



2018 SIGMOBILE OUTSTANDING CONTRIBUTIONS AWARD: Teresa H. Meng

Citation: For groundbreaking research, engineering and entrepreneurial leadership to make Wi-Fi faster, lower power, and lower cost.

Dr. Teresa H. Meng is the 2018 SIGMOBILE Outstanding Contributions Award recipient. She is a pioneer of radio hardware design and implementation for wireless local-area network (LAN). Her groundbreaking research, engineering and leadership at Atheros made Wi-Fi faster, lower power, and cheaper; as a result, Wi-Fi technology today is ubiquitous. When founding Atheros twenty years ago, Dr. Meng expounded three revolutionary ideas:

- First, to use standard CMOS technology, instead of the then-dominant bipolar technology, to implement radio-frequency circuits.
- Second, to use digital signal processing to overcome the limitations of CMOS implementations.
- Third, to build radio hardware with a large number of software-tunable parameters.

These architectural ideas together enabled Wi-Fi hardware to tap into the magic of Moore's Law and made it scalable in terms of performance and efficiency, as modulation schemes and baseband algorithms grow increasingly complex. When Dr. Meng founded Atheros twenty years ago, Wi-Fi hardware, in the form of 802.11b, cost about \$50 per Mbps. Today's Wi-Fi hardware costs less than \$0.02 per Mbps. Along with these revolutionary

ideas, Dr. Meng made monumental technical contributions to low-power very-large scale integrated (VLSI) circuit design that underpins modern high-speed, low-power integrated systems beyond radio hardware.

Dr. Meng has been an outstanding mentor at Stanford and Atheros, producing a generation of technical leaders in wireless communication and low-power CMOS radio engineering. In a commencement speech she gave at National Taiwan University [1], her alma mater, she recounted three stories from her life from when she arrived in the States for graduate school to the founding of Atheros: (1) to experience life and expand one's horizon (2) to get out of one's comfort zone and embrace challenges, and (3) to treat people equally, especially those who are different from you. For (3), she recounted that in the early stage of founding Atheros, her cofounder, a male Stanford faculty member, quit to form another startup, dealing a devastating blow to the plan of Atheros. While she was contemplating the future of Atheros, a senior Stanford colleague consoled her that she could easily find a job in a great company if she wanted to join the industry. Humiliated, she was determined to show the world that women can also found successful technology startups. And the rest is history.

Recently, Dr. Meng shared her experience with sexism, implicit and

explicit, as a woman engineer in a male-dominated industry in an inspiring keynote at the International Solid State Circuits Conference, which was summarized by an *EETimes* article [2]. Dr. Meng wrote to *EE Times* after her keynote: "My purpose of giving the talk was to serve as a voice for those women who are still struggling and to let them know that they are not alone. This is really about them, not about me."

So, I have a humble request. The next time you enjoy Wi-Fi on your laptops or smartphones, pause for a moment to marvel at the achievement of a brilliant and brave colleague of our own. More importantly, remember her tip: treat people equally, especially those who are different from you. ■

Editor's note: After this article was written, Dr. Meng shared her technical and personal insights in a special session at MobiCom 2018, the 24th Annual International Conference on Mobile Computing and Networking. The video is available at <https://youtu.be/S73VH2Jx8TM>

REFERENCES

- [1] Dr. Teresa H. Meng's NTU Commencement Speech 2015, <https://youtu.be/MZCuN8ym7gs> (speech delivered in Mandarin Chinese). Published September 7, 2015.
- [2] Junko Yoshida, An Engineer's Guide to Sexism, https://www.eetimes.com/document.asp?doc_id=1332972, February 15, 2018