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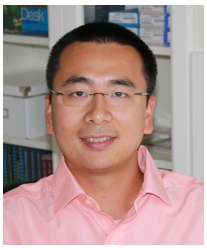
INTERVIEW

Interview with Xiaoli Wang PhD winner of CACA 2016 Young Investigator Award



Xiaoli Wang is currently an R&D Senior Scientist in Agilent's HPLC instrument R&D group at Agilent Technologies, Waldbronn, Germany. Prior to this, he was an R&D manager in Agilent's CrossLab Group in the US focusing on development of novel chromatographic columns. He has a B.S. degree in Chemistry from Peking University, Beijing China and a PhD. degree in Analytical Chemistry from the University of Minnesota in 2006. He started his industrial career in the pharmaceutical industry at AstraZeneca for four years before joining Agilent Technologies in 2010. Recently, he won the prestigious 2016 Young Investigator Award from Chinese American Chromatography Association (CACA). This interview was conducted by Roland J.W. Meesters PhD, Editor-in-Chief of Journal of Applied Bioanalysis.

Q: What is the CACA organization and what does this organization do?

A: Chinese American Chromatography Association (CACA) is a non-profit organization with a mission to promote networking and career development for its members. CACA's missions are (1) sharing technical information in the area of separation sciences, particularly in the area of chromatography, within the United States and around the world; (2) providing a network for members to share experiences and help each other in career development; and (3) providing a forum for interacting and developing cooperative relationships with other separation organizations, particularly in mainland China, Taiwan, and Hong Kong.

Q: What is exactly your achievement and what are the conditions to become eligible for nomination for this prestigious award?

A: CACA started the Young Investigator Award in 2016. The award is open to all CACA members who are within 10 years of receiving their highest degree at the time of the award session. Each nomination is judged on the originality and overall quality of work, significance to the advancement of separation science and other supporting factors. Measures of the impact of the work include publications, presentations, patents, and leadership roles at their research fields or place of business.

As stated in the CACA 2016 Young Investigator Award announcement, my contributions to the separation science included the followings: developed a step-wise approach to maximize peak capacities for complex separations; extended the concept of Poppe plot for gradient separation; developed methodologies to optimize high speed 2D-LC for proteomic analysis; characterized and developed multiple novel bonded phases and particles including the commercially successful Poroshell HPH (high-pH stable superficially porous particles). Dr. Wang published a total of 17 peer-reviewed journal articles and presented more than 30 podia and poster presentations at international conferences. Dr. Wang's technical and management capabilities were amply demonstrated by his successes in numerous new products development, his leadership positions at the Chromatography Forum of the Delaware Valley and the Eastern Analytical Symposia, his short courses involvements in 2D-LC, and his many impactful publications.

Q:What was/were the specific reason(s) for you the build a career in the industry and not in academics?

A: I have a strong passion for turning concept/theory into practice. As a result, I love commercialization and building tools to help people do things better. This is strongly influenced by my PhD. advisor Prof. Peter Carr,

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who believed in "Theory guides, experiment decides". This is a famous quote from the pre-eminent Prof. Izaak Kolthoff who is widely considered the father of analytical chemistry. In summary, I admire the academicians but I also love the fast-paced commercialization environment in the industry.

Q:What are your plans for the future after being awarded this award?

A: I just moved to a new role within Agilent to work on HPLC instruments. I have enjoyed working on HPLC columns development in the past 5 years and now I want to focus on innovative instruments that can make chromatography faster, simpler and more efficient, especially in emerging areas where current methodologies are not good enough.

Q: What do you personally think scientists can do to make more impact to the scientific society?

A: Solve real world problems. I always view analytical chemists being problem solvers. The key is to identify the right problems in the first place. In today's world, this requires broader network and talking to people from different field. Problems are becoming harder and solving them almost always requires inter-disciplinary collaboration

Q: Are there any particular scientists you have worked with who have had an impact on your professional path or career?

A: Certainly. I am fortunate to have worked with many outstanding scientists who have impacted my career. The list starts with my PhD advisors Prof. Peter Carr and Kent Mann. What I learned from them is not just chromatography, but also how to solve problems and how to communicate. I also got to know and work with some brilliant Carr students including Dwight Stoll and Yu Zhang. At Agilent, I had the privilege to work with some exceptional people and some of them (not listing all) are Bill Barber, Ron Majors, Wu Chen, Ta-Chen Wei, Monika Dittmann, Klaus Witt and Tom van de Goor. Last but not the least I want to mention several outstanding colleagues at Astrazenca including Partha Mukherjee, Patrik Petersson and Adrian Clarke.

Q: What words of encouragement would you give young scientists who might be envisioning a future career in separation sciences or analytical chemistry in general?

A: Well, there are plenty of problems to solve so this also means plenty of opportunities in separation science. I would strongly encourage young scientists to learn as broadly as they can. Take organic chemistry or biochemistry for example. I already mentioned that inter-disciplinary collaboration is key to success in today's world

Q: Is there any recently published paper in the field of chromatography that has caught your attention?

A: As I will mention below, separation problems are becoming more challenging and require an order of magnitude higher resolution. Biological samples are extremely complex and sample matrices are also more complex (e.g. proteomics to foodomics). I recently see that Prof. Peter Schoenmakers at the University of Amsterdam received a prestigious European Research Council grant for a project "separation technology for a million peaks (STAMP)". This is very exciting and I am sure he will publish many important papers on this project. In terms of recently published paper, there was a very impressive paper on a microfluidics device for comprehensive spatial two-dimensional LC by Wouters et al (J. Sep. Sci. 2015 38 1123-1129). Multidimensional LC can not only be done in time but also in space.

Q: In the next 5 years what area or element of chromatographic sciences do you see advancing or changing the most and why?

A: We are approaching the performance limit of one-dimensional LC. However, the real world problems are demanding an order of magnitude higher resolving power, especially in the bioanalysis world. As a result, we will see the growth in multidimensional LC. This is becoming a more robust and more user friendly tool with instrument vendors' efforts so a tool that can be used by non-experts. It is a general trend that the knowledge level of today's instrument users is decreasing. This is a serious problem. I see that future instruments will be made simpler, smarter, and more intuitive. Maybe one day it will be like everyone uses a smart phone without knowing how it actually works! LC-MS will become more common and an indispensable tool for labs. I also see the potential of new chromatographic media being developed to revolutionize the HPLC columns field. It will surely be an exciting time.

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