

# Excellent Women Mechanical Engineers

## Marilyn Lightstone



Marilyn Lightstone is currently a Professor and Chair of Mechanical Engineering at McMaster University. She is a Professional Engineer registered in Ontario. Marilyn is the first female Chair in the history of the Faculty of Engineering at McMaster University. She was previously Associate Chair (Undergraduate) in Mechanical Engineering.

Marilyn obtained her B.A.Sc. from Queen's University in Mathematics and Engineering followed by a Masters and Ph.D. from the University of Waterloo in Mechanical Engineering in the area of CFD. After obtaining her Ph.D., she joined Atomic Energy of Canada Limited as an analyst working in nuclear thermohydraulics. While Marilyn enjoyed her work in the nuclear industry, she realized that an academic career was her long-term career objective. To enable this, she successfully applied for a NSERC Women's Faculty Award and joined the Mechanical and Industrial Engineering Department at the University of Toronto in a CLA position. She subsequently joined the Department of Mechanical Engineering at McMaster University.

Marilyn's research interests span three different areas within thermofluids. The most fundamental work is in the development of new mathematical models to predict the interaction of droplets or particulates with a turbulent flow. This has applications in areas such as combustion, environmental flows and drug delivery. Marilyn has also been active in the area of solar energy (her Master's thesis was on this topic) and thermal energy storage. She currently has an active group that is using computational and experimental methods to develop high-capacity thermal storage through the incorporation of phase change materials. Lastly, Marilyn has maintained collaborations with the nuclear industry through the University Network of Excellence in Nuclear Engineering (UNENE) on modelling nuclear subchannel flows. Thirty-three students have completed their graduate degrees with her and she is currently supervising or co-supervising nine graduate students.

Marilyn has been involved with a number of groups outside of McMaster. She was Executive Officer for the CFD Society of Canada and was a Director for the period 2003-2008 and was Co-Chair for the 15th Annual Conference of the CFD Society of Canada (CFD2007). Marilyn also was the National Fluids Examiner for the PEO for the period 2007-2010. She was a member of the NSERC Evaluation Group for Thermofluids for 2008-2011, was Co-Chair for that group in 2010-11 and was also a committee member for the Agence Nationale de la Recherche in France (France's NSERC equivalent) in 2011-12. She is currently a project leader for the Solar Net-zero Energy Buildings Research Network in the area of thermal storage. Marilyn has also been

a volunteer with the Canadian Cancer Society and has been a co-chair of Bingo Night (a somewhat surprisingly huge job) for many years at her children's school. She lives in Toronto with her husband, two boys, and her elderly cat.

### Q. Who inspired you to become a Mechanical Engineer?

A. As a child I was very interested in solar energy and I always knew that I wanted to work in science. I was also lucky to have an aptitude for mathematics and physics. When I was in high school, I took Grade 13 Physics one year early. One of the Grade 13 girls, who I really looked up to, was going to study Engineering at Queen's. So it was really my conversations with her that inspired me to consider applied rather than pure science. Engineering was also, of course, an excellent fit for my interest in solar energy. At the time though, high school guidance counsellors really did not know much about engineering and certainly were not encouraging women to consider it!

### Q. Who (other than family members) do you admire most?

A. I am absolutely inspired by my graduate supervisors from University of Waterloo: George Raithby and Terry Hollands. They are both brilliant and have made extraordinary contributions to their areas, and yet remain modest. They were outstanding teachers to me and I feel that much of my success is a result of the learning that occurred during that time.

### Q. What is your definition of leadership?

A. Leadership requires an ability to inspire co-workers to do the best that they can do by providing challenging and meaningful work, recognition of accomplishments, and opportunities for personal growth. A good leader is also someone who values honesty, accountability and kindness.

### Q. What do you feel has been your most important professional accomplishment to date?

A. I believe that the greatest impact of the work that I do is through teaching undergraduate and graduate students and also through the counselling of undergraduate students that I did in my previous Associate Chair role.

### Q. What is the one piece of advice you would give to Women in Engineering?

A. Don't wait to have babies! I waited until my mid-thirties because of my various career choices (grad school, then a few years in industry, joining academia in my early thirties...) and there was never a good time. So I recommend to our new-hires at McMaster that they really don't need to wait for tenure before starting a family.

