

Journal of Chemical Education Call for Papers: Special Issue on Diversity, Equity, Inclusion, and Respect in Chemistry Education Research and Practice

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ABSTRACT: The *Journal of Chemical Education* announces a call for papers for an upcoming special issue on diversity, equity, inclusion, and respect in chemistry education research and practice.

KEYWORDS: Curriculum, Laboratory Instruction, Learning Theories, Women in Chemistry, Inclusive Teaching, Broadening Participation, Cultural Relevance, STEM Pathways, Marginalized Populations

■ INTRODUCTION

Nationally, students exit chemistry and other science, technology, engineering, and mathematics (STEM) disciplines at rates that threaten the stability of the STEM workforce.^{1–3} The departure of women and ethnic and racial minorities from many STEM disciplines can be as high as twice that of Caucasian and Asian students.³ This exodus limits human resources, preventing the nation from realizing an inclusive and resilient economy.

The discipline-based education research (DBER) goal of “identifying approaches to make science and engineering education broad and inclusive”⁴ highlights a national goal and global necessity of deepening our understanding of methodologies and strategies for broadening participation in STEM disciplines and careers. As the central science and a gateway into STEM disciplines, chemistry provides a strategic setting for investigating this DBER goal. Within the discipline lies a unique opportunity to delineate what works to ensure that those who are members of underrepresented groups succeed in the pursuit of a scientific career for which chemistry is a foundational discipline.^{2,5,6} There is a significant body of work characterizing why students struggle in STEM learning environments. However, as was recently noted in an editorial in this *Journal*:⁷

As we begin to investigate how systemic racism impacts the outcomes of Black Americans, we need to move beyond traditional arguments of merit and preparedness to start to question how these individuals experience our institutions in the classroom, the research laboratory, and the scientific culture.

We need not only an understanding of positive institutional settings and learning experiences that influence students’ career paths but also an understanding of how systemic racism and other forms of discrimination and bias impact a student’s journey. We call for papers that leverage theories of diversity,

equity, inclusion, and respect (DEIR) to increase engagement of individuals from groups underrepresented in the chemistry enterprise and decrease barriers experienced by these individuals in the discipline.

Diversity, equity, inclusion, and respect are discrete concepts yet are inextricably linked. Collectively and independently, the terms describe efforts to reduce disparities and remove barriers to participation. *Diversity* recognizes a range of identities and the value in the varied perspectives that each identity brings to a collective. Here we seek to highlight those efforts that target groups underrepresented in our disciplines, particularly those having a range of racial/ethnic, socioeconomic, and academic backgrounds. *Equity* seeks to meet the needs of individuals to ensure their access to opportunities and resources. *Inclusion* involves systems and dispositions that seek to engage individuals from diverse backgrounds and create a welcoming and supportive environment in which these individuals can successfully operate. At the core of any diversity, equity, and inclusion effort is *respect*, regard for others as humans with something to contribute to the chemistry enterprise.

Advancing scholarship that broadens the participation of individuals from groups underrepresented in chemistry and related disciplines is critical to a DEIR agenda. Further, identifying practices that eliminate barriers is necessary to providing road maps for transforming instruction in chemistry classrooms and cultivating inclusive environments in our research laboratories. The *JCE* special issue on diversity, equity, inclusion, and respect will feature research studies,

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evidence-based practices, and novel approaches that advance these efforts in academic and professional settings within the chemistry classroom and enterprise.

■ SPECIAL ISSUE SCOPE AND CONTENT

The special issue seeks to lay the groundwork for DBER-based DEIR scholarship in chemistry and related sciences and serve as a seminal reference point for work in this area. Of interest are efforts that produce clear outcomes and transformative work within the context of chemistry education. Papers are welcome that consist of theoretical/conceptual frameworks, literature reviews, case studies, and reflective essays that

- Advance the understanding of diversity, equity, inclusion, and respect as individual concepts and synergistic terms by examining the most current terminology and its impact in this space.
- Describe mentoring, teaching, and research methods for studying issues related to DEIR.
- Examine the impact of various DEIR-related education and training activities on professional practice within the chemistry enterprise. Efforts to establish inclusive classroom environments, increase cultural competence in formal and informal learning spaces, and utilize systems thinking to create wholistic assessment tools are of particular interest.
- Increase the use and development of course content that is culturally relevant.
- Share practices to reduce identity-related anxiety for learners and increase learner agency.
- Characterize counter spaces, advocacy, and support structures in learning work environments.
- Describe how teaching and learning have been impacted by societal issues characterized by identity-based disparities, discrimination, and other forms of injustice.
- Describe how the chemistry enterprise can adapt curricula, pedagogies, and learning resources from other disciplines that promote DEIR practices.
- Describe activities that align with social and environmental justice and how such topics can be incorporated into the curriculum.
- Create awareness of and propose solutions to disparities in the academic outcomes caused by the COVID-19 pandemic, particularly those that impact students from marginalized populations and underserved communities and those with a low socioeconomic status.
- Examine how systemic racism, bias, microaggressions, and marginalization impact student outcomes in chemistry classrooms and professional spaces and integrate strategies for interrupting such phenomena.

Ultimately, the aim of this special issue is to offer scholars a framework for and successful examples of DEIR research and practice in chemistry in an academic and research environment. Authors are encouraged to contact the guest editors prior to submission to determine the suitability of other topics.

■ SUBMISSION, REVIEW, AND PUBLICATION PROCESS

Manuscripts should align with the principles outlined in the Author Guidelines for the *Journal of Chemical Education*⁸ and should be submitted using these manuscript types: Activity, Article, Commentary, Communication, Demonstration, Laboratory Experiment, and Technology Report. Authors are

encouraged to use the JCE-specific manuscript template,⁹ which contains prompts for required manuscript components; using the manuscript template aids in creating documents that are easier to review and publish.

Manuscripts should be submitted to the *Journal of Chemical Education* through the online manuscript submission portal ACS Paragon Plus¹⁰ by Monday, April 12, 2021, to receive full consideration for publication in the special issue. Manuscripts received after the deadline may still be considered for publication; however, depending on the length of the peer-review process, they may be included in an issue of the *Journal* subsequent to this special issue.

When submitting your manuscript in the Paragon system, select “Diversity, Equity, Inclusion, and Respect in Chemistry Education Research and Practice” under the Special Issue Selection during “Step 1: Type, Title, & Abstract”. Authors should also indicate in the cover letter during “Step 6: Details & Comments” that the manuscript is submitted for publication in the Special Issue on Diversity Equity Inclusion and Respect in Chemistry Education Research and Practice.

As with all ACS journals, articles intended for the special issue will be available ASAP (as soon as publishable) online as soon as they are accepted and proofs have been checked, ahead of publication in the special issue itself.

■ GUEST EDITORS

The themed issue will be curated by Leyte L. Winfield, Zakiya S. Wilson-Kennedy, Florastina Payton-Stewart, Jennifer Nielson, Ann C. Kimble-Hill, and Edgar A. Arriaga.

Leyte L. Winfield is an associate professor of chemistry and biochemistry at Spelman College where she serves as division chair for the Natural Sciences and Mathematics Division. In addition to her medicinal chemistry research, Dr. Winfield leads NSF-funded research to increase the participation and success of underrepresented groups in STEM and chairs the internal steering committee for the newly established Center of Excellence for Women of Color in STEM at Spelman College. She is the lead editor of the book *Growing Diverse STEM Communities: Methodology, Impact, and Evidence*, published by the ACS in 2019. Dr. Winfield is a coach and facilitator for the AAC&U PKAL STEM Leadership Institute and holds a postgraduate certificate in academic leadership from the Chicago School of Clinical Psychology. She chairs the Minority Chemist Subdivision of the ACS Division of Professional Relations, is a member of the ACS Committee on Professional Training, and serves on the leadership board for OrganicERs, a learning community for the development and dissemination of organic chemistry pedagogies and learning resources. Dr. Winfield is a scholar, mentor, and leader currently serving on the Editorial Advisory Board for the *Journal of Chemical Education*.

Zakiya Wilson-Kennedy is the Associate Professor of Research in Chemistry Education and the Assistant Dean for Diversity and Inclusion within the College of Science at Louisiana State University. Dr. Wilson-Kennedy is a computational chemist whose current research investigates the persistence of individuals from all backgrounds in STEM higher education and careers, with regard to faculty and student recruitment, retention, and success. She has been a principal investigator or coinvestigator on over \$30 million in extramural support with funding from the National Science Foundation, the National Institutes of Health, the U.S. Department of Education, the Louisiana Board of Regents,

and other agencies. Dr. Wilson-Kennedy is the lead editor of a recent book, *Broadening Participation in STEM: Effective Methods, Practices, and Programs*, and coeditor of *Growing Diverse STEM Communities: Methodology, Impact, and Evidence*. She is a charter member of the Society of STEM Women of Color and the Metropolitan Baton Rouge Chapter of the National Coalition of 100 Black Women as well as a founding contributor to the American Chemical Society Women Chemists of Color Initiative and former chair of the Minority Chemist Subdivision of the ACS Division of Professional Relations. In 2019, Dr. Wilson-Kennedy was chosen for the NOBCCChE Winifred Burks-Houck Professional Leadership Award for her display of leadership, scientific achievements, and community service throughout her STEM career. In addition to being the principal investigator on an NSF-funded S-STEM SOARS project and co-principal investigator of a recent NSF ADVANCE Catalyst project, Dr. Wilson-Kennedy currently serves on the Editorial Advisory Board for the *Journal of Chemical Education*.

Florastina Payton-Stewart is Associate Professor of Chemistry and Faculty Administrative Fellow for Diversity and Inclusion at Xavier University of Louisiana for the XULA STiDES NSF ADVANCE grant. Dr. Payton-Stewart is a professor, mentor, and advisor to students as well as junior faculty. She is a synthetic organic chemist with experience in both academia and industry. Her research projects involve design, synthesis, characterization, and biological screening of novel anticancer agents, funded in part by the National Institutes of Health, the National Science Foundation, and the Department of Defense. Dr. Payton-Stewart's current work focuses on identifying, implementing, and supporting institutional transformation centered on diversity, equity, and inclusion initiatives. She is a member of the National Institutes of Health Scientific Workforce Diversity Advisory Committee to the Director, a Keystone 2017 Fellow, a 2017 alumna of HERS, and a 2018 alumna of the AAC&U PKAL STEM Leadership Institute. In addition to research, teaching, publishing in bioorganic chemistry, and working on diversity, equity, and inclusion initiatives, Dr. Payton-Stewart currently serves on the Editorial Advisory Board for the *Journal of Chemical Education*.

Jennifer Nielson is an associate dean in the College of Physical and Mathematical Sciences and a teaching professor of organic chemistry in the Department of Chemistry and Biochemistry at Brigham Young University. She serves as the chair of the Society Committee on Education (SOCED), which recommends science education strategies and policy to the American Chemical Society. She is an *ex officio* member of the ACS Undergraduate Program Advisory Board and the Graduate Education Advisory Board. She serves on the advisory board for the ACS Bridge Project, an NSF INCLUDES Alliance in the Inclusive Graduate Education Network (IGEN). She is a National Change Agent on NSF DUE project Get the Facts Out, Changing the Conversation around STEM Teacher Recruitment. She is the creator and director of *Learning Chemistry Through Experimentation* workshops in Uganda, Africa, and her current chemistry research focuses on the importance of hands-on experimentation and best practices for student engagement in learning chemistry. She is a codirector of BYU Chem Camps, which are summer science camps for youth ages 9–14 to encourage girls to identify as scientists, and a Co-PI for STEM-FI, faculty teaching development workshops funded by the NSF. She is an

advocate for diversity, equity, inclusion, and respect in her ACS roles and at BYU, including as the advisor of wiSTEM to support women science and math students, a conference organizer for the national education organization Latinos in Action, and a member of BYU Diversity Network.

Ann C. Kimble-Hill is an assistant research professor of biochemistry at the Indiana University School of Medicine and the program coordinator for the Indiana University Purdue University Indianapolis (IUPUI) Post-Baccalaureate Research Education Program (IPREP). Dr. Kimble-Hill is a biophysical chemist, using techniques such as small angle scattering, X-ray crystallography, and fluorescence microscopy/spectroscopy to understand dynamic protein–lipid interactions involved in tumorigenesis with specific interests in impacts related to racial health disparities. She also has research and practice interests in methodologies toward developing diverse trainee self-efficacy and broadening recruitment to/participation in the STEM pipeline. She is a trained facilitator of the National Research Mentoring Network (NRMN) Entering Research curriculum and also facilitates diversity education workshops across the IU campuses. She provides research experiences and mentoring to students in several programs, including the Urban Center for the Advancement of STEM Education (UCASE), the IUPUI Life-Health Science Internship Program (LHSI), Bridges to the Baccalaureate, Undergraduate Research Opportunities Program (UROP), Diversity Scholars Research Program (DSRP), Project Seed, and Louis Stokes Alliances for Minority Participation (LSAMP). Her research efforts have been funded in part by the National Institutes of Health as well as several sources within the Indiana University system. She has served also on several nonprofit boards and committees, including being the principal investigator for several foundation grants to support and organizing the Midwest Biotech Conferences—National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCChE). She also holds several governance roles for ACS, including chair of the Committee on Minority Affairs (CMA), and is a member of the Diversity, Inclusion, and Respect Advisory Board and the joint taskforce with SACNAS on broadening ACS partnerships.

Edgar A. Arriaga is a professor of chemistry and graduate faculty of biomedical engineering and biochemistry, molecular biology, and biophysics at the University of Minnesota, Twin Cities. He teaches general chemistry, analytical chemistry, and courses related to functional proteomics in aging. His research focuses on bioanalysis at the subcellular and single cell level. He earned a Licenciatura degree (BSc. Equivalent) from the Universidad del Valle de Guatemala and a Ph.D. from Dalhousie University (Canada). He is coleader and founder of the College Science and Engineering (CSE) Diversity & Inclusivity Alliance and codirector of the NIH Functional Proteomics in Aging Training Grant at the University of Minnesota. He serves on the Department of Chemistry Diversity and Inclusion Committee. He has served as reviewer and chair of the NIH study section, NIA-B, that reviews Career Awards. He serves as chairperson of the ACS Committee on Professional Training and as *ex officio* member of the ACS Graduate Education Advisory Board. He is an advocate for diversity, equity, inclusion and respect within the ACS and has participated in strategic planning retreats for several national ACS committees.

■ INQUIRIES

Inquiries regarding the suitability of a manuscript topic can be directed to Leyte L. Winfield at LWinfield@spelman.edu. Questions regarding the submission process can be directed to eic@jce.acs.org.

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<https://pubs.acs.org/10.1021/acs.jchemed.0c01300>

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