Prior to his NSF appointment, Suresh served as dean of MIT’s School of Engineering. He is currently on leave from the Vannevar Bush Professorship of Engineering at MIT. His innovative experimental and modeling work with nanoscale materials, which connects cellular nanomechanical processes and human disease states, has helped quantify the onset and progression of devastating diseases such as malaria. His academic research has won him a number of awards over the years, including election to the U.S. National Academy of Engineering, the U.S. National Academy of Sciences, and the American Academy of Arts and Sciences. More recently, he has been awarded the prestigious Timoshenko Medal from the American Society of Mechanical Engineers (ASME).

ENGEnious interviewed Dr. Suresh to learn more about the challenges and opportunities facing engineering and science in the United States.

ENGEnious: What is the greatest challenge facing engineering and science in the United States?

Suresh: For the last half-century, the United States has been considered the undisputed leader of global innovation. Despite an ongoing economic crisis, maintaining America’s leadership role is critically important. Many other nations’ economies are also suffering, but nevertheless they see engineering and science investment as the ticket to innovation and prosperity. For the last decade, other countries’ increased rate of funding has been significantly more than ours. If our funding reductions continue for several years, we’ll pay a very heavy price. Our
second and third challenges have occurred in the last couple of decades. We are in a global competition for talented scientists and engineers. We will remain an innovation leader if we can continue to attract and keep top talent from all over the world. And our aging infrastructure—experimental facilities for physical sciences, for example—need updating, which is expensive. By building newer infrastructure, other countries can leapfrog technologies.

**ENGEnious**: Despite the economic challenges we are facing, NSF has received strong support from Congress. What do you think is fueling this success?

**Suresh**: At times of tight fiscal constraint, there’s often a flight to quality. In past economic crises, strong research universities have actually seen increases in research funding. There is general awareness that global leadership in technology and innovation directly depends on the quality of a country’s research and education in science and engineering. In this area, NSF plays a key role, and so I’ve been making the argument that now is the time to increase support—not because it’s self-serving, but because the data support it. Although we see more competition from other countries, engineering and science funding for basic research carries no political agenda; even in periods of global unrest, international cooperation in research continues.

**ENGEnious**: Why did you choose to serve as director of NSF?

**Suresh**: A continuous connection to education, research, and the political process makes NSF a very unique institution. As its director, I deal with researchers, educators, young scientists, students, and administrators in about 1,800 institutions across the country, engage in numerous national and international activities, and enjoy access to the global scientific community.

**ENGEnious**: What do you hope to accomplish as NSF director?

**Suresh**: Though resources are tight, with clear strategies and careful leveraging, we have launched a number of new ideas and initiatives. For example, some of our best practices have been elevated to agency-wide levels, such as the Career-Life Balance Initiative, a ten-year plan to provide greater work-related flexibility to women and men in research careers and facilitate reentry after family leave with minimal loss of momentum. We received strong encouragement for this initiative from the White House, which is concerned about the importance of supporting and retaining women and girls in STEM (science, technology, engineering, and mathematics) careers. Another example is our Integrated NSF Support Promoting Interdisci...
I know by experience that migration from one field to a seemingly unconnected field is possible. Ten years ago, I went from mechanical engineering to microbiology and infectious diseases. Ten years ago, I chose to go and really learn the infectious diseases.

The importance of focusing on basic research, education, and innovation generally takes a secondary or tertiary role in the political debate compared to other topics. But we all need to understand that we cannot afford not to support innovation through research and education in engineering and science.