



MONASH University

Department of Chemical Engineering

SEMINAR

Ultrasound and Membranes

Presented by Associate Professor Sandra Kentish

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Thursday 21st August 2008, Building 36, Room 222, 4 – 5pm.

Abstract:

This presentation will give an overview of research at the University of Melbourne in two quite diverse areas.

Firstly, we have a significant program assessing the use of power ultrasound in industrial applications – a field known as sonoprocessing. The turbulence associated with acoustic cavitation and streaming is well known to increase mass transfer rates. This approach is particularly effective when the major resistance to mass transfer occurs within the boundary layer adjacent to a solid surface as acoustic effects are often enhanced in this region. Work in our laboratories has shown that such mass transport enhancement through sonication can be utilised in membrane applications and in supercritical fluid extraction processes. More generally, the turbulence associated with sonication can be used as a source of localised shear forces. We have shown such shear forces to be effective in the preparation of fine nanoemulsions. Ultrasonic nebulisation is also under study as a mechanism for the concentration of surface active species.

Membrane processes are a second significant field of study within our Department. While our work in the use of membranes for carbon dioxide capture may be familiar, we have also considered membranes for casein microfiltration and for the processing of ultrafiltration whey permeate. More recent work is focussed on reverse osmosis membranes for desalination.

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