

Connell HA, M.E.Sc., "Effect of Particle Shape on the Flux in Crossflow Microfiltration", December 1997 (co supervisor: A Bassi).

### **Abstract**

In an effort to further increase the understanding of crossflow filtration, experiments were performed on the influence of particle shape on permeation flux. Five particles of similar density and size distribution which varied in shape were used to test the influence of particle shape, while varying experimental parameters such as crossflow velocity, filtration pressure, solids concentration, membrane morphology and pore size. Particle shape was found to influence the equilibrium flux by the structure of the cake layer formed. Irregular shaped particles such as branched carbon particles provided higher fluxes due to the high voidage cakes. More regularly shaped particles such as glass spheres resulted in lower fluxes. Platelet aluminium particles had relatively high filtration rates due to the gaps between the plates. The effects of the experimental parameters typically showed results consistent with previous publications. A theoretical model based on D'Arcy and Kozeny gave reliable predictions of the experimental results.