

THE EFFECT OF FOULING UPON THE PERFORMANCE OF SYNTHETIC MEMBRANES USED TO FRACTIONATE GUM ARABIC

Harriet E. Manning^{1,2}, Michael R. Bird²

¹Centre for Sustainable Chemical Technologies, University of Bath, BA2 7AY, UK

²Membrane Applications Laboratory, Department of Chemical Engineering, University of Bath, BA2 7AY, UK

ABSTRACT

The fractionation of 2 wt% gum arabic using 0.1 μm polysulfone flat sheet membranes is described. Fluxes of between ca. 50 and 75 $\text{L m}^{-2} \text{h}^{-1}$ were achieved during diafiltration experiments at cross-flow velocities of between 0.97 and 1.63 m s^{-1} . Although high solids rejection is seen by the membrane, a high degree of fractionation is also seen, which establishes the principle of this novel membrane application. Rejection of high MW arabinogalactan-protein complex (AGP) is observed with selective transmission of lower MW glycoprotein (GP). Multi-cycle experiments show that flux can be recovered to a high degree after cleaning of the membrane, although some decline is observed after 5 cycles.