

Special Issue: The Behavior of Crystalline Materials: In Honor of Professor Hussein Zbib



**Professor
Hussein Zbib**

This special issue of the *ASME Journal of the Engineering Materials and Technology* is dedicated to the memory of our friend and colleague, Professor Hussein Zbib, who passed away in February 2020. Hussein was a past editor of this journal and was an internationally recognized research leader and an innovator in numerous aspects of mechanics of materials, such as dislocation dynamics, plasticity, and irradiated materials. The articles in this special issue, through the different contributions of

his collaborators, colleagues, students, and friends, truly reflect the different research areas he impacted. Furthermore, these contributions underscore how his research interests, collaborations, and achievements fundamentally influenced the experimental and modeling accomplishments of the contributing authors.

Hussein was a Professor in the School of Mechanical and Materials Engineering at Washington State University since 1988. As a director of the Computational Mechanics and Materials Science Laboratory, he conducted research in the field of multiscale theoretical modeling and predictions of the thermo-mechanical behavior of advanced materials. He developed models and theories used by materials scientists and engineers throughout the world, and his research significantly improved and elevated the fundamental understanding of the behavior of metals, alloys, and composites at different physical scales.

His research group, for instance, developed models to simulate the behavior of a wide array of materials that are exposed to high doses of radiation. It was well known that such materials can deform and fail, but the mechanics and defect behavior were not well understood until Hussein and his coworkers developed a new class of computational tools based on innovative formulations related to dislocation dynamics. This was a crucial breakthrough, since dislocation dynamics is essentially now recognized as an established link between atomistic and continuum approaches.

Hussein published more than 250 technical articles in leading journals, edited 12 books, and presented hundreds of invited talks and seminars. Over his career, he supervised and mentored more than 30 masters and doctoral students, six postdoctoral fellows, 11 visiting scholars, and 15 undergraduate research assistants. Many of his students went on to become internationally recognized researchers and leaders in academia, in industry, and at national laboratories.

Hussein was a fellow of the American Association for the Advancement of Science and the ASME as well as an executive member of the Lebanese Academy of Science. He was a recipient of the 2010 Khan International Award for outstanding contribution to the field of plasticity. He also received research excellence awards from the Voiland College of Engineering and Architecture in 1994 and 2015 and from the School of Mechanical and Materials Engineering in 2000 at Washington State University. He was named a Regents Professor, the university's highest faculty title, in 2018. He also served as the director of the School of MME from 2003

to 2011. During his tenure as a school director, he played a significant role in expanding the faculty size, research expenditures, and private donations, and fostering partnerships with industries and national laboratories, such that the School is now recognized as a leading national mechanical engineering and materials science department.

Hussein was born in Beirut, Lebanon, to Mustapha and Sahjouna Zbib, and his parents were from South Lebanon. He completed his schooling in Beirut, graduating from Aamlye Technical College. Zbib received his bachelor, masters, and Ph.D. in Mechanical Engineering and Engineering Mechanics from Michigan Technological University. He married Marcia Ann Rowe in Hancock, MI, on July 12, 1986, and in 1988, they moved to Pullman when Zbib accepted a position at WSU.

Hussein enjoyed being with family and friends. He enjoyed cooking and dancing, and he and his wife Marcia were active in both the Palouse dance club and gourmet club. Zbib also enjoyed golfing, fishing, boating, reading, cross country skiing, table tennis, tennis, going to fine dining restaurants, and spending time at the gym exercising and swimming. Together he and his wife Marcia enjoyed traveling throughout the world.

Hussein is survived by his wife Marcia, mother Sahjouna Zbib, two brothers Ali and Bilal Zbib, three sisters Fadia, Hana, and Iman Zbib, and many nieces and nephews. He was preceded in death by his father Mustapha Zbib, brother Hassan Zbib; and two sisters Ferial and Sanaa Zbib.

Hussein was the model for a research innovator and an academic leader. All of us are missing Hussein; we will never forget him, his wisdom, his easy smile, and the twinkle in his eye. His spirit will always be with us as a guiding light in our lives.

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