

## **Effect of kaolin/pesf ratio and sintering temperature on pore size and porosity of the kaolin membrane support**

### **Abstract**

This study discusses the effect of kaolin/PESf ratio and sintering temperature on the pore size and porosity of the flat sheet kaolin membrane support. Inexpensive kaolin has been proposed as a replacement for  $\text{Al}_2\text{O}_3$ ,  $\text{Ti}_2\text{O}$  and  $\text{ZrO}_2$  as a membrane material. In casting the support precursor, Polyethersulfone (PESf), solvent N-methyl-2-pyrrolidone (NMP) and kaolin were used as a polymer binder, solvent and ceramic powder, respectively. The morphology structure and pore size were observed under the Scanning Electron Microscope (SEM) and the porosity were obtained by calculation using weight loss, area and thickness data of the prepared support. The results showed that both of the membrane pore size and porosity linearly decreased from 20 to 8  $\mu\text{m}$  and 26 to 11%, respectively when sintering temperature was increased from 1100 to 1500°C and kaolin/PESf ratio was increased from 1:1 to 3.5:1.