FACES OF MASS SPECTROMETRY / Tabiwang Arrey

Anne Brenner and J.D. Brookbank are science writers at Technica Editorial Services.

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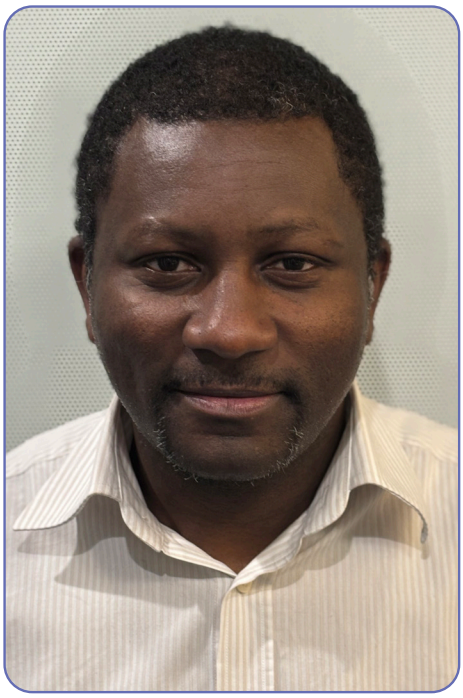


The Road to Success

As a senior product specialist at Thermo Fisher Scientific, Tabiwang Arrey has assisted with the development of proteomics methods for the company's major mass spectrometers since 2011. In this role, Tabiwang spends his time creating solutions for customers' difficult problems; one of the most rewarding aspects of the job.

Tabiwang grew up in Cameroon, where he discovered a love for science. He was introduced to mass spectrometry while pursuing a PhD in Germany at the Goethe University Frankfurt. At the university, he became one of the main operators of a newly acquired Thermo Fisher Scientific instrument. He began to collaborate with employees of Thermo Fisher Scientific-Bremen during his studies, and he was subsequently offered a position with Thermo Fisher.

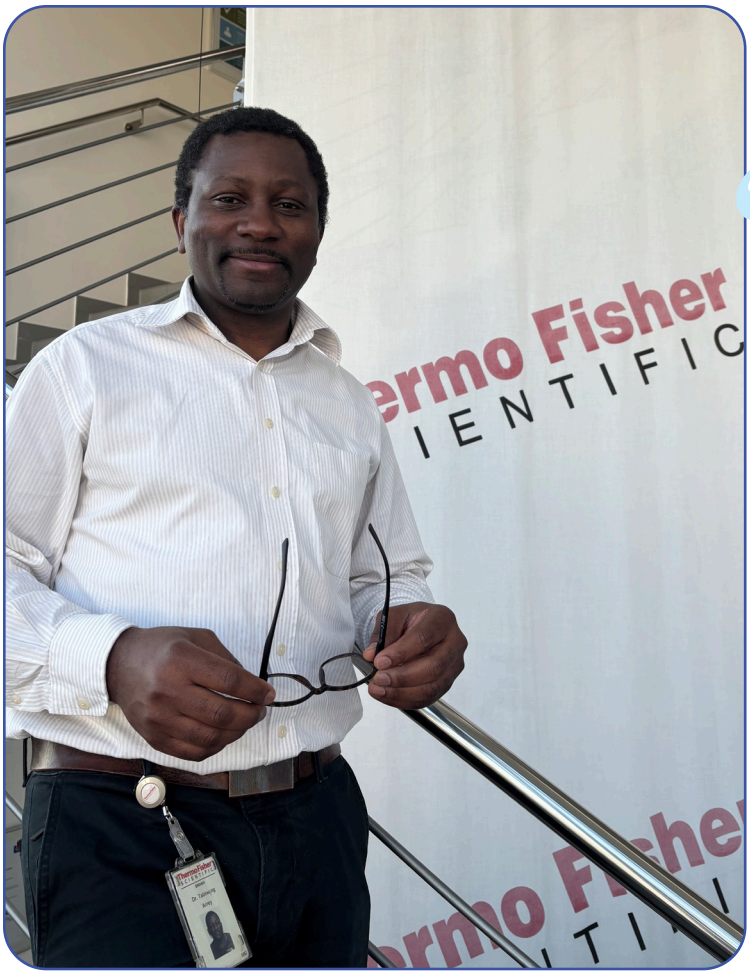
Tabiwang has been a member of ASMS since 2008. Through his years of membership, he developed an appreciation for the shared challenges encountered by others in the field, as well as the importance of collaboration and establishing productive, professional connections.

When did you first learn about mass spectrometry, and what was your first experience with a mass spectrometer?

My undergraduate degree had nothing to do with mass spectrometry. I began my university years in Cameroon, where I did one year of chemistry. During this time, I first learned of mass spectrometry, but I had never seen one. At that point, mass spectrometry seemed like something far away that I would never actually use. When I began working on my diploma in Germany, I was extracting and purifying bioactive components from a plant called Amaranthus tricolor, using nuclear magnetic resonance (NMR) to determine its chemical composition. After we received the reports from our NMR analysis, my supervisor asked that I bring the purified plant extracts to another department for further testing. When I arrived in that lab, and started walking towards the instrument in the room, someone said, "Don't get any closer, you might disrupt ongoing measurements." It got me wondering, what is this instrument that people are not allowed to go near? I handed my samples off, afraid to go closer. I was not sure if it was because the instrument was so expensive or so sensitive to movement. As I now know, it was a mass spectrometer. After finishing my diploma, I moved to the University of Frankfurt for my PhD in method development for proteomics applications using LC-MALDI. There, my supervisor Professor Michael Karas took me to the mass spectrometer lab. Seeing my nervous expression, he said to me, "Don't be scared, you can break it; but if you do, it is probably the best way to learn more about it!" Over the next several months, I began to use mass spectrometry and fell in love with it!

When did you first decide you wanted to focus specifically on mass spec as it relates to proteomics methods?

Actually, it was only after the first six months of my PhD thesis that I decided to pursue a career in mass spectrometry. When I was interviewing for PhD positions, I accepted a proposal focused on mass spectrometry from Goethe University Frankfurt with Professor Michael Karas. The project I received was in collaboration with the Johannes Gutenberg University Mainz, where I was tasked with developing LC-MALDI methods for major histocompatibility complex (MHC) peptide identification. The group at the University of Mainz was interested in the connection between MHC peptides and a particular type of cancer. Growing up, my aunt had cancer. I am not sure what type, whether it was "good or bad," or if she died from it. In Cameroon, if someone had cancer, it was basically a death sentence and almost certain that they would die; anything related to cancer meant death. Reflecting on this now, this is perhaps the reason I chose the PhD position in Frankfurt. Long story short, I started in mass spec researching MHC-peptides but due to the lack of available samples, I ended up developing LC-MALDI methods for different proteomics applications.



Tabi in front of the lab. (Photo courtesy of Tabiwang Arrey.)

> *I consider myself to be a very patient person, and that has been very helpful.*

How exactly did you begin your career with Thermo Fisher?

While I was doing my PhD, we acquired a new mass spectrometer from Thermo Fisher Scientific (Figure 1), the MALDI LTQ Orbitrap. I was designated as one of the main users of the instrument. While working with it, we realized that it had advantages over other instruments I had used before. I spent a lot of time optimizing LC-MALDI methods on that instrument, which led to a collaboration with the product manager at Thermo Fisher Scientific. We did a couple of projects together, and when they were looking to fill an open position in the product management team in Bremen, I was asked to join the team. At first, I hesitated to accept, because I was still finishing my PhD thesis. I had heard from multiple people the risk of starting to work before completing your PhD thesis; knowing there was a chance I may never find the time to finish, or it would take much longer to complete. I emailed her back and said, "I'm just writing my thesis, can you wait a couple of months?" Thankfully, she told me that it was fine, and I ended up completing the thesis, interviewing, and landing the job.

What is something you find rewarding about your work as a product specialist with Thermo Fisher?

I love seeing the smiles and the expressions of satisfaction on our client's faces that just say, "Wow!" when I can assist them in achieving their goals. This is worth more than any amount of money. It is fulfilling to know I can help clients understand the capabilities and functionalities of our instruments. This might also go a long way in facilitating them to accomplish their goals; to me, that means more than anything. It truly gives me a rewarding feeling.

What types of mass spectrometers have you helped to develop?

At Thermo Fisher Scientific, I am part of the life science product management team in the chromatography and mass spec division. One of our responsibilities is to manage all aspects of a product's life cycle. This includes writing requirements or coordinating with both internal and external testers to ensure that our product meets the desired specifications and customer needs. The first project I worked on fourteen years ago was the Orbitrap Elite. Over the years, I have contributed heavily to defining specifications, early testing, validation, and collaborating with different researchers and companies on the Q Exactive and Orbitrap Exploris platforms instruments. Currently, I am doing the same work on the Orbitrap Astral MS. These are examples of exciting projects I have been involved with at Thermo Fisher. I love what I do and enjoy the different challenges that come with the various instruments we produce and the colleagues I work with.

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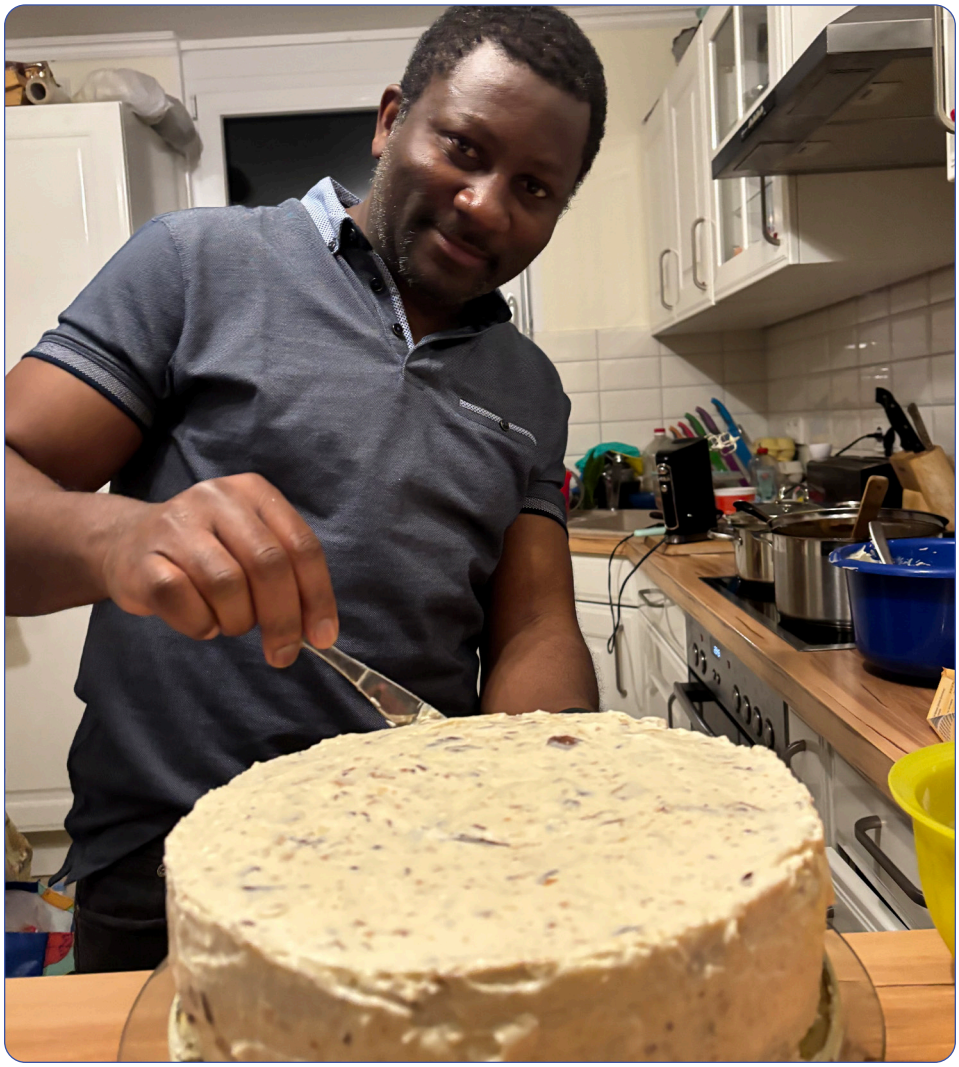

Tabi bakes a cake for his daughter's birthday. (Photo courtesy of Tabiwang Arrey.)

You have been a member of ASMS since 2008. How has your involvement with ASMS helped you to grow as a scientist?

Early on, ASMS conferences were where I met scientists who were in the same field as myself. I remember talking to different people—whether PhD students or PIs—about the challenges I was facing, and how long it takes to get tangible results. ASMS conferences have taught me a great deal about the value of collaborations. I saw that no matter what country or continent we are on, as researchers, we were all facing similar issues and challenges. I came to understand that to both learn and make progress, you must talk to people who are working on similar projects. Over time, I saw that we were all in the same boat and that was comforting to know. Working at Thermo Fisher, that same concept still applies. I work for a company that is geared towards making the world healthier, cleaner, and safer. As part of this team, I focus on helping scientists in my field get the best out of their research. I try to understand our customers' needs, challenges and how we can use our products to address those unique issues. Attending ASMS conferences has been a win-win situation for me and my company. I cannot wait to go to the next ASMS conference, talk to customers, learn about their challenges, and bring those back with me to the factory!

You have co-authored numerous mass spec publications. What kinds of lessons have you learned from this process?

This goes back to what I mentioned earlier about collaborating. Meeting various people such as at ASMS gatherings or in collaborations provides the right grounds to talk to experts and extend my knowledge. Listening to someone's talk or poster presentation at a conference, especially on topics I am not familiar with, gives me ideas about what to work on and who to contact for those topics.

What do you think are the keys to success in problem solving?

Patience, patience, patience! I consider myself to be a very patient person, and that has been very helpful. In my work, I face a lot of unique challenges. At times, I get carried away in my thoughts, so much so, that I cannot even imagine another way to approach the problem. In cases like this, I try to take a break, clear my head, and then come back to the same issue later. This gives me the chance to gain a fresh perspective. If I still cannot solve the problem, I seek help from colleagues and others in the field. The bottom line is that patience is crucial. If I cannot solve a problem within a half an hour

or so, I tell myself, "Okay, let me stop here and walk around, maybe talk to some colleagues, and just free my mind."

Do you ever make it back to Cameroon?

Unfortunately, not as much as I would like. My family members are located around the globe. To remind myself of home, I prepare a lot of traditional meals; to minimize the pain of missing Cameroon, and to have a taste of home. Family, friends, and culture are what take you back to your homeland. My immediate family, and many of my classmates and friends from Cameroon have relocated to Europe or the US. Therefore, I mainly visit these countries. My mum, and three of my siblings live in the United States. My other three siblings live in England. My father passed away thirteen years ago. I am the only one in Germany. I socialize as much as I can with old classmates and other people from Cameroon. This is comforting because the stories you hear or narrate bring back good old memories, but unfortunately, they do not replace the feeling of being home.

What are your interests outside of the lab?

I have three children of my own, two girls and a boy; aged twelve, nine and six. They occupy a chunk of my time! Gardening is another activity that I enjoy. I have a small garden where I grow my own tomatoes, zucchini, cucumbers, and carrots, among other vegetables. In the summer, gardening is the first thing I do when I get home from work just to take the stress away! Cooking for family and friends is another great way for me to de-stress. I also love to bake, and I make about twenty to thirty birthday cakes per year (Figure 2). This is something I never would have imagined myself doing a few years back. Before COVID hit, I used to play a lot of football. As a young child, my dream was to be a football player! However, education was something my parents always wanted me to pursue, and so I followed that path.

What kind of advice would you offer young people in the science field who are just starting their careers?

Again, I cannot emphasize enough the importance of patience. The road to success can be rough and takes time, but no matter how long it takes, you must stay focused; that will lead you to success. Also, for some of us, living abroad comes with certain responsibilities to family and friends back home. These responsibilities can bring a lot of pressure. My advice is to make time for yourself and find ways to relieve stress. Engage in activities outside of studies or work, such as sports, cultural events, or anything that makes you happy. For those in academia, it is advisable to have a mentor who is not in your domain, someone you can speak to openly, who will not judge, but will help guide you when difficulties arise. Finally, if you do not enjoy what you are doing, leave it. Staying with something you do not like is the primary source of unhappiness. My last piece of advice, of course, is: Do not forget to appreciate life, you never know what tomorrow might bring!