ASME Journal of Manufacturing Science and Engineering
Online journal at:
https://asmedigitalcollection.asme.org/manufacturingscience

Journal of Manufacturing Science and Engineering

Editorial

Editorial

Albert Shih,
Editor-in-Chief, JMSE

The *Journal of Manufacturing Science and Engineering* (JMSE) is actively soliciting research papers in semiconductor manufacturing. A Special Issue in "Semiconductor Manufacturing" is planned to publish in Summer 2024 with Cha Bum Lee, Martin Jun, Greg Vogl, Sangkee Min, and Jichul Yang as Guest Editors. In her speech entitled "The CHIPS Act and a Long-term Vision for America's Technological Leadership" at Georgetown University on February 23, 2023, US Secretary of Commerce Gina Raimondo said, "Semiconductors form the foundation of all advanced technology." She elegantly outlined the historic opportunity and the long-term goals provided by the CHIPS and Science Act. By searching the keyword "manufacturing" in her speech, you may read:

"manufacturing—not software or algorithms—powered this engine of innovation."

"We once manufactured nearly all of the world's most advanced semiconductors. Today, we manufacture none. Taiwan alone produces 92% of the world's leading-edge chips."

"We sacrificed our manufacturing capacity and workforce in the mistaken belief that we could somehow maintain our technological leadership without them."

"This manufacturing atrophy has real consequences … it's a threat to our national security."

"If we don't invest in America's manufacturing workforce, it doesn't matter how much we spend… It starts with training and inspiring a generation of engineers and scientists who are excited about manufacturing."

We have a once-in-a-generation opportunity in advanced manufacturing. I wrote a unique JMSE article entitled "Multicultural Diversity Workforce and Global Technology Collaboration Empowered Semiconductor Manufacturing Excellence in Taiwan: A Manufacturing Engineer's Perspective" in this Issue summarizing my observations and hypotheses on why Taiwan is so good in semiconductor manufacturing. In the past nine months at National Tsing Hua University (NTHU) in Hsinchu, a city where Taiwan started the pursuit and continued relentless R&D to maintain the lead in semiconductor manufacturing excellence, I am surrounded by many outstanding semiconductor manufacturing and R&D engineers. This article is a reflection of the wisdom of many of them. I was also hoping to be close to my ailing mother, who unfortunately passed away before I started at NTHU. In hindsight, her illness made possible this JMSE article, which is dedicated to her.

"Multicultural diversity" is a key message of this JMSE article, which will be informative for manufacturing engineers and laypersons by demonstrating the impact and importance of diversity and showing the complexities, challenges, and opportunities in semiconductor manufacturing. It is my greatest hope that this JMSE article will inspire the multicultural diversity aspects in our society and encourage more colleagues to study frontier semiconductor manufacturing.

This issue has three other papers with authors from Taiwan on power skiving, an advanced internal gear cutting process, and silicon nanowire manufacturing. Altogether, this is a Special Section dedicated to advanced manufacturing in Taiwan.

Albert Shih
Editor-in-Chief, JMSE
University of Michigan,
Ann Arbor, MI 48109;
National Tsing Hua University,
Hsinchu 300044, Taiwan