojun Ren**. Journal of Biological Chemistry 294 (5), 1451-1463.
- Live-cell single-molecule dynamics of PcG proteins imposed by the DIPG H3. 3K27M mutation. Roubina Tatavosian, Huy Nguyen Duc, Thao Ngoc Huynh, Dong Fang, Benjamin Schmitt, Xiaodong Shi, Yiming Deng, Christopher Phiel, Tingting Yao, Zhiguo Zhang, **Haobin Wang**, **Xiaojun Ren**. Nature communications 9 (1), 2080.
- Mesomorphic Behavior in Silver(I) N-(4-Pyridyl) Benzamide with Aromatic π–π Stacking Counterions. Torres, I.; Ruiz, M.; Phan, H.; Dominguez, N.; Garcia, J.; Nguyen, T-Q.; Evans, H.; **Resendiz, M. J. E.;** Baruah, T.; Metta, A.; Arif, A.; Noveron, J. C. Materials, 11, 9, 1666 2018 DOI: 10.3390/ma11091666.
- Modeling of Canonical and C2'-O-thiophenylmethyl Modified hexamers of RNA. Insights into the Nature of Structural Changes and Thermal Stability. Dzowo, Y. K.; Wolfbrandt, C.; **Resendiz, M. J. E.; Wang, H**. New J. Chem. 42, 10177-10183, 2018 DOI: 10.1039/C8NJ01739E.
- Molecular structure of an N-terminal phosphorylated β-amyloid fibril. ZW Hu, **L Vugmeyster**, DF Au, D Ostrovsky, Y Sun, W Qiang. Proceedings of the National Academy of Sciences, 201818530.
- Solid-state NMR reveals a comprehensive view of the dynamics of the flexible, disordered N-terminal domain of amyloid-β fibrils. FF Au, D Ostrovsky, R Fu, **L Vugmeyster**. Journal of Biological Chemistry, jbc. RA118. 006559.
- Quantum Phase Transition in the Spin-Boson Model: A Multilayer Multiconfiguration Time-Dependent Hartree Study. **H Wang**, J Shao. The Journal of Physical Chemistry A.
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DEPARTMENT OF CHEMISTRY FACULTY

MARGARET BRUEHL
PRISCILLA BURROW
ROBERT DAMRAUER
DAVID ENGELKE
VANESSA FISHBACK
JOHN FISK
EMILIE GUIDEZ
KYOUNG NAN KIM
DORIS KIMBROUGH
JEFF KNIGHT
JUNG-JAE LEE
HAI LIN
YONG LIU
MARTA MAROŃ
SCOTT REED
XIAOJUN REN
MARINO RESENDIZ
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HAOBIN WANG, *CHAIR*
XIAOTAI WANG

Department of Chemistry
COLLEGE OF LIBERAL ARTS AND SCIENCES
UNIVERSITY OF COLORADO **DENVER**

Department of Chemistry
University of Colorado Denver
Campus Box 194, PO Box 173364
Denver, CO 80217-3364
clas.ucdenver.edu/chemistry