



*virtu*AIChE®

This month's meeting:

*Primary (with live discussion/live chat) Wednesday, Feb 24 at 9 pm ET (US) / 1 am GMT
Alternate 1 (with live discussion/live chat) Thursday, Feb 25 at 6 am ET (US) / 10 am GMT
Alternate 2 (with live discussion/live chat) Thursday, Feb 25 at 1 pm ET (US) / 5 pm GMT*

The Art of Winemaking

Presented by David E. Block,
Marvin Sands Department Chair, UC Davis

Producing a red wine involves a heterogeneous, three-phase system with complex fluid mechanics, heat transfer, mass transfer, and kinetics (both chemical and biological). Yet, the vast majority of winemakers globally, and most of wine consumers, have no idea, and prefer to describe the process in terms of the smell and taste of the fermenting or finished product. How much blackberry aroma is there in the nose? Does the Cabernet fill the mouth pleasantly or does it make your mouth pucker in an unpleasant manner? What if you could predict and explain these seemingly qualitative assessments using chemical and biochemical engineering principles? In this talk, I will give some examples of how we have done just this over the years, touching on explaining the kinetics of yeast fermentations using unstructured models, examining how computational fluid dynamics can be used to explain the tannin profile of a finished wine, and understanding the biological basis of yeast ethanol tolerance and yeast-derived sensory impact molecule production using genome-scale mathematical modeling, among other ideas. Ultimately, the goal of this work is not to replace the winemaker, but to augment the tools at their disposal to produce creative, high quality wines that delight the consumer.

Professor Block is Marvin Sands Department Chair in Viticulture and Enology at UC Davis and holds the Ernest Gallo Endowed Chair. Since joining UC Davis, he has conducted research on various topics, from fermentation optimization methods to metabolic engineering of yeast for improved wine production, as well as on single-plant resolution irrigation sensing and control. More recently, his research has focused on computational fluid dynamics models for red wine fermentations and process optimization for cultivated meat production. He played a key role in designing the UC Davis LEED Platinum-certified Teaching and Research Winery. Prof. Block has received the Distinguished Teaching Award from the UC Davis Academic Senate, the highest teaching award given for teaching alone on the UC Davis campus. Prior to joining UC Davis, he worked for Hoffmann-La Roche, Inc. working on biopharmaceuticals, both in process development and in manufacturing. Dr. Block, recently elected an AIChE Fellow, has been active in AIChE, serving as Director, Secretary, Vice Chair, Chair, and Past Chair

of Division 15, Food, Pharmaceutical, and Bioengineering, as well as being a co-chair of the first two annual AIChE Food Innovation and Engineering (FOODIE) Conferences and a Topical Conference on Food Innovation and Engineering at the 2019 Annual Fall Meeting. David holds a B.S.E. from the University of Pennsylvania and a Ph.D. from the University of Minnesota, both in Chemical Engineering.

***Note that registration for VLS meetings is required.
Our meetings are still free to attend and open to all.***

February Meeting Registration Information

Primary	Alternate 1	Alternate 2
(Live Presentation/Live Chat)	(Recorded Presentation/Live Chat)	(Recorded Presentation/Live Chat)
Feb 24 at 9 PM EST / 1 AM GMT	Feb 25 at 6 AM EST / 10 AM GMT	Feb 25 at 1 PM EST / 5 PM GMT
Register in advance for the Primary Meeting	Register in advance for the Alternate 1 Meeting	Register in advance for the Alternate 2 Meeting

After registering, you will receive a confirmation email containing instructions for joining the meeting, along with add-to-calendar links.

We're in this Together

The ongoing COVID-19 situation has provided us with a reminder that even in uncertain times, AIChE is a diverse community of people who lead, create, inspire and learn—together. AIChE is here to help. Knowing that many of our members are working virtually, AIChE has created this page to act as a hub for online content, access to communities, and communication updates. [Learn more.](#)

NIST airflow model could help reduce indoor exposure to aerosols carrying coronavirus

Researchers at the National Institute of Standards and Technology (NIST) have built an online tool that could help decrease the concentration of aerosols containing the novel coronavirus (COVID-19) in the hospital rooms of COVID-19 patients and other spaces such as offices, retail stores and residences, potentially reducing the likelihood of building occupants becoming infected. [Review here.](#)

3M and MIT Researchers Developing a Low-Cost COVID-19 Diagnostic Test

Accelerated research is underway to learn if a simple-to-use, diagnostic device can produce highly accurate results within minutes and is feasible to mass manufacture. The test would detect viral antigens and deliver highly accurate results within minutes via a paper-based device. [Review here.](#)

Career Search Section

Looking to help our community, we will share regularly a set of tips and some resources from OnCareerSuccess that will help our community.

Challenges For Students/New College Graduate

by Dr. Lucia Feng, President & CEO
OnCareerSuccess Inc.

For the students/new college graduate and Early Career professional with 0-5 years of work experience, the challenges they face of not knowing how to conduct an effective job search to get into the workforce to start their careers are similar to what the Mid-Career working professionals experience. The consequence of not getting a job at time of graduation has a larger adverse impact on their careers.

Most universities and colleges, surprisingly, do not offer useful and actionable guidance to their graduating students on how to launch a job search, write effective resume, prepare for multiple types of interviews and communicate professionally both in writing and verbally during the job search campaign. Many institutions may post downloadable resources that provide very general, and even outdated, guidelines on what's involved in a typical job search. Some higher-learning institutions may supplement with in-person workshops for the students, but many cannot attend the in-person workshops due to time conflicts with coursework. While some institutions may further supplement their efforts by making short videos of 3-8 minutes in length on a specific topic, the content often have errors or are outdated. The combined result is that the students are on their own during a consequential stage in their young life.

The failure of graduating students not getting timely expert-developed proven job search guidance as they embark on their job search near graduation amounts to the "last mile" problem that adversely impact the new graduate's career trajectory and has long lasting effect on their lifetime earnings. Studies have found that the length of time to land a new job as a new grad can determine if the new Early Career professional makes \$60K or \$24K a year. Gallup in September 2018 [4] has reported - based on a study done between 2010-2016 - that graduates who had a good job upon graduation are 2.4 times more likely to earn \$60K or more than graduates who took two to 12 months to find a job. Also the trajectory of a college graduate's starting salary has a big impact over their lifetime earnings - and therefore their financial security - as subsequent salaries are typically based on previous salary compensation package. In short, the quicker a new college graduate finds a "good" job after graduation, the more likely they earn a better salary in the short and long term.

College graduates are also graduating with sizable student loan debts. A study found 69% of college students graduated among the Class of 2019 averaged student loan debt amount of \$29,900 [5]. Graduates who don't have a job, or have a temporary job in the gig economy that does not contribute to the professional career growth of the young graduate, will likely not able to repay their student loans or live the life they want to live, such as having a stable income with health benefits, savings for retirement, children's college, homeownerships, etc. The unemployment or underemployment of the new college graduates could translate to significant financial insecurity for the young professionals and potential financial burden for society over time.

Lack of job search support for students, especially women students, can also contribute to financial harm. A TIME analysis in 2016 [6] showed women earning less than men at every age range: 15% less at the start of their careers at ages 22 to 25, and 38% less at ages 51 to 64. As women actuarially live longer than men, therefore a delay for female students in starting their careers with good jobs, or experiencing a starting salary difference that can be subsequently sustained in gender pay gap over their working life, contribute to damaging their financial security in the long run.

The COVID-19 pandemic introduces further challenges to graduating seniors and new college grads. Instead of entering one of the strongest job markets in 50 years, the Class of 2020 faced a deep recession with double digit unemployment rate. Amidst uncertainties against COVID-19 economic slowdowns, the Collegiate Employment Research Institute Annual Recruiting Trends survey from Michigan State University reports a declining job market for the Class of 2021 college graduates as employers take advantage of a large experienced labor pool now available to them [7]. The survey further found that employers don't expect a quick recovery of the jobs lost to COVID-19 or regaining the hiring momentum started in Fall 2019 for college students; in fact, 48% of the companies surveyed believe it will take two to three years to recover. These reduced number of hires would also impact the new graduates earning power. Researchers [8] have found that "U.S. college students who graduated during a recession earned 10% less the first year after they completed their studies than would otherwise be expected. And the negative effects lasted over the next seven years." In order to compete with the millions of newly unemployed individuals, it is critically important that students/new college graduates have to invest now before graduation to learn the job search essential skills and relevant career knowledge in order to get a job to properly start their professional careers.

Due to the dynamics and the confluence of diverse factors long time in making – accelerated technology innovations affecting future of work and workplace, globalization, demographic changes in the workforce just to name a few – and the compounding effect of a pandemic, an aspiring professional such as graduating college seniors, postgraduate students at the Master's or doctoral levels, and working professionals need to own their career management and become a "CEO of one" to ensure they can have a job to get the income needed to provide for them and their families as well as the life, dreams and retirement they want to have. Trends indicate job change will be more frequent and the length of time between job changes likely shortened. Simply put, job search essential knowledge becomes one of the critical life skills that a professional – regardless of what phase of career the professional is in – must make the time and incur the expense to invest in oneself to learn and master in order to prosper by landing jobs and earn more.

Instead of feeling victimized, helpless or being fearful of not knowing how to conduct job search, or stressed over possible potential restructuring that may result in job loss, or even worried about how to differentiate oneself when applying for an internal new job opportunity in one's current company, a professional who has learned job search knowledge is empowered to succeed. Whether an individual is employed looking for a better job or is in transition, empowerment enables career agility and career resilience by helping a professional feel confident and land jobs competitively and successfully in one's professional career progression.

Following is the third part of a series of Webinars to support you on your job search:

3. "Interview Preparations: Strategies For Success"

Direct link to password-protected page:

[Interview Preparation: Strategies For Success Live Webinar AICHe 2020-11-18 \(oncareersuccess.com\)](https://www.oncareersuccess.com)

Case-sensitive password: NorCalAICHe

In addition to these three webinars, there are additional resources at OnCareerSuccess.com available. The module on [Early Career Job Search Essentials](#) contains 10 webinars that covered topics comprehensively from Launching Your Job Search, Critical Elements of an Effective Resume, Interview Preparations – Strategies for Success, 10 Interview Questions For New Grads and Students (And 5 To Ask), Networking Strategies for Early Career, LinkedIn A College Student’s Fast Track to Internships and Jobs, Job Search Campaign Correspondence, Evaluating Job Offers – What Can You Ask For?, and Holiday Job Search. The module for [Mid-Career Job Search Essentials](#) contains 12 webinars, offering content specifically developed for a mid-career professionals, with the added topics on Overcoming Potential Age Discrimination and Returning To Work After a Prolonged Absence.

AICHe News

The AICHe hosts technical conferences around the world. Check www.aiche.org/conferences for registration and presentation information for this year’s events.

Dates	Event
Feb 10 – 12	Food Energy-Water Nexus
Feb 11	RAPID Technology Showcase Featuring Captis Aire
Feb 17	CCPS February 2021 TSC Meeting
Feb 17	Virtual RAPID Info Session
Feb 17	Lean into LEAN
Feb 25	RAPID Technology Showcase featuring RAPID’s Software Toolbox
Mar 1 – 2	7 th Conference on Constraint-Based Reconstruction Analysis (COBRA 2021)
Mar 2	CCPS South East Asia Regional Members Virtual Meeting
Mar 8 – 10	7 th International Conference on Accelerating Biopharmaceutical Development (AccBio 2021)
Mar 10 – 12	2021 DIERS Spring Virtual Meeting
Mar 17 – 18	13 th AICHe Midwest Regional Conference
Mar 18	Improving Operations and Safety Advanced Analytics
Mar 25	CCPS Latin America Regional TSC Meeting
Mar 26 – 28	2021 Southern Student Regional Conference

Upcoming VLS Meetings

The VLS has monthly meetings. The following meetings have firm dates and speakers.

Dates	Topic
March 2021	The Application of AI in Chemical processing
April 2021	Weaning ChEs off of spreadsheets

Past VLS Meetings

The VLS records its monthly meetings and archives them on the AIChE Academy website in case you missed a meeting or are looking for a particular topic. See below for current recordings.

Date	Event
Nov 2020	<u>Protecting Lives and Livelihood: Hazardous Materials Classification and its Impact to the Supply Chain</u>
Oct 2020	<u>Chemical Safety Board (CSB) Accidental Release Reporting Rule</u>
Sep 2020	<u>September VLS Meeting - Internships and Undergraduate Education</u>
Aug 2020	<u>Physical Property Models to Design Better Chemical Products</u>
Jul 2020	<u>Julia - A Fresh Approach to Technical Computing</u>
Jun 2020	<u>The Next Digital Leap to AI (An Interactive Webinar)</u>
May 2020	<u>Challenges and Benefits of Remote Operator Training using Cloud-Deployed High-Fidelity, First-Principles Based Standard Operator Training Simulators (SOTS)</u>
Apr 2020	<u>NASEM Chemical Engineering in the 21st Century Study: Give your input!</u>
Mar 2020	<u>Is Your Focus Your Magic!</u>
Feb 2020	<u>DIERS data/standards in HAZOPS of two phase flow</u>
Jan 2020	<u>A Brief History of Measurement</u>
Nov 2019	<u>Using Thermal Imaging to Guard Industrial Facilities</u>
Oct 2019	<u>Python for chemical engineers: Getting started</u>
Aug 2019	<u>Reactive Chemical Hazards</u>
Jul 2019	<u>Should I Py or Should I Fortran?</u>
Jun 2019	<u>Design Considerations for Organic Electronic Materials and Devices</u>
May 2019	<u>Why Can't You Compete Without Virtual/Augmented Reality in Your Plant</u>
Apr 2019	<u>The Chemistry of Bourbon: The "spirit" of molecules</u>
Mar 2019	<u>Demystifying Professional Engineering Licensure and How to Put it to Work for you</u>
Feb 2019	<u>Municipal Wastewater and Sludge Are a Resource, Not a Waste: Coping with Tightening Water Supplies and Limited Landfill Availability</u>

The Virtual Local Section's Executive Committee

Officers

Chair:	Paul Adamson
Senior Vice Chair:	Aaron Sarafinas
Vice Chair:	Steve Treese
Immediate Past Chair:	Dan Lambert
Secretary:	Laura Gimpelson
Treasurer:	Jennifer Brand

Directors

Member Care	Fred Fischl
Publicity	Paul Wissmann
Newsletter	Mario Arredondo
Programming	Scott Clarke
	Kirsten Rosselot
Member Feedback	Richard Evans

Subscription Information

Current fully paid members of the Virtual Local Section receive this newsletter. If you wish to update your email address, contact the AIChE's New York Office for Permanent Address Corrections at xpress@aiiche.org or 1-800-242-4363

Did You Know?

You can visit [the VLS website](#) for more information on the Virtual Local Section's mission, activities, and membership. Also at this website, AIChE student members and VLS members can watch previous webinars for free.

Continuing Education Credits

Members of AIChE can receive 1 hour of continuing education/professional development credit for attending Virtual Local Section webinars. Send your name, the certificate number on your professional engineer's license, and the licensing entity (state or country) in which you are licensed to our Secretary, [Laura Gimpelson](#), to receive one hour of continuing education credit for attending this meeting.