



Mechanical & Industrial Engineering  
UNIVERSITY OF TORONTO

**Problem Statement:** As large scale patient testing becomes standardized, ensuring low sample variability is critical to beneficial patient outcomes. Currently, the US Food and Drug Administration requires industrial testing methods have coefficients of variability (CV) below 15%<sup>1</sup>; however, the allowable CV may become more stringent as methods improve. This variability can result in significant differences in patient results and the CV across rows within microarrays can vary significantly and across columns. Dealing with these variations is important to develop improved microarray results.

The thesis will investigate drying improvements to minimize well-to-well variation within the microarray. The work will involve design and printing of a 3D prototype, modeling of the flow within the process and analysis of results.

Please contact Prof. Sullivan, [sullivan@mie.utoronto.ca](mailto:sullivan@mie.utoronto.ca) if you are interested.