UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Memorial Tribute to

ANTHONY (TONY) A. HAASZ

Professor and Director Emeritus
University of Toronto Institute for Aerospace Studies

April 11, 2019

Be it resolved –

> THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on March 12, 2019 of Anthony (Tony) A. Haasz.

Tony Haasz was born in Hungary on March 18, 1943. His family moved to Canada and he went on to obtain an undergraduate degree in Engineering Science from the University of Toronto in 1967. Following this, he obtained Master of Applied Science (1968) and Doctor of Philosophy (1973) degrees from UTIAS.

He would go on to an academic career at UTIAS where he successively held the positions of Lecturer/Research Scientist, Assistant Professor, Associate Professor, and Full Professor. He was the Director of UTIAS during the period 1996-2006.

Tony's research career was largely devoted to the now 70-year-old quest for energy's holy grail - fusion energy: to create a man-made sun in a bottle to generate electricity from inexhaustible and universally available fuel that won't produce greenhouse gases.

His first involvement in a fusion research project, with the collaboration of Prof. Peter Stangeby (then himself a junior professor at UTIAS, 1972) was work towards the development of a gas-target neutron generator, GTNG, which would have made fusion using a powerful tritium ion beam fired into a supersonic deuterium gas jet. The idea was not to generate energy, but to create a source of high energy neutrons for materials testing. President Carter's 1978 budget included funds to build 2 GTNGs but the Congressional budget didn't.

From there the Stangeby/Haasz duo moved in the late 70's to another research area where, again, there was a connection to aerospace applications – plasma-solid interactions. From a historical perspective, the connection between aerospace and fusion is very well established, with fusion reactors powering spacecraft like the Millennium Falcon, long ago in a galaxy far away. More recently, during the 50's and 60's, spacecraft reentry was (and still is) an important part of rocket-science. The

problem in fusion is very similar: how to help materials survive contact with a high temperature plasma. In the reentry case, the plasma is about 10,000 degrees; while in the fusion case, the plasma is a bit hotter – more than 100,000,000 degrees. This new field had the advantage that there was some old equipment, and also some expertise at UTIAS. However, the field also had the disadvantage of there being an extremely well-funded research centre focusing on this field: the Max Planck Institute for Plasma Physics in Garching, outside Munich, Germany. The bar was set very high for any newcomers in this field. In fact, by pursuing laboratory accelerator-based simulation work, Tony's lab – with Tony now partnered with Jim Davis – was in direct competition with the leading scientists in Garching. One of the measures of the success of Tony and Jim's lab is the regular visits of scientists from Garching they hosted over the years. And, importantly, this success was achieved with a very small fraction of the personel and funding available to that major government lab near Munich.

For four decades now, the experimental group started by Tony has continued to make significant contributions to the understanding of the interactions of high-temperature plasmas with materials. One of his lab's main facilities, the dual-beam accelerator, remains a facility with capabilities unique in the world nearly three decades after it started operation. Fusion materials databases generated by Tony and Jim continue to be used throughout the world fusion effort. Over his career, Tony supervised or co-supervised 40 Masters and 10 PhD theses. His almost 200 research journal papers, mainly co-authored with Jim, have been cited nearly 5000 times.

Tony Haasz was a very warm, kind, and friendly person. He will be missed by his colleagues at UTIAS, many of whom benefitted from his excellent leadership as the Director of UTIAS.

Be it further resolved –

> THAT this tribute to Anthony (Tony) A. Haasz be inscribed in the minutes of this Council meeting, and that copies be sent to his family as an expression of the respect and gratitude of the members of this Council.

Prepared by Professor Chris Damaren with assistance from
Professor Emeritus Peter Stangeby and Professor Jim Davis