

# STLE member advising Congress stresses need for greater technical expertise

Bharat Bhushan emphasizes how STEM disciplines impact economic growth and influence national policy.



## **Bharat Bhushan** **The Quick File:**

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Bharat Bhushan (*left*), with the Honorable John Boehner (R-Ohio), the current Speaker of the U.S. House of Representatives.

**BHARAT BHUSHAN, PH.D., PE, WHO SERVED ON THE REPUBLICAN STAFF** of the Committee on Science, Space and Technology (SST) in the U.S. House of Representatives, was an ASME member who served as 2013-2014 ASME Federal Government Fellow. Bhushan, an Ohio Eminent Scholar and Howard D. Winbigler Professor and director of the Nanoprobe Laboratory for Bio- and Nanotechnology and Biomimetics at U.C. the Ohio State University, spent his year on Capitol Hill preparing science legislation and arranging hearings for the SST's Subcommittee on Re-

search and Technology. Bhushan also is an STLE Fellow and Life Member and has received the society's highest technical honor, the International Award.

Bhushan's duties as a Congressional Fellow included selecting witnesses and preparing questions for subcommittee hearings, preparing op-ed pieces, drafting memos, preparing research overviews regarding various technologies and attending regional meetings of the National Academies and numerous hearings and briefings in the nation's capital and in other locations.

During his year as an ASME Congressional Fellow, Bhushan was struck by the genuine need for technical engineering and scientific guidance on Capitol Hill, where fewer than 5% of the members of Congress charged with making decisions on bills involving technical components are actually engineers or scientists. According to the report Bhushan submitted at the end of his Fellowship, only 12 House and Senate members in the 113th Congress had engineering degrees, while a mere 5%-10% of the congressional staff who prepare the legislation typically possess physical science or engineering degrees. This is a scenario Bhushan would like to help change.

Following the one-year term, Bhushan issued the follow statement to describe his experience with science and technology in the U.S. Congress:

Research and development (R&D) investments, particularly in the broad areas of science and technology (S&T), help drive economic growth through direct and collateral effects. The U.S. has been a global leader in these investments, but its dominance is slipping as other developed and emerging economies are much more rapidly increasing their R&D investments. Traditionally the U.S. has invested in basic research and relied on industry to transfer that research into viable products for market. However, industry has been increasingly unwilling to take the financial risks involved in technology transfer, resulting in lower return on investment for the significant funding the U.S. provides for basic research. Increasing federal investments and public-private partnerships are needed to make products of research attractive to industry and investors. This will once again return the U.S. to global technological leadership.

Scientists and engineers can help promote R&D investments and the resulting economic growth through legislative participation in policy and funding development. Legislators prepare and make decisions on bills that involve S&T policy components, but they may not have sufficient expertise to do so. Congress operates on a truncated work week to allow congressional members time to travel to and work in their home states. This places many demands on their time while they are in Washington D.C., necessitating reliance on staff to manage day-to-day business. Staff have the ear of their congressperson, so a fellow needs to work with them closely. Navigating that relationship can be delicate. Due to the fast-paced, competitive and adversarial environment, as well as the varied nature of their work, staff are called upon to exhibit expertise that they often do not possess. They become used to having a little bit of knowledge about a lot of things, and so feel confident discussing topics that in reality they do not fully compre-

hend. It is up to the fellow to balance the need to educate the staff (and thereby the congressperson) on critical issues with the fragile nature of egos surrounding the policy. It is vital that scientists and engineers from academia and industry spend time in Washington D.C. to constructively engage in policy decisions and lend their expertise to legislators and their staffs. In this way, scientists and engineers need to be champions for S&T policy and thereby R&D investments to keep the U.S. competitive in the global market.

In this perspective, I share my experiences while serving as an S&T Fellow with the U.S. Congress. This will show the education I derived, the impact I had and the major impact that can be made on current and future policies by future fellows.

I spent a year as the S&T Policy Fellow for the Subcommittee on Research and Technology of the House Committee on Science, Space and Technology. The subcommittee is responsible for funding for the National Science Foundation (NSF), National Institute of Standards and Technology (NIST), the Office of Science and Technology Policy (OSTP) and Science, Technology, Engineering, and Mathematics (STEM)-related programs and Technology Transfer (Transfer Act). The subcommittee is also responsible for the 21st Century Nanotechnology R&D Reauthorization Act. Additionally I was detailed to the House Committee on Oversight and Government Reform and on loan to the House Committee on Energy and Commerce.

There are many ways S&T fellows can influence policy. Staff, including fellows, prepare legislation and conduct hearings on various bills and subjects of interest. They participate in preparation of legislative documents, as well as selection of hearing witnesses, preparation of questions and other logistics, and occasionally prepare op-eds and state-of-the-art research overviews. There are many other ways to get involved, limited only by the interest and persistence of fellows.

Some of the ways I got involved included assisting in the preparation of legislation and hearings on major bills and follow-up markup hearings. A list of legislation follows:

- Frontiers in Innovative Research, Science, and Technology (FIRST) Act (H.R. 4186), reauthorizing funding for NSF, NIST, OSTP and Interagency STEM Programs.
- Revitalize American Manufacturing and Innovation Act of 2013 (H.R. 2996), a bipartisan bill sponsored by Representatives Reed (R-NY) and Kennedy (D-MA).
- Private Sector Programs that Engage Students in STEM Act of 2014 (H.R. 5031).

A list of hearings follows:

- Prizes to Spur Innovation and Technology Breakthroughs
- Nanotechnology: From Laboratories to Commercial Products
- Reducing the Administrative Workload for Federally Funded Research
- Policies to Spur Innovative Medical Breakthroughs from Laboratories to Patients
- Nanotechnology: Understanding How Small Solutions Drive Big Innovation (House Committee on Energy and Commerce).



In closing, by serving in Congress, a fellow gains an understanding of the legislative process, the role of lobbyists and stakeholders and can begin to understand not only the party divide, but also the intricate nature of relationships on Capitol Hill. With this understanding, a Fellow can influence policy decisions constructively and initiate new policy bills. In addition, congressional staff gain a better appreciation for working with scientists, and the ties which one develops provide invaluable contacts and keep the channels of communication open. An academic that serves as a Fellow can bring back the experience to the classroom and inspire students to pursue S&T policy careers. Further, engineering and science departments at universities should initiate a joint bachelor's of science program in engineering/science and public policy and/or a minor in science, engineering and public policy, to encourage future scientists to engage in these important roles. Finally, as S&T professionals, it is our social and professional responsibility to participate in the national S&T policy.

### ACKNOWLEDGMENT

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ing orientation, placement and continuing education. He thanks the House Committee on Science, Space and Technology (SST), and the House Committee on Oversight and Government Reform (OGR) for acting as hosts. He thanks the House Committee on Energy and Commerce for inviting him to serve as guest staff in order to organize a hearing on nanotechnology. **TLT**



Dr. Bhushan is greeted by the Honorable Nancy Pelosi (D-Calif.), Minority Leader of the U.S. House of Representatives.



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