On the Contribution of Professor K.T. Ramesh to Dynamic Behavior in Honor of His 60th Birthday

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During Professor K.T. Ramesh's distinguished career, he has made seminal contributions in wide-ranging scientific topics, yet he is particularly well known for his efforts in the areas of impact physics and the failure of materials under extreme conditions. This special issue of the Journal of the Dynamic Behavior of Materials is meant to celebrate the contributions of Professor Ramesh in these particular fields on occasion of his 60th birthday. It is a collection of articles contributed by those associated with K.T. including prominent colleagues and collaborators, as well as former students and postdoctoral research scholars. This edition is a complement to the symposium held in his honor at the 2019 Mach Annual Technical Conference in Annapolis, Maryland from April 3 to 5, 2019 with fellow co-organizers Professors Shailendra Joshi, Jamie Kimberley and Justin Wilkerson.

K.T. Ramesh received his bachelor's degree in Mechanical Engineering from Bangalore University, India, in 1982. From there, he attended Brown University where he received a ScM in Solid Mechanics in 1985 and a ScM in Applied Mechanics in 1987. In 1988, K.T. received his Ph.D. in Solid Mechanics advised by Professor Rodney Clifton at Brown University. He continued his career as a postdoctoral research scholar in solid mechanics at the University of California, San Diego the following year and then began his faculty career in the Whiting School of Engineering at the Johns Hopkins University in the Department of Mechanical Engineering. He has served as the chair of the department from 1999 until 2002. In 2001, K.T. founded the university's Center for Advanced Metallic and Ceramic Systems and directed it until 2012. In 2011, Professor Ramesh was named the Alonzo G. Decker, Jr., Professor of Science and Engineering. The following year, the Army awarded a large grant to establish the Center for Materials in Extreme Dynamic

Environments within the Hopkins Extreme Materials Institute (HEMI), a massive effort spear headed and directed by Professor Ramesh. HEMI's research focuses on impact and failure of materials under extreme conditions, with specific interest in protective materials, massive failure of brittle solids, impact processes in planetary science, and impact biomechanics; thus illustrating the highly interdisciplinary nature of K.T.'s work.

In tangent with these prestigious accomplishments, it is no surprise Professor Ramesh also has a multitude of complementary accolades, scientific contributions and history of service. He previously served as a regional director of the American Academy of Mechanics and on the governing board of the Society of Engineering Science (SES) and was a past president of SES. Professor Ramesh is a fellow of the American Associate for the Advancement of Science, the American Academy of Mechanics, the Society for Experimental Mechanics and the American Society of Mechanical Engineers. Additionally, K.T. has written over 200 peer-reviewed technical articles and is the author of *Nanomaterials: Mechanics of Mechanisms* (Spring 2009). He is the recipient of the 2006 M. Hetenyi award for the best research paper published in Experimental Mechanics, the 2012 B.J. Lazan award for outstanding original technical contributions to experimental mechanics from the Society for Experimental Mechanics and has given their prestigious 2015 W. M. Murray Lecture. In 2019, the Applied Mechanics Division of the American Society of Mechanical Engineers awarded the Warner T. Koiter Medal to Professor Ramesh for recognition of outstanding and distinguished contributions in the field of solid mechanics. To date, Professor Ramesh has mentored over 32 PhD students and 41 postdoctoral research scholars and has been an admired teacher, advisor and colleague to all that have worked with him. As such, his former mentees have gone on to become faculty at institutions of higher education across the world, principal scientists at national and international laboratories and chief engineers in industry.

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Within the special issue, you will find papers that span many aspects of dynamic behavior given the broad spectrum of work Professor Ramesh has been a part of in this field. Some of these include five contributions focused on magnesium and magnesium alloys, exploring their shock behavior by J.T. Lloyd et al., a review of their spall failure by Mallick et al. and Williams et al., a model for damage by Olinger et al. and a numerical study on strain-rate and triaxiality effects from Professor Shailendra Joshi and his group at the University of Houston. An integrative constitutive model for brittle materials is provided by Cil et al. highlighting analytical and computational advancements in the predictions of microcracks and breakage. Kettenbeil et al. provides improvements on the pressure shear impact (PSPI) experiment, demonstrating the ability to extend the experimental technique to higher pressures, approaching 50 GPa. Lastly, a study on the thermo-mechanical response of additively manufactured energetic material simulant under dynamic loading is contributed by Professor Zhou and his team at the Georgia Institute of Technology.

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