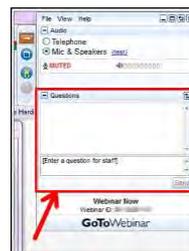


Have Questions?



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**“Why am I muted?”**

Don't worry. Everyone is muted except the presenter and host. Thank you and enjoy the show.

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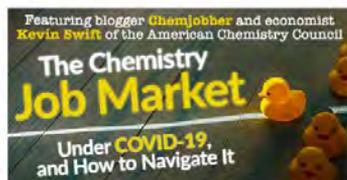
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 Courses for Educators  
 Standards & Guidelines



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High School  
 Undergraduate  
 Graduate/Postdoctorate



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Adventures in Chemistry  
 Periodic Table of Elements  
 Landmarks in Chemical History



#### Find Outreach Activities

National Chemistry Week  
 Chemists Celebrate Earth Week  
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<https://cen.acs.org>

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# The



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## The Future of the Chemistry Laboratory Course



**Marcy Towns**  
Professor of Chemistry and Director of  
General Chemistry, Purdue University



**Justin Carmel**  
Assistant Professor, Department of Chemistry  
and Biochemistry and STEM Transformation  
Institute, Florida International University



**Edgar Arriaga**  
Professor, Department of Chemistry, University of  
Minnesota and Chair, Committee on Professional  
Training, American Chemical Society



**Celia Arnaud**  
Senior Correspondent,  
Chemical & Engineering News

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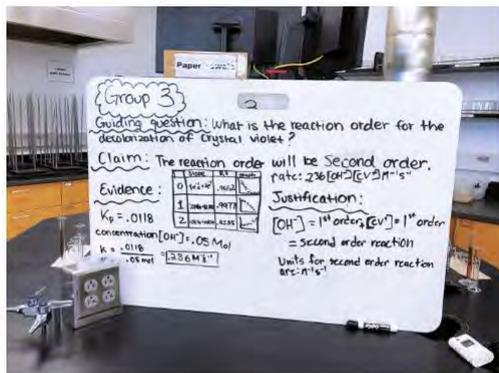
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## Disclaimer

This event is designed to explore key questions regarding the future of laboratory experiences and curricula. The opinions or views expressed in these discussions do not necessarily reflect on the current statements and guidelines of the American Chemical Society, the views or opinions of ACS's management or its members, or plans for renewed or revised policies. Chemistry departments seeking ACS Approval must continue to follow the ACS Guidelines for Bachelor's Degree Programs as stipulated by the Committee on Professional Training, including those for laboratory instruction once their campuses resume face-to-face instruction without social distancing.

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## Articles and Editorials



Credit: Joi Walker  
This whiteboard, created by a group of four students in East Carolina University's argument-driven inquiry lab, presents the guiding question, claim, evidence, and justification for the final rate law for the decolorization of crystal violet with sodium hydroxide. Groups present their arguments to other students in a structured argumentation session.

**D**epending on the size of the college, hundreds or even thousands of students will take an institution's general chemistry labs each semester. The dedicated lab space, equipment, reagents, waste disposal, and instructional time required to accommodate that many students, typically in their first or second year of study, make general chemistry labs among the most expensive educational undertakings on a university campus.

### Questioning the value of general chemistry labs

Celia Henry Arnaud

*Chemical & Engineering News*

MAY 10, 2020 | APPEARED IN [VOLUME 98, ISSUE 18](#)

### Evidence for the Importance of Laboratory Courses

Stacey Lowery Bretz

*Journal of Chemical Education* **2019** 96 (2), 193-195

DOI: 10.1021/acs.jchemed.8b00874

### Investing in Laboratory Courses

Rebecca Sansom and Joi P. Walker

*Journal of Chemical Education* **2020** 97 (1), 308-309

DOI: 10.1021/acs.jchemed.9b00714

### Establishing the Laboratory as the Place to Learn How to Do Chemistry

Michael K. Seery

*Journal of Chemical Education* Article ASAP

DOI: 10.1021/acs.jchemed.9b00764

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## Discussion Topics



- Essential skills and knowledge that students develop in (and only in) laboratory courses
- Approaches for determining what students are gaining from laboratory experiences
- Strategies for building laboratory curricula that develop essential knowledge and skills

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## Additional Resources



### ACS GUIDELINE QUESTIONS

- ✓ General descriptions of the ACS Guidelines Adjustments - <https://drive.google.com/file/d/1aE5m9tfg3Eawb55ZyIRu1iugsYr5dtd/view>
- ✓ Feedback on Proposal to ACS Guidelines Adjustments - [https://fs12.formsite.com/acs\\_cpt/GLMods/index.html](https://fs12.formsite.com/acs_cpt/GLMods/index.html)
- ✓ CPT- Laboratory Experiences that Require Hands-on Experience, a proposal from CPT - <https://drive.google.com/file/d/1h8EUVJ752K0XbY1lwM40peVMnsPqvDl6/view>

### EQUITY QUESTIONS

- ✓ 3 Myths Plus a Few Best Practices for Achieving Diversity - [https://medicine.arizona.edu/sites/medicine/files/invite\\_everyone\\_in\\_sci\\_am\\_2014.pdf](https://medicine.arizona.edu/sites/medicine/files/invite_everyone_in_sci_am_2014.pdf) and <https://www.scientificamerican.com/author/victoria-plaut/>
- ✓ Creating community in the classroom - [https://disability.umn.edu/sites/disability.dl.umn.edu/files/media/creating\\_community\\_in\\_the\\_classroom\\_1.pdf](https://disability.umn.edu/sites/disability.dl.umn.edu/files/media/creating_community_in_the_classroom_1.pdf)
- ✓ Navigating the 'Decolonising' process: Avoiding pitfalls and some Do's and Don't's - <https://discoversociety.org/2019/02/06/navigating-the-decolonising-process-avoiding-pitfalls-and-some-dos-and-donts/>
- ✓ Sloan Equity and Inclusion in STEM Introductory Courses - <https://sites.google.com/umich.edu/SEISMIC/home?authuser=0>

### FACEMASK SAFETY QUESTIONS

- ✓ CDC Recommendations for wearing a facemask properly - <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-to-wear-cloth-face-coverings.html>

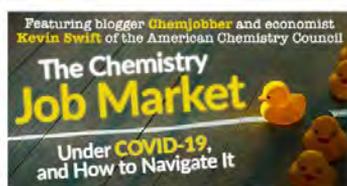
### FREE REMOTE INSTRUCTION RESOURCES

- ✓ Stacey Lowery Bretz's curated list of online animations, videos, simulations, and demos to support colleagues as we move to #remoteinstruction #online learning - <http://chemistry.miamioh.edu/bretzsl>
- ✓ Brittlund DeKorver's Facebook page for teaching chemistry in times of COVID - <https://www.facebook.com/groups/84942775469472>
- ✓ The Journal of Chemical Education special issue "Insights Gained While Teaching Chemistry in the Time of COVID-19" - <https://pubs.acs.org/doi/10.1021/acs.jchemed.0c00378>
- ✓ The Beyond Labz virtual labs are a set of realistic and sophisticated simulations covering general chemistry, organic chemistry, biology, physics, and physical science - <https://www.beyondlabz.com>

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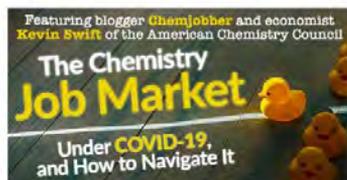
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