MRS Bulletin

Millie Dresselhaus (1930–2017): Catalyst for carbon nanoscience

I think that entering the field of science is really almost the best career [young women] can have. What's the reason for it? There are two reasons. One, the work is very interesting, and secondly, you're judged by what you do and not what you look like.

Mildred Dresselhaus

A few years ago, I got off a long flight from San Francisco in Sydney, Australia, early in the morning. I was there to attend an Australian Materials Research Society conference. I was tired and ready to get to my hotel room for a good nap. And there I saw Millie getting off a flight from Boston. Unlike me, she looked fresh and energetic and ready to get on with the conference right away. As George Crabtree states in a recent remembrance in *MRS Bulletin*, "She was uniquely tireless, thoughtful, and attentive all at the same time."*

Millie was the recipient of the National Medal of Science, the Presidential Medal of Freedom, the Kavli Prize in Nanoscience, the Enrico Fermi Prize, and the MRS Von Hippel Award, among dozens of other recognitions, and may have narrowly missed a Nobel Prize, according to some accounts. But she remained simple, easily approachable—she was Millie to everyone, not Prof. Dresselhaus or Dr. Dresselhaus or Mildred.

She attended many MRS Fall and Spring Meetings over the decades, and my favorite image remains of her walking down one of the hallways in Boston with a group of young researchers trailing her as she talked animatedly. There are many stories of her mentorship and encouragement of young scientists, especially female scientists. She had numerous collaborators all over the world beyond her own students and postdocs.

Millie's life story is well known by most. Growing up under modest circumstances in the Bronx in New York City as the daughter of Polish immigrants, she excelled in science and math. She went on to study at Hunter College, where she came under the mentorship of the future Nobel Laureate Rosalyn Yalow, and later received her master's degree at Radcliffe College. She obtained her PhD degree in physics from The University of Chicago, where she worked with Enrico Fermi. She moved to MIT with her husband Gene, also a physicist, in 1960 and became the first woman at MIT to obtain a full professorship in 1968. She continued over the years to promote and encourage women in science in many ways.

Above all, Millie was an outstanding scientist, and most recently focused on carbon nanoscience as one of her areas of research. She started working on carbon before it became a "hot" field and before the discovery of fullerenes. Her work contributed to the discovery of carbon nanotubes. Today, this has been further extended to graphene and many other carbon nanostructures.

Millie passed away suddenly on February 20 of this year. She never retired, and her scientific output remained consistent and prodigious until the end. It was a shock to realize she was mortal.

This issue of *MRS Bulletin* focuses on the growth of nanocarbons using appropriate catalysts and methods, discussing the theory and mechanisms of catalytic growth of nanocarbons and ways to experimentally control the growth to obtain the desired structures and properties. These areas lie squarely within the boundaries of Millie's expertise and research interests.

When we were considering this topic of catalysts for nanocarbon growth for an issue of *MRS Bulletin* in January of this year, Millie's name was at the top of the list of suggested guest editors for the issue. Peter Thrower, one of the guest editors of this issue, invited Millie to join him in guest editing the issue in mid-February. Millie had passed away before she could respond. It is fitting that Hui-Ming Cheng, co-guest editor of this issue, worked with Millie in her lab as a visiting research scholar.

It is with a sense of deep gratitude for her contributions to materials science and carbon nanoscience, among other areas, and her intangible contributions to the materials community as a whole in myriad ways, that we dedicate this issue of *MRS Bulletin* to Millie Dresselhaus.

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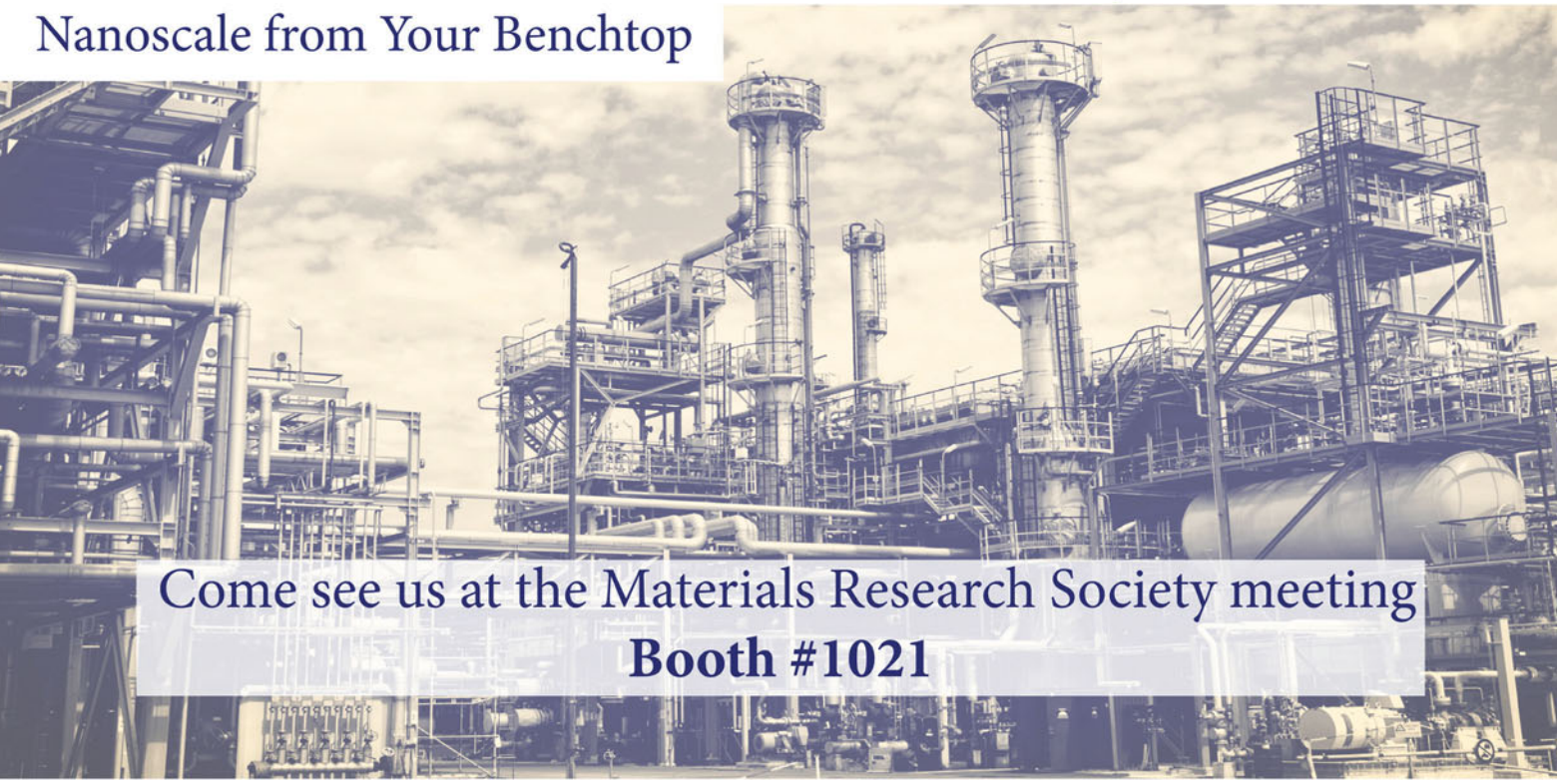

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