Title- Dr. R. S. Swathi : Where there is a will, there is a way

Byline- Anvy Kuriakose and Arunita Banerjee

Preview- Dr. R. S. Swathi, Associate Professor, is a theoretical chemist at IISER Thiruvananthapuram. She spoke to Cogito137 over an email interview, where she talks of overcoming different hurdles for securing a higher education in basic sciences and a career in scientific research.

Dr. Swathi with her lab members after a lab-lunch event

Main-

Who or what inspired you to pursue a career in scientific research?

I would be lying if I said that I wanted to pursue a career in scientific research from my childhood days. I was fortunate to have been taught by a group of highly committed teachers in the residential setting of the Jawahar Navodaya Vidyalaya (JNV) system. The JNV experience very naturally drove me towards taking up teaching as a career and I enrolled myself for a four-year integrated BScEd program at the Regional Institute of Education, Mysore. It was here that I was drawn towards chemistry, again, thanks to some excellent professors.

At a time when most of my peers had completed engineering studies and were in possession of well-paid jobs, the decision of pursuing higher studies in chemistry was not an easy one. The dual excitement of obtaining the highest possible academic degree by way of a PhD in chemistry

and pursuing my passion of teaching as a professor led me to aspire a career in scientific research. Once the determination was there, crossing the hurdles during the career path was not very tough!

My tryst with theoretical chemistry began during my MSc days at IIT Guwahati. I still feel the excitement that I felt on reading the book "In search of Schrödinger's cat" by John Gribbin. I was intrigued by the weirdness of the quantum world. The quantum chemistry course developed an appreciation in me for the effectiveness with which approximate mathematical models could explain chemistry at the fundamental level. During my undergraduate days, I had also developed some fondness for mathematics and therefore pursuing theoretical chemistry research appeared to be the way forward.

The ambience for research at the Indian Institute of Science, Bangalore where I pursued my doctoral degree is unmatchable. Listening to the lectures by scholars from varying walks of life, freedom of independent thinking, the innumerable informal discussions during coffee sessions, coupled with the culture of working till very late in the night catalyzed my interest in scientific research as a career.

How does a supervisor's influence impact a student's career - in making or breaking it? Tell us a little about your experience with your previous mentors and your relationship with your current students?

I have had a wonderful opportunity of pursuing theoretical chemistry under the mentorship of two professors, Prof. Satrajit Adhikari, my MSc thesis mentor and Prof. Sebastian, my PhD thesis mentor. Both of them are men of few words and high academic standards. Perhaps they believe in teaching the nuances of academia by setting personal examples.

There are many subtle aspects of being an academician that I picked up by silently watching them. The best lesson that I have learnt from them is to be passionate about what you pursue and give your best, rest will automatically follow. Both my mentors have had a great role in making my career. Taking a cue from my mentors, I strive to let my deeds do the talking.

I am extremely fond of the Confucian statement, "Don't do to others what you would not want them to do to you". If the mentors do not treat the students the way they would not have liked to be treated when they were students, I believe that we don't have to ever talk about mentors breaking the careers. I always try to be conscious of this golden rule in my interactions with my students.

Academicians are often blamed for confining their research within academic circles. This widens the gap between science and society. According to you, how should the scientific community bridge this? In continuation, how would you describe your research and its relevance to a layperson?

I totally agree that scientists ought to be more proactive in communicating scientific research to the general public. It's not a straightforward thing to do, so we scientists have to make an active effort to reach out.

Conventionally, chemistry is considered as an experimental science. Therefore, my first challenge of explaining my research began when I had to describe what I wanted to pursue for my PhD to my parents. I explained that I would be working with mathematical models, learning how to predict chemical properties of molecules and materials and chemical phenomena without performing the actual experiments. Indeed, this worked to my advantage. My parents were excited that their daughter would be a chemist yet not be spending a lot of time dealing with chemicals in the laboratory. Explaining theoretical chemistry research to a layperson is easier these days; practicing theoretical chemistry is the green way of doing chemistry! Theoretical chemists address questions like: does A react with B? What are the conditions under which A reacts with B? What is the product when A reacts with B? Can B lead us back to A? If not, under what conditions can this be facilitated? Why do A and B behave the way they behave? To me, modeling and computation is a really cool way of being able to answer all such questions without having to physically handle the chemicals A and B.

In our country, higher education, especially in scientific disciplines has long been a monopoly of upper-caste men. With better dissemination of opportunities these days, the scenario is slowly changing. How would you reflect upon that? What message would you give your colleagues and young researchers, for building a more inclusive atmosphere in academia, devoid of gender imbalance and comparable representation from all sections of the society?

Born into a somewhat orthodox family, it was tough to convince my parents to allow me to enroll for a PhD. In fact, I had to lie to them that I would complete my PhD in two years. Otherwise, there was no way that I would have been able to pursue my doctoral studies. In hindsight, I do not regret my white lies because they enabled me to make a career of my choice. But times are changing, women today are far more confident and independent in making their career choices. Having said that, there are still many girls with great potential and passion, who are unable to pursue their dreams. There is no single formula that works for all and the means to overcome their hurdles are highly contextual. All that these women need is a bit of support from someone, who may be a family member or a teacher or a friend. Our society, in general, needs to be more sensitive and inclusive. The scenario is no different in academia, although not as glaringly evident as in other domains of life. I would urge the young women researchers to believe in their strength and pursue their dreams with all honesty. If they do so, there is no way that the other gender can afford to ignore us! There is no doubt that the administrators of academic and research institutes in India can take more robust steps to promote gender equality. However, in my opinion, the bottleneck in implementing the measures is the will of the immediate academic

community. As long as there is a will, a lot can be done. But, if there is no will, any number of measures that might be brought in will not bear any fruits. The change has to come from within!

Author Bio:

This electronic interview was coordinated and conducted by Anvy Kuriakose and Arunita Banerjee for Cogito137, IISER Kolkata.

Anvy calls herself a bibliophile and a feminist, a woman in STEM transitioning from undergrad days to graduate days, and getting a lot more time than required for it because of Corona'.