

Matter of Opinion

I May Not Have Symptoms, but COVID-19 Is a Huge Headache

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The COVID-19 pandemic was an unprecedented surprise, to say the least. Academia is rooted in group assemblies – from classroom to conferences – which were promptly cancelled and/or shifted to remote efforts. Here are some perspectives from Professors involved.

This article is a crowd-sourced op-ed experiment, compiled via open invitation using Twitter. A Google Doc was initiated, publicly open for revisions/edits, and linked via tweet from March 10th to March 16th, 2020 – relatively early in the pandemic response in the USA. The following is the results, with little revision.

A science journal editor's job is both passive and active. The passive side is the mundane—sit at a desktop, wait for submissions to come through the system, read them, assess them, discuss them, and either reject them or send them out for peer review. Once we accumulate ten papers or so, we make a table of contents, pick a cover, and repeat. The active side is the more interesting part of the job—getting off my ass and interacting with the community. Meet as many researchers and PIs as possible and find out what is trending, exciting, and emerging in the field (for *Matter*, the totality of materials science). This is usually accomplished by attending conferences and scheduling institution-specific site visits.

Coronavirus, aka COVID-19, put a halt to all of that.

I was first directly affected by COVID-19 restrictions by the cancellation of

the APS March Meeting in Denver, CO (the Saturday evening before, but that is another issue). Within a week, Cell Press effectively grounded editorial for non-essential travel, so a site visit to University at Buffalo, NY was postponed. Then came ACS Philly. Local universities (Harvard and MIT) are currently in the midst of massive online-teaching initiatives. My daughter's kindergarten class is cancelled for at least three weeks (in step with the elementary schools in Massachusetts). I don't think it would be prudent to aggressively schedule meetings; social distancing is the name of the game. More cancellations are likely to follow in the coming months. Now don't get me wrong; such cancellations are necessary to contain this beast. I get it. The decisions (while difficult) are the correct course of action.

But I'd still rather get out of the office.

Clearly, I am not alone in this circumstance. The nature of my position, in fact, makes it easy for me to work from home (we are used to remote meetings), and the journal can go about business as usual (in case anyone was concerned). PIs, in particular, have encountered a range of issues: work, research, teaching, stu-

dents, travel, dog-walking, crossfit regime, etc.

Here are a few personal reflections on the current COVID-19 pandemic.

Taylor Sparks; Associate Professor & Associate Chair of Materials Science & Engineering; University of Utah, Salt Lake City, UT, USA

News of the last-minute cancellation of the APS March Meeting ricocheted around academic Twitter circles (likely more efficiently than the official announcement). Many scientists had already boarded flights, and in some cases, they had already arrived in Denver only to see that their trip was in vain. It's easy to understand their frustration. Why had the conference organizers waited so long to cancel? After all, the APS meeting attracts > 10,000 attendees from around the world and the outbreak had been discovered two months prior with the World Health Organization declaring it a "global public health emergency" one month prior. After the APS cancellation, all eyes turned toward the even larger (> 15,000 attendees) ACS meeting in Philadelphia. With each passing day frustration and incredulity grew as scientists wondered what the ACS organizers could possibly be waiting for.

Personally, I sympathize with the organizers of these and other conferences and events affected by COVID-19. For one thing, although worldwide pandemics occur every few years (Zika in 2015, Ebola in 2013, etc) this particular disease elicited a different response than usual. Consider the large scale quarantine of tens of millions of inhabitants in Chinese cities like Wuhan! Although there was a sense of

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impending inevitability, at the time, the disease seemed far away. Up until February 26th, there had been no observation of community spread - a case with no clear source of exposure. This left the organizers with mere days to assess the effectiveness of worldwide quarantine and prevention measures against the backdrop of a new, poorly understood disease, misinformation in media, and mild hysteria driving a scared public to do things like hoard bottled water, toilet paper, and hand sanitizer. Ultimately, the organizers decided to cancel the meeting because many attendees would come from countries that the Center for Disease Control had listed as level 3 warnings.

Another factor that some people may not fully appreciate is how much work and preparation goes into planning events like this. I've personally had a taste; I have organized two previous workshops on machine learning in materials science (2018 in Salt Lake City and 2019 in Houston) where beginners would attend and learn about techniques, tools, best practices, and case studies in the hot field of materials informatics. The logistics and planning necessary for advertising, housing, venue, meals, keynote speakers, registration, etc. are onerous. The event I had been planning for this March, SSMCDAT2020 Solid-State Materials Chemistry Data Science Hackathon, was the most ambitious yet and was planned to coincide with the time and location of the ACS meeting. My co-organizers and I began planning the event 18 months ago. We had to get a proposal written, reviewed, and funded from the National Science Foundation (DMR SSMC & CMMT as well as DMS BIGDATA), and once it was funded, we began to plan the unique event. We had to line up a venue, build a website, start advertising, invite keynote speakers, and establish third-party sponsorship agreements. The hackathon relied on a unique team formation, as well. We had applicants begin by

submitting solid-state materials chemistry problem topics. We then solicited data scientists to propose potential solutions. Then began an intense series of horse-trading and team-forming to get teams assembled. The emails, phone calls, video conferences, and h of time necessary to plan the logistics for this event are incredible and we only had ~100 attendees instead of the >15,000! So, when the ACS was cancelled, I could begin to appreciate what a difficult decision that must have been. The ACS cancelling means that we now need to postpone our own event to September 17-19, which means dealing with reimbursements, hotel and airfare rescheduling, team re-formation, and essentially all the logistics planning all over again.

Follow T. Sparks at <https://twitter.com/taylordsparks>

Tej S. Choksi; Assistant Professor, School of Chemical and Biomedical Engineering; Nanyang Technological University, Singapore

I started my tenure-track appointment in December 2019 in Singapore. Through January and February, we calmly plodded through the COVID-19 scare in Singapore. While the news media and social echo chambers seemed awash with frenzy, the city state had an almost unnerving sense of calm in dealing with the new situation. Perhaps this is because most Singaporeans follow rules meticulously, and social distancing together with high levels of hygiene helped. Fortunately, I was not assigned teaching duties in my first semester, so I did not have to create online lessons at short notice.

While I was a postdoc at Stanford in 2019, one of the session chairs from the C1-C4 division invited me to submit an abstract to ACS 2020 Philadelphia. I was overjoyed at the prospect of delivering an "invited talk" at a prominent research conference on behalf of my

nascent research group. Being a chemical engineer, I have never attended ACS meetings before, and this ACS meeting, the invited talk, and a presentation as a PI would all have been a set of firsts for the new research group. Now these three points will indelibly be associated with cancelled due to COVID-19 pandemic in the group record. Naturally, I was quite disappointed with ACS 2020 being cancelled, given the exciting conversations, (re)connecting with colleagues and friends, and the science I was keen to share.

We must all do our part, however small, in "flattening the curve" and giving the healthcare sector much needed breathing space to take on the expected deluge of cases.

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Matthew G. Panthani; Assistant Professor and Herbert L. Stiles Faculty Fellowm Chemical and Biological Engineering, Iowa State University, Ames, IA

In the past year, Greta Thunberg and other environmental activists brought awareness to the environmental cost of academic travel. This challenged our way of thinking about academic communication, prompting discussion of teleconferencing as an alternative mode of communication that contributes greatly reduced carbon footprint.

With COVID-19 derailing conferences, panels, meetings, teaching, and research activities nationwide, we are being forced to use telecommunications technology in a way that would have been unthinkable a few years ago. Universities and departments across the country are suddenly switching to online-based teaching. At Iowa State, we are encouraged to teach asynchronously to avoid overloading our servers. I will be serving on a National Science Foundation

grant review panel via teleconference. I am cancelling all invited talks and academic travel for the next few months, at the minimum. While social distancing certainly will aid in propping up our healthcare system, I am sure that many PIs, especially those at an early-career stage are concerned about the long-term impact of COVID-19 on their careers.

I have come to realize the value of in-person communication as an academic. My teaching evaluations have benefited tremendously from interactions with students. Serving in a live (i.e., not virtual) NSF panel gave me unique insight into the proposal review process and also resulted in invaluable opportunities for side discussions with program managers; this experience was undoubtedly a contributing factor to later receiving NSF funding. Invited talks at universities and conferences have been great opportunities to improve visibility and expand my collegial network.

All of these activities involved real face-to-face meetings, and I have some experience with their virtual counterparts. I have previously served on virtual NSF panels. Many of the benefits (to the panelists) are removed—side discussions with other panelists and program managers during breaks, for example, are nonexistent. It is also clear that panelists are not fully engaged, likely multitasking without the social pressure of keeping on task. I would hypothesize that if a study on virtual versus in-person panels were to be conducted, it would find that the in-person panels were more effective in proposal evaluations. While seminars and conference talks may be delivered through virtual means, they do not offer the valuable networking opportunities that are present when visiting conference venues or universities. I delivered my first lecture this morning using Zoom. While I am certain that my delivery will improve with more experience, I had the sense that I was speaking to a wall

of 30 boxes (mostly black boxes, since the majority of the class elected to not share video) rather than actual people.

Luckily for me, my tenure package was submitted last year. This means that regardless of the decision Iowa State University makes about my tenure case, it will not have been impacted by COVID-19. I am concerned about the COVID-19 pandemic will affect the evaluation of those going up for tenure in the next few years. As much as institutions deny it, there is a tendency for evaluators and committees to focus on aggregate numbers during evaluation: number of papers, invited talks, grants submitted, dollars received, students graduated, etc. Will promotion and tenure committees and university officials account for the impact of COVID-19 during evaluation? How will this be done in a reasonable and equitable manner? Does this point toward larger system problems with the promotion and tenure processes that occur in most universities? I do not have the answers, but I hope this prompts an opportunity for discussion.

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Anonymous (by request); Assistant Professor; US Institution

To quote Queen: “the show must go on.”

My tenure-track position has been overshadowed by a parent diagnosed with cancer just prior to my start date. The anxiety of following their chemotherapy, a failed stem cell transplant, and a new treatment that actually took hold was already crippling to my young career. Now, after having achieved remission and thinking we are in the clear, COVID-19 has shot it all to hell. Any virus would be lethal, and I am holding out for the worst. My parents live in Europe, where things are already a lot worse than they are here in the US,

and not being able to say goodbye would be unbearable.

2020 was supposed to launch my career. While I have not yet been affected personally by the cancellations of APS or ACS, I have (had?) several invited talks lined up at national and international conferences, and a talk at a GRC that was an outstanding compliment for someone as young as I am in the field. I fully expect all these talks to get cancelled. I will likely feel the long-lasting effects of the cancellations throughout my tenure-track time and in my tenure letters. There is a big difference between “wow, what an amazing talk a 2nd year assistant professor gave” and “well, could’ve been a good talk, we will never know.” Networking, and presenting our work is vital for assistant professor: in finding collaborators, in finding letter writers and in finding overall support. I do not believe virtual networking will have the same effects.

Assistant professors struggle enough with in-classroom teaching. We have just managed to get into our groove with teaching, are preparing new classes and suddenly, we are expected to move to online teaching. Likely, most of us have no experience with remote teaching, and I am at a loss of how to effectively teach via Zoom or similar. Not being face-to-face allows the students to become more distracted and not pay attention in the same way. Flipped classrooms are a good approach, but is it feasible to completely redo a course in less than a week? At the end of the day, our students will not get the same education as in classroom, and this will negatively impact both their futures and ours.

An additional aspect is graduate recruiting. Young professors rely on recruiting good students to the lab, as our careers rely on training the next generation. How COVID-19 will influence graduate recruiting won’t be felt until the

acceptances are in, but I cannot imagine there will be no fallout.

The effects of possible lab shutdowns will be worst on the graduate students. Will their PhD clocks be extended? Are they expected to come back after possible shutdowns and pick up where they left off or be further along? While I hate to be the advisor that makes the students work unreasonable hours, my students have instructions to ensure they get all data acquired on degradable samples as soon as possible, as further university closures are likely to happen.

The uncertainty of how this entire pandemic will affect my entire career is suffocating. I am lucky enough to be in the position of having data for several manuscripts that I can write up remotely, but I know there are plenty of assistant professors that are not in this situation.

We can only hope for extensions of our tenure clocks if needed.

Conclusion

Wasted organizing efforts and lost conference opportunities, virtual

versus face-to-face meetings, and tenure clock time lost are just a few concerns from those willing to share.

Are these experiences and opinions meant to be universal? Clearly not. But perhaps you can relate to a point or two. The critical thing is realizing that this situation is affecting everyone, albeit in slightly different ways. We are in this together. We'll get through this together.

But it's still a headache.