

## **Continuous recycle enzymatic membrane reactor system for In-situ production of pure and sterile glucose solution**

### **Abstract**

In this study, an efficient Continuous Recycle Enzymatic Membrane Reactor (CREMR) system for production of in-situ glucose solution was developed and the Simultaneous Gelatinization, Liquefaction and Saccharification (SGLS) carried out at temperatures below 60°C, is proposed to replace the conventional starch hydrolysis. Using a 30 kD polysulfone hollow fibre membrane and 10% (w/w) tapioca starch concentration, it is found that during the steady state continuous operation, the SGLS process in the CREMR at temperatures of 55 and 60°C and trans-membrane pressures of 0.5 and 1 bar has produced a steady state glucose concentration in the permeate stream as high as 64 g L<sup>-1</sup> over a period of eight hours operation. The glucose solution obtained is of high purity greater than 99.9% and sterile, hence can be utilised as intravenous dripping solution and other medical products without post-treatments. In addition, the CREMR system is also relatively easy to scale-up, has a smaller footprint c.f. conventional systems, thus allowing in-situ production. © 2007 Asian Network for Scientific Information.