PROFESSOR LIVIU LIBRESCU

(1930–2007)

Liviu Librescu was a prominent scientist and academic whose major research fields were aeroelasticity and aerodynamics. His last academic position was Professor of Engineering Science and Mechanics at Virginia Polytechnic Institute and State University (Virginia Tech).

Liviu Librescu was born in August 18, 1930 in the city of Ploieşti, Romania. After Romania allied with Nazi Germany in World War II, his family, along with thousands of other Jews, was deported to a ghetto in Romania. Liviu as a boy was interned in a labor camp in Transnistria.

Liviu Librescu survived the Holocaust, and was repatriated to Communist Romania and became an accomplished scientist. He studied aerospace engineering at the Polytechnic University of Bucharest, graduating in 1952 and continuing with a master degree at the same university. He was awarded a Ph.D. in fluid mechanics in 1969 at the Academy of Science of Romania. From 1953 to 1975, he worked as a researcher at the Bucharest Institute of Applied Mechanics, and later at the Institute of Fluid Mechanics and the Institute of Fluid Mechanics and Aerospace Constructions of the Academy of Science of Romania.

His career stalled in the 1970s because he refused to swear allegiance to the Communist Party of Romania. When Librescu requested permission to emigrate to Israel, he was fired from his job. In 1976, a smuggled research manuscript that he had published in the Netherlands drew him international attention in the growing field of material dynamics. After years of government refusal, Librescu family moved to Israel in 1978.

From 1979 to 1986, Librescu was Professor of Aeronautical and Mechanical Engineering at Tel-Aviv University and taught at the Technion in Haifa. In 1985, he left on sabbatical for the United States, where he served as Professor at Virginia Tech in its Department of Engineering Science and Mechanics from September 1, 1985 until his death. He served as a member on the editorial board of seven scientific journals (specifically, since 2003 professor Librescu was a Member of the International Editorial Board of the journal *Mathematical Methods and Physico-Mechanical Fields*) and was invited as a guest editor of special issues of five other journals. Professor Liviu Librescu was the organizer and chair of the 5th International Congress on Thermal Stresses and Related Topics in June 8–11, 2003, at Virginia Tech in Blacksburg, Virginia. He was a chair of the International Organizing Committee of the 6th International Congress on Thermal Stresses '05, May 26–29, 2005, Vienna, Austria. Most recently, he was co-chair of the International Organizing Committee of the 7th International Congress on Thermal Stress, Taipei, Taiwan, Republic of China, June 4, 2007 to 7. He had also been scheduled to be one of the six invited keynote speakers there. As a world renowned expert in vibrations, structural mechanics and aeronautical engineering, his lecture was to cover the recent developments in multifunctional thin-walled structures.

Librescu's major fields of study included:

– Foundation and applications of the modern theory of shells incorporating non-classical effects and composed of advanced composite materials;

– Foundation of the theory and applications of sandwich type structures;

– Aeroelastic stability of flight vehicle structures;

– Nonlinear aeroelasticity of structures in supersonic and hypersonic flow fields;

– Aeroelastic and structural tailoring;

– Dynamic response and instability of elastic and viscoelastic laminated composite structures subjected to deterministic and random loading systems;

– Mechanical and thermal postbuckling of flat and curved shear-deformable elastic panels;

– Static, dynamic and aeroelastic feedback control of adaptive structures;

– Unsteady aerodynamics and magnetoaerodynamics of supersonic flows with applications;

– Optimization problems of aeroelastic structural systems;

– Theory of composite thin-walled beams and its application in aeronautical and mechanical constructions;

– Response and behavior of structures to underwater and in-air explosions;

– Multifunctional and functionally graded material structures.

This is a partial list of books that Librescu authored:

1. *Librescu, L.,* Statics and Kinetics of Anisotropic Shells and Plate-Type Structures. – Publishing House of the Romanian Academy of Science, 290 pp., 1969 (in Romanian).
2. *Librescu, L.,* Elastostatics and Kinetics of Anisotropic and Heterogeneous Shell-Type Structures. – Noordhoff International Publishing, Leyden, Netherlands, 598 pp., 1975.
3. *Librescu, L.,* Recent Contributions Concerning the Flutter Problem of Elastic Thin Bodies in an Electrically Conducting Gas Flow, a Magnetic Field Being Present. – Solid Mechanics Archives, 2(1), pp. 1–108, 1977, Canada – The Netherlands.
4. *Cederbaum, G., Elishakoff, I., Aboudi, J. and Librescu, L.,* Random Vibrations and Reliability of Composite Structures. – Technomic Publishing Company, Inc., Lancaster-Basel, USA, 1992, 191 pp.
5. *Librescu, L. and Song, O.,* Composite Thin-Walled Beams: Theory and Application. – Springer, 615 pp., 2005.

Professor Librescu published 246 articles in 58 peer-reviewed journals and more than 300 published papers presented at Nationals and Internationals Conferences, and a large number of invited keynote/plenary lectures on numerous seminars and conferences. Dr. Librescu's papers have been cited over 1000 times in the technical literature.

At age 76, Librescu was among the thirty-two people who were murdered in the Virginia Tech massacre. On April 16, 2007, Seung-Hui Cho entered Norris Hall Engineering Building and opened fire on classrooms. Librescu, who taught a solid mechanics class in the Norris Hall during April 2007, held the door of his classroom shut while Cho was attempting to enter it. Although he was shot through the door, Librescu prevented the gunman from entering the classroom until most of his students had escaped through the windows. He was struck by five bullets, with a shot to the head ending his life. Of the 23 registered students, only one died.

Librescu received many academic honors during his work in the Engineering Science and Mechanics Department at Virginia Tech, serving as chair or invited as a keynote speaker of several International Congresses on Thermal Stresses and receiving several honorary degrees. He was elected member of the Academy of Sciences of the Shipbuilding of Ukraine (2000) and Foreign Fellow of the Academy of Engineering of Armenia (1999). He was a recipient of Doctor Honoris Causa of the Polytechnic Institute of Bucharest (2000), of the 1999 Dean's Award for Excellence in Research, College of Engineering at Virginia Tech, and a laureate of the Traian Vuia Prize of the Romanian Academy (1972). He was a member of the Board of Experts of the Italian Ministry of Education, University and Scientific Research. He was awarded the Engineering Science and Mechanics Frank J. Maher Award for Excellence in Engineering Education (2005) and an ASME diploma (2005) expressing «deep appreciation for the valuable services in advancing the engineering profession».

Posthumously, Professor Librescu was commended by Traian Băsescu, the President of Romania, with the *Star of Romania* Order with the rank of Grand Cross, «as a sign of high appreciation and gratitude for the entire scientific and academic activity, as well as for the heroism shown in the course of the tragic events which took place on April 16th, 2007, through which he saved the lives of his students, sacrificing his own life».

By «The Heroic Life and Works of Professor Liviu Librescu (1930-2007)», *Thermal Stress Conf. - 2007, Nat. Taiwan Univ. of Sci. and Technol., Taipei, Taiwan*

Ridiculous accident taken away the life of outstanding scientist.

Scientific and service personnel of the Pidstryhach Institute of Applied Problems of Mechanics and Mathematics of NASU feel very sad because of this loss for world science and would like to express sincerest condolescence to all who was close to Professor Liviu Librescu.