

## **Dr. David A. Thompson – 2009 CSTC Lifetime Achievement Award Winner**

David Thompson received his Bachelor's degree in Physics from Reading University, UK in 1963. His PhD, also from Reading, was awarded in 1967. Upon graduation Dave took up his first employment position as a Research Physicist at Westinghouse Canada Ltd. During his five years at Westinghouse he rose to the position of Manager of the research group responsible for the development of novel processes for the fabrication of solid state devices. It was during this period at Westinghouse that Dave's interaction with McMaster University began. In 1969 he held the position of Industrial Research fellow (part-time) in the Department of Engineering Physics, and upon leaving Westinghouse in 1972; he joined the department on a full-time basis as an Assistant Professor. Following promotion to associate professor in 1975, Dave became a full professor and Chair of the Department in 1981- a post he held until 1987. During his over 30 years as a member of the teaching staff at McMaster, Dave taught many courses concerning the application of semiconductor based materials and devices and developed and taught a 4<sup>th</sup> year advanced laboratory course, in which the students fabricated a complete integrated circuit on a silicon wafer. Students have enormous respect for his enthusiasm and professional approach toward teaching, often commenting on his thorough preparation and clear delivery of lectures. A conservative estimate of the number of students who have benefited from his direct instruction is likely greater than 2,500. Many of these students are now employed in Canada's hi-tech industries.

Although Dave's impact on undergraduate life at McMaster has been substantial, it is likely that the impact of his contributions to academic research have been even greater. One of Dave's greatest virtues is that he allows his students to freely explore new territory. He supported the students' development by encouraging attendance at international conferences. This encouragement opened their eyes to a wide range of international research interests and demonstrated the importance of collaboration in research. As one of his nominators points out, "*Dave offered just the right amount of supervision. He was not content to leave you completely alone, but he would not be on your doorstep everyday either. His guidance kept me on track, and made me into an honest researcher*". Altogether, Dave has graduated 33 Master's students and 26 with a Ph.D. Twenty five early-career researchers have had the opportunity to work at the cutting edge of semiconductor research as post-doctoral fellows and research associates under his supervision and many more as visiting scientists from all over the world. Retirement from teaching has had little impact on Dave's research and he continues with current (co)supervision of several graduate students and post-doctoral researchers.

The wide range of topics to which Dave has contributed during his 35 year career is equally as impressive. In total, Dave has over 200 publications in refereed journals to his credit and the total number of citations of his work is approaching 2,000. Dave was a pioneer of the use of ion implantation and ion beam analysis in the 1970's. He managed the construction of an ion beam facility upon his appointment to McMaster and together with other notable researchers such as John Davies and George Carter developed many of the ideas which underpin the current knowledge of doping, implant isolation and damage accumulation. In the late 1970's Dave became the scientific leader of the Optoelectronics Thrust within the Ontario Centre for Materials Research (OCMR). He led a significant

expansion of McMaster's semiconductor fabrication capability by installing one of the world's first academic-based molecular beam epitaxy systems, as part of a multi-million dollar research infrastructure investment co-funded by the OCMR. This allowed him to perform fundamental work on the physics of III-V semiconductor growth and – in close collaboration with John Simmons and industrial partners - develop a new range of electronic and photonic devices. In support of the semiconductor growth facility he managed the construction of an industry-standard semiconductor processing cleanroom, allowing the full fabrication of devices from substrate to packaged test structure. Dave's foresight at that time thus led to a facility which has provided a model of how a university should operate semiconductor fabrication on an academic budget. These various facilities evolved into the McMaster Centre for Electrophotonic Materials and Devices, CEMD (now the Centre for Emerging Device Technologies, CEDT) in 1987, of which Dave was director until 2004. In the early 2000's, Dave made the CEMD one of the principal partners in the formation of the Ontario Photonics Consortium (OPC).

Dave Thompson over the years has always had a strong international component to his research. He was a Principal Investigator in a Technology Ontario/Region Rhône Alpes collaborative project to develop integrated optoelectronic systems, where his group demonstrated an integrated laser with a transistor driver. Following the success of that project, he was then chosen to lead a Technology Ontario/Singapore collaborative project to develop a tunable, multiple electrode, distributed-feedback semiconductor laser with quantum well technology for optical communications and other applications, which was successfully completed in 2001. Since the very early days of his research career Dave has welcomed researchers from around the globe to his team, many of whom returned to their home countries to start their own successful careers in industry or academia.

Overall, Dave has proven himself as one of the top semiconductor researchers both nationally and internationally. Dave Thompson's research, supervision, and teaching have made a significant contribution to our knowledge of semiconductor materials, fabrication processes, and devices. It is therefore highly appropriate that Dave be named the 2009 CSTC Lifetime Achievement Award Winner.