

## CAPEES/Nanova Frontier Research Award

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AWARDEE & FEATURED MEMBER

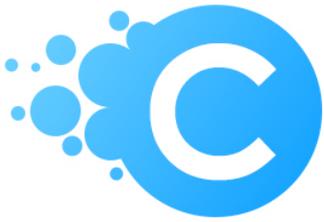
### 1. Career Path

At the end of 2019 my career is entering a new “path”, as I am moving from Virginia Tech to Washington University in St. Louis (WashU). Leaving Virginia Tech is a tough decision but WashU is an attractive place, besides that I am a WashU graduate receiving my PhD in 2007. This is my 2<sup>nd</sup> time of moving to a “new” school (WashU isn’t completely new to me, considering that I spent four years there). The first time was six and half years ago when I moved from University of Wisconsin – Milwaukee to Virginia Tech. There could be a million reasons for leaving a place, but one thing is in common: you will be surprised at how much stuff you’ve accumulated over the years. In the past 24 years, I’ve lived in six places, Shanghai (undergraduate), Lyngby (30 min to Copenhagen, Denmark; M.S.), St. Louis (Ph.D.), Los Angeles (postdoc), Milwaukee (Assistant Professor), and Blacksburg (Associate and Full Professor). Now my track is closing a loop (in the U.S.) by returning to St. Louis. It’s not a fun experience to move between cities/counties, but I think I’ve had more gain than suffering. When my boys grow up (yes, I have three sons), I will encourage them to see as many places as possible. Learning on foot can always bring you something that you won’t be able to get from books.

### 2. Publish or Perish

I enjoy publications...I am not saying this because I am an editor for three journals. Indeed, I enjoy publications! My first journal publication completely changed my career goal: I was flattered during an international conference in 2006 and thought it wouldn’t be a bad idea to spend my life on research (that can lead to publications). Since then, I’ve made a firm goal of becoming a professor. That’s certainly not the best way to decide on one’s career goal. I “inherited” the excitement about publications from my PhD adviser (that’s why it is so important to choose a right adviser). Being a PhD student, postdoc, or even an Assistant Professor, the key goal of publications is to make an attractive CV for obtaining a position or resources (e.g., funding). After receiving the tenure, one should calm down and really think about why we need to publish. There has been much noise about whether publications are a good measure of one’s achievements/qualification. To me, publications are a much better measure than funding; the latter is the research input while the former is the output. I like an analogy (by someone else) that “Universities bragging about their funding records is just like airlines bragging about how much fuel they have consumed, instead of how many passengers they have delivered”. Removing the funding records from the CV/ P&T evaluation will be a major step towards weakening the metric-based evaluation.

Back to publication: why should we publish? The anti-publication folks like to use the Nobel Laureate – Prof. Youyou Tu as an example of little importance of publications. While, I like to use the same example to demonstrate the importance of peer-reviewed publications: first, Prof. Tu’s key idea that led to her Nobel Prize was enlightened by an ancient book (“a publication?”), and second, her team had tried hundreds of recipes that claimed functional but none of them actually worked (lack of quality control for publications - “importance of peer review?”). Nowadays, a peer-reviewed publication is not a simple record; it’s the reflection of both research outcome and researchers’ understanding of a subject. Despite the flaws with peer review processes, publications are still one of the best ways to disseminate the quality information among the researchers and to the public/policy makers. Publications will stay much longer than funding records, so we’d better make it right and try not to have something flawed with our names on it.



# CAPEES

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Dr. He's group at Virginia Tech (last VT group)

### 3. Best product - students

Publications can bring us honors, resources, and promotion, but they are not our best products. We can better impact this world through education – our students. Because of the increased research requirement, we often forget that we are also “teachers” and in fact one of our key responsibilities is teaching/advising. I am fortunate to have had wonderful students so far who make my lab a welcome environment and a pleasant place. I am by no means an excellent teacher or adviser, but I gradually formulate my strategy to work with students: be open and frank. Here is some advice that I tell Every Student in my lab:

- Impress others with your work, not network. I am not pushing students to be “nerds”; instead, I hope them not to overlook the importance of improving themselves. I’ve heard stories and also seen cases that some faculty members spend a huge amount of time on networking and could become very successful. Personally, I think that’s the bad examples for their students. Network is important only if you have something that others need or care about. Talking to “big-name” professors on conferences for a few minutes can hardly make a network unless they are interested in your research work.
- It is you that will compete with others for a job in XX years, not me. Students must understand that they are working for themselves. I am a tenured professor with a secured position; one more or less paper won’t really affect my position/salary, but it could have a greater effect on students’ resume/job applications. If a student cannot realize or understand this, then I can only say “Good Luck”.

Many of our students are foreigners to this country, just like us, so they are going through the same/similar path that we have been through. Thinking in their place may help them to avoid problems that we might have encountered. I always encourage students to publish as many as possible: “quality” helps them to get a job and “quantity” helps them to get a green card. They don’t have to stay in this country but if they want, at least a green card can give them one more option.

### 4. Down to earth

A sad fact is that more and more engineering professors stay away from engineering fields. This is partially due to the current P&T evaluation criteria. In the past two years I managed a training program for water/wastewater operators in the state of Virginia and coordinated >10 short courses per year that had over 1,000 participants (~ 4,000 water treatment operators in Virginia). This rare opportunity allowed me to interact with operators in a very close distance and better understand the “water crisis” that has nothing to do with any fancy technologies/research ideas. Look for a chance to impact those outside our academic world and your efforts will be appreciated.

### 5. Be a member of community

Participating in a community is not only to build a network, but more importantly to have our voice being heard. Chinese are not considered underrepresented or minority, although our absolute population in the U.S. is only 4 million. Our traditional philosophy asks us to be persistent, hard-working, and low profile. The last part makes “mainstream” to often neglect us, no matter how excellent our work is. It’s not a shame to stay together and become a power, especially in this country. I’ve helped to establish CESP (many of “older-generation” Chinese researchers may still remember it) and been active in CAPEES and other professional organizations. One person alone won’t make a splash, so promote others whenever there is a chance.

Community means more than “professional societies”. Nothing is above your family (a community) and health!