



UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

Memorial Tribute to

KENNETH CARLESS (K.C.) SMITH

Professor Emeritus

The Edward S. Rogers Sr. Department of Electrical & Computer Engineering

February 27, 2024

Be it resolved –

THAT the Council of the Faculty of Applied Science & Engineering record with deep regret the death on October 29, 2023 of Professor Kenneth Carless Smith.

Professor Kenneth Carless Smith — known to friends and colleagues as “K.C.” — was born in Toronto in 1932. He is survived by his wife and life partner of 40 years, Laura Chizuko Fujino, sons Kenneth David Smith and Kevin Anthony Smith, both alumni of U of T Engineering, and granddaughter Sophia Moore Smith.

After graduating from Lawrence Park Collegiate in 1950, Professor Smith joined the Engineering Physics program (now known as Engineering Science). Upon graduation he embarked on an MASC and later a PhD, both from the University of Toronto.

Professor Smith joined U of T’s Department of Electrical Engineering, now The Edward S. Rogers Sr. Department of Electrical & Computer Engineering (ECE), as an Assistant Professor in 1960 before leaving for the University of Illinois where he became an Associate Professor.

At the University of Illinois, he was a member of the design team and later chief engineer of the *Illiack II* and *Illiack III* computers. Here, Professor Smith recognized that with the need to design complex transistor circuits, heavily physics-based models were too cumbersome. In response to this challenge Professor Smith developed simple and intuitive transistor models that could be used in the rapid design of complex circuits.

When he returned to U of T, where he reached the rank of Full Professor, Professor Smith used these simple models and design approaches in a highly innovative course on digital circuit design. This course was taught to generations of graduate students, helping to position ECE at U of T as an international leader in circuit design. Professor Smith notably co-invented, along with Professor Adel Sedra — K.C.’s former graduate student — the current conveyor: a groundbreaking circuit component akin to an operational amplifier.

In 1982 with Professor Sedra, he coauthored a seminal textbook called *Microelectronic Circuits*. Better known as Sedra/Smith, this book established a new way for teaching electronic circuits to undergraduate engineering students. Sedra/Smith has been translated into ten languages and is currently in its eighth edition. With more than one million copies in print, it remains the most widely used textbook on the subject.

“K.C. was well known for his eloquent and insightful speech. I specifically recall an occasion where he held forth on the multiple levels of abstraction in electrical engineering. He described how we connect and traverse a vast knowledge hierarchy, spanning from quantum mechanics in transistors to the complexities of global communication networks. It profoundly impacted and inspired me as a young engineer. I continue to draw on that idea in my teaching and research.” said Professor Tony Chan Carusone, who co-authored the 8th edition of Sedra/Smith in 2020.

Professor Smith’s gift of simplifying the abstract, as well as his articulacy and ability to make connections, served him well in his research and teaching as well as in various administrative roles both in the University and through his professional organizations. He served as Chair of ECE from 1976 to 1981 and was the Chair of the Engineering Science Advisory Board from 2012 until his passing. “K.C. brought not just his insightful perspectives, but also a generous spirit that uplifted us all,” said Professor Deepa Kundur, who served as Chair of Engineering Science from 2017 to 2019 and currently serves as Chair of ECE, “His dedication to EngSci and ECE was unwavering and wisdom profound.” After he retired, he remained actively involved with both the University of Toronto and the International Solid-State Circuits Conference (ISSCC).

At ISSCC meetings, “K.C. would always listen to all sides on any debate, recognize the pros and cons in everyone’s arguments, then come back with the most convincing argument that all sides would agree on. This was a true characteristic of K.C.,” said Professor Ali Sheikholeslami.

It would be difficult to find a person with a larger or longer lasting presence and impact in the ECE department and in the IEEE Solid-State Circuits community than Professor Smith. “He was an engineer’s engineer, a circuit designer par excellence, and a man with deep insights, simply expressed,” said Professor Safwat Zaky.

Be it further resolved –

THAT this tribute to Professor KC Smith 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 and Chair Deepa Kundur, and Professors Tony Chan Carusone, Jonathan Rose, Adel Sedra, Sorin Voinigescu, Safwat Zaky, Steve Mann, Belinda Wang, Antonio Liscidini, Bruno Korst, Ali Sheikholeslami, Hoi-Kwong Lo, Berj Bardakjian, Khoman Phang, Ali Sheikholeslami, and Natalie Enright Jerger