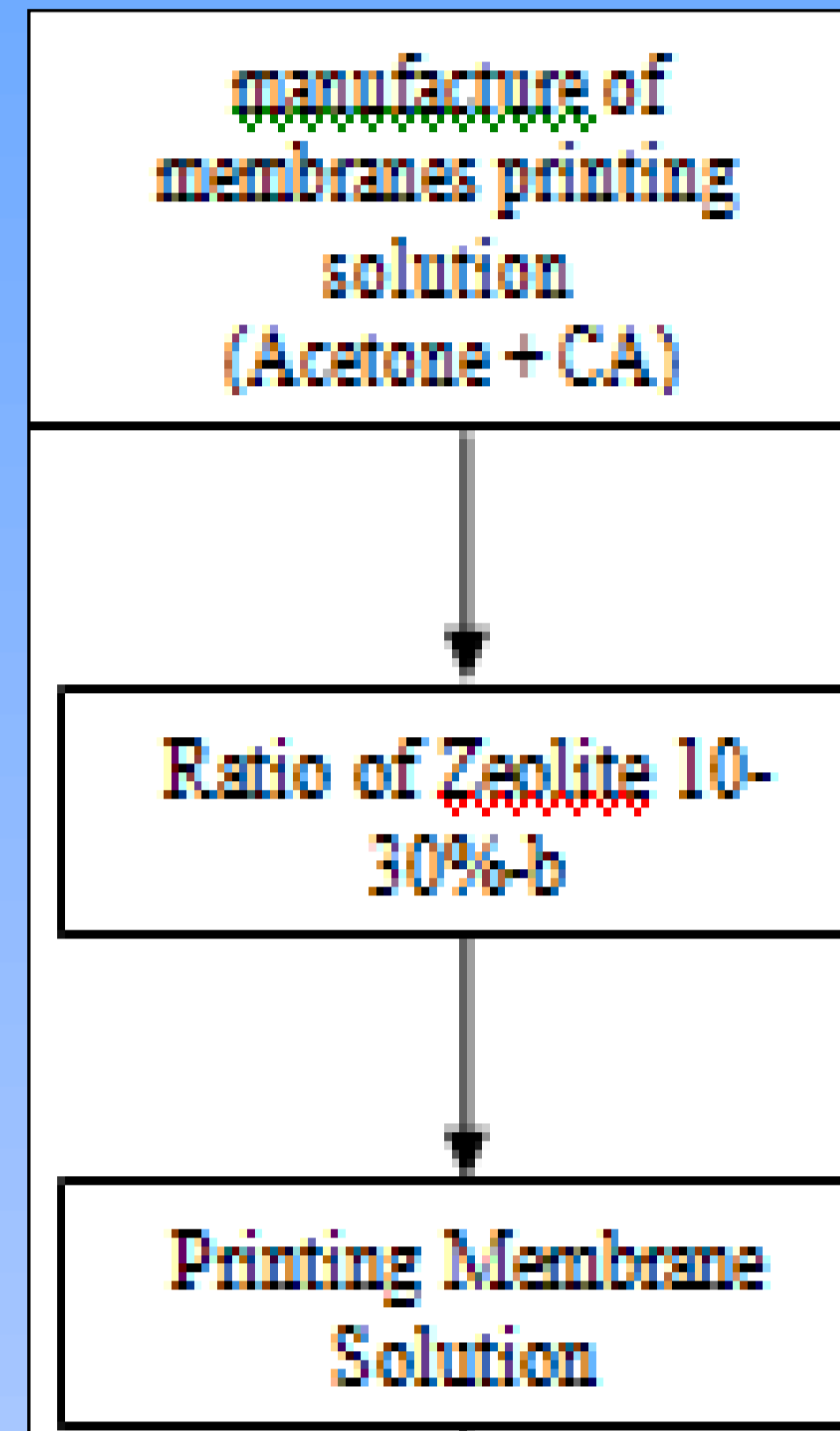
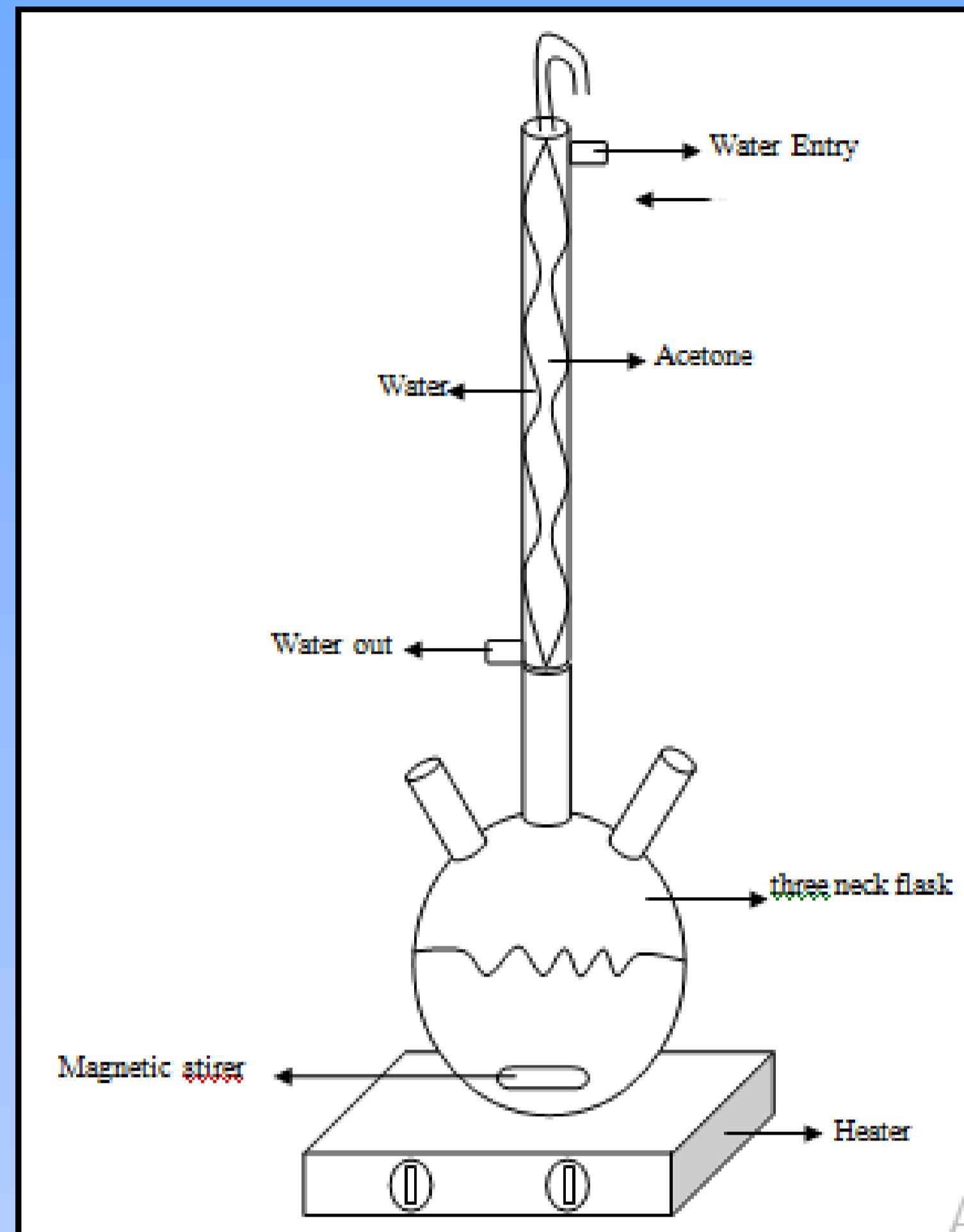
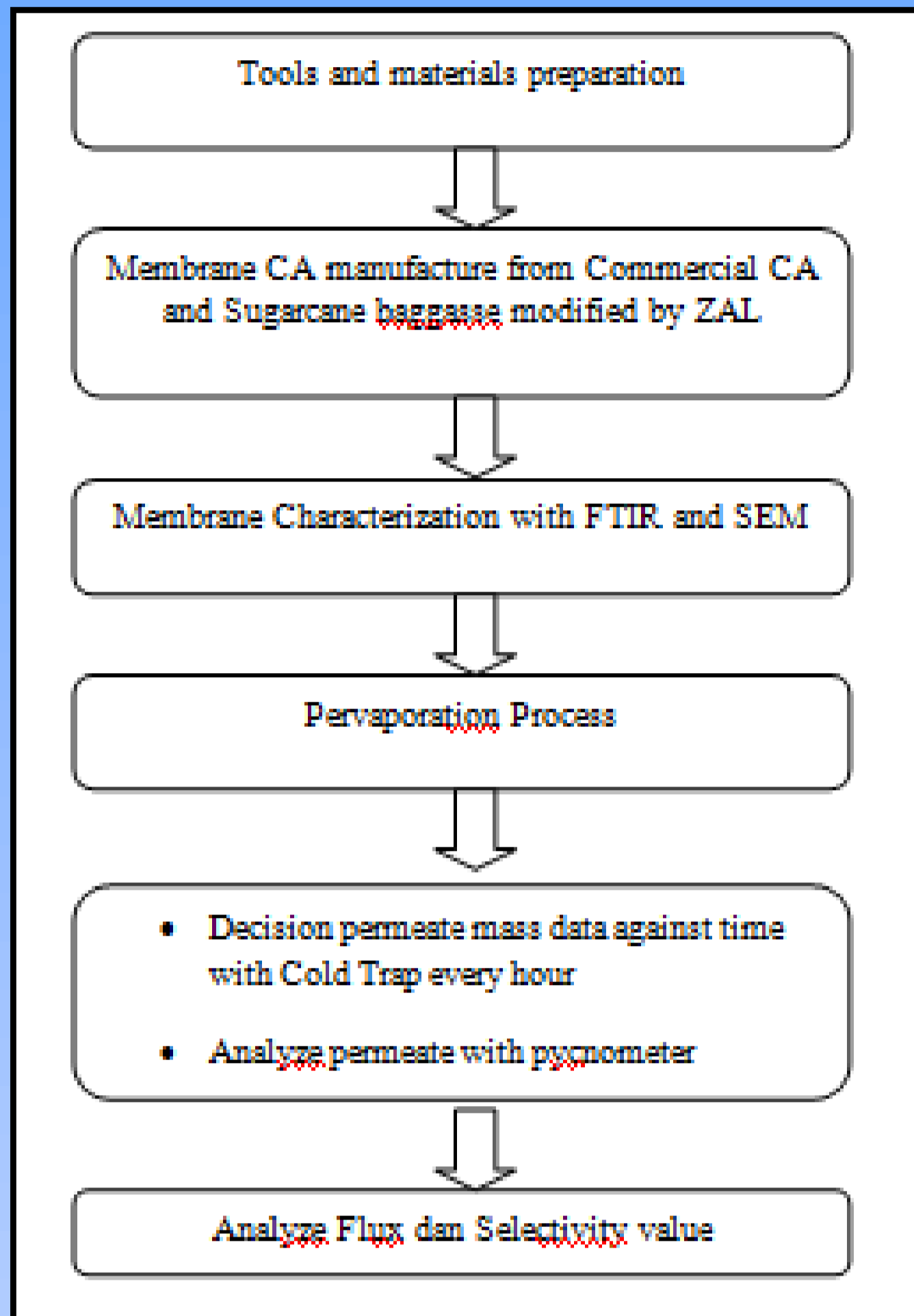


Abstract

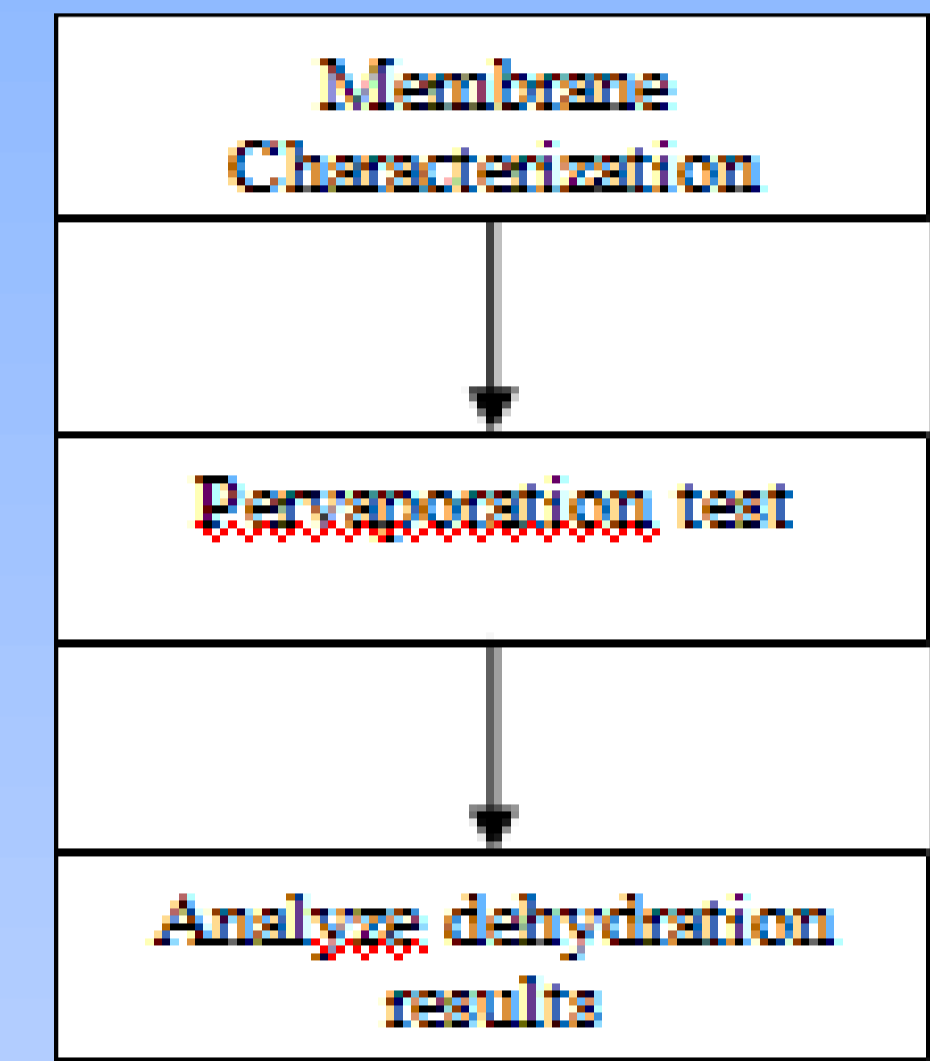
Pervaporation of ethanol dehydration can be done using membrane technology, one of which is by using cellulose acetate (CA) membrane which is made from non-wood cellulose such as sugarcane bagasse. The research objective was to compare commercial CA membranes and bagasse pulp CA membrane modified Lampung natural zeolite, and to study the effect of the Lampung natural zeolite concentration on the performance of CA membrane. The polymer used is a commercial CA and bagasse pulp CA with a concentration of 20% w/v. the modification of Membrane with the addition of Lampung natural zeolite with various concentrations 10% w-CA, 20% w-CA, 30% w-CA. Membrane characterization using (FTIR) showed that the CA membrane has been modified by Lampung natural zeolite and the results of Scanning Electron Microscopy (SEM) showed that the commercial CA membrane modified has a dense pore that is higher than bagasse pulp CA membranes modified. The highest purity ethanol in a commercial CA membranes modified by Lampung Natural Zeolit obtained on the addition of 30% w-CA zeolite concentration and the purity of ethanol 99.27%, the value of flux 2.819 kg / m².h and selectivity 111.080. For bagasse pulp CA membranes modified, the purity of ethanol obtained of 98.10%, the value of flux 2.999 kg / m².h, and the value of selectivity 30.760.

Material and Experimental Method

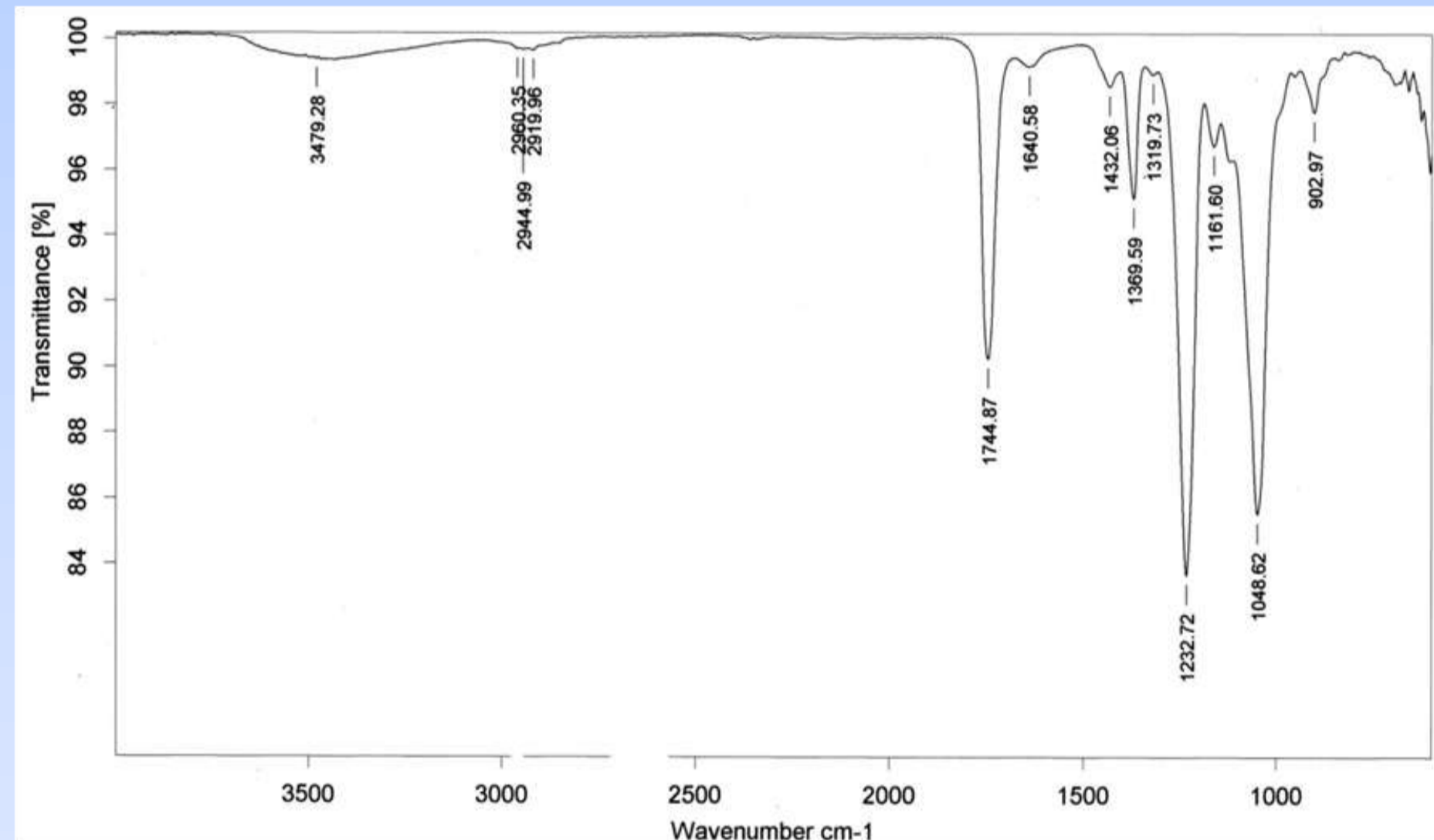


Sugarcane bagasse composition

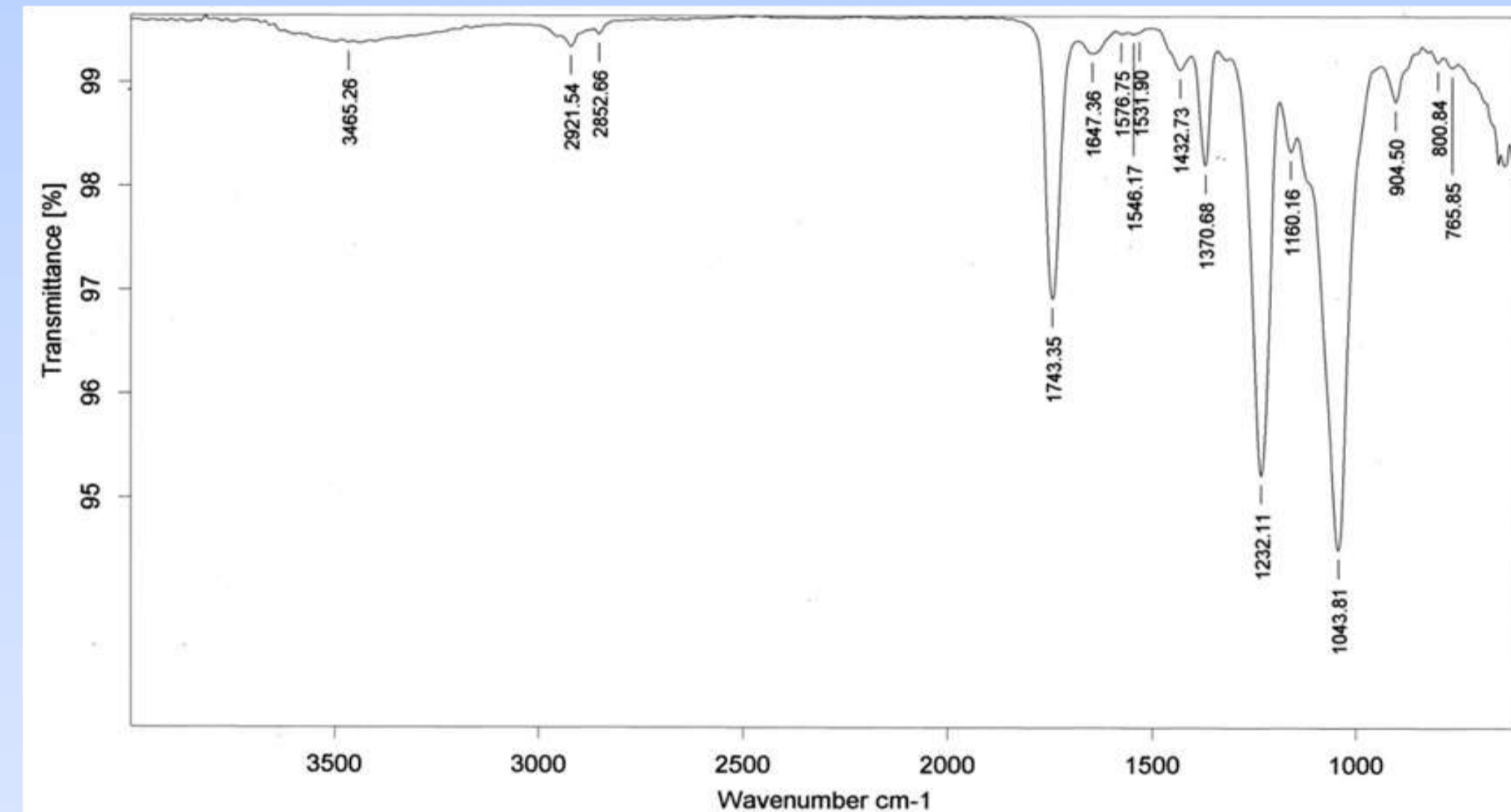
Cellulose	: 43.4 wt%
Hemicellulose	: 21.7 wt%
Lignin	: 20.3 wt%
Ash	: 5.3 wt%
Others	: 9.3 wt%



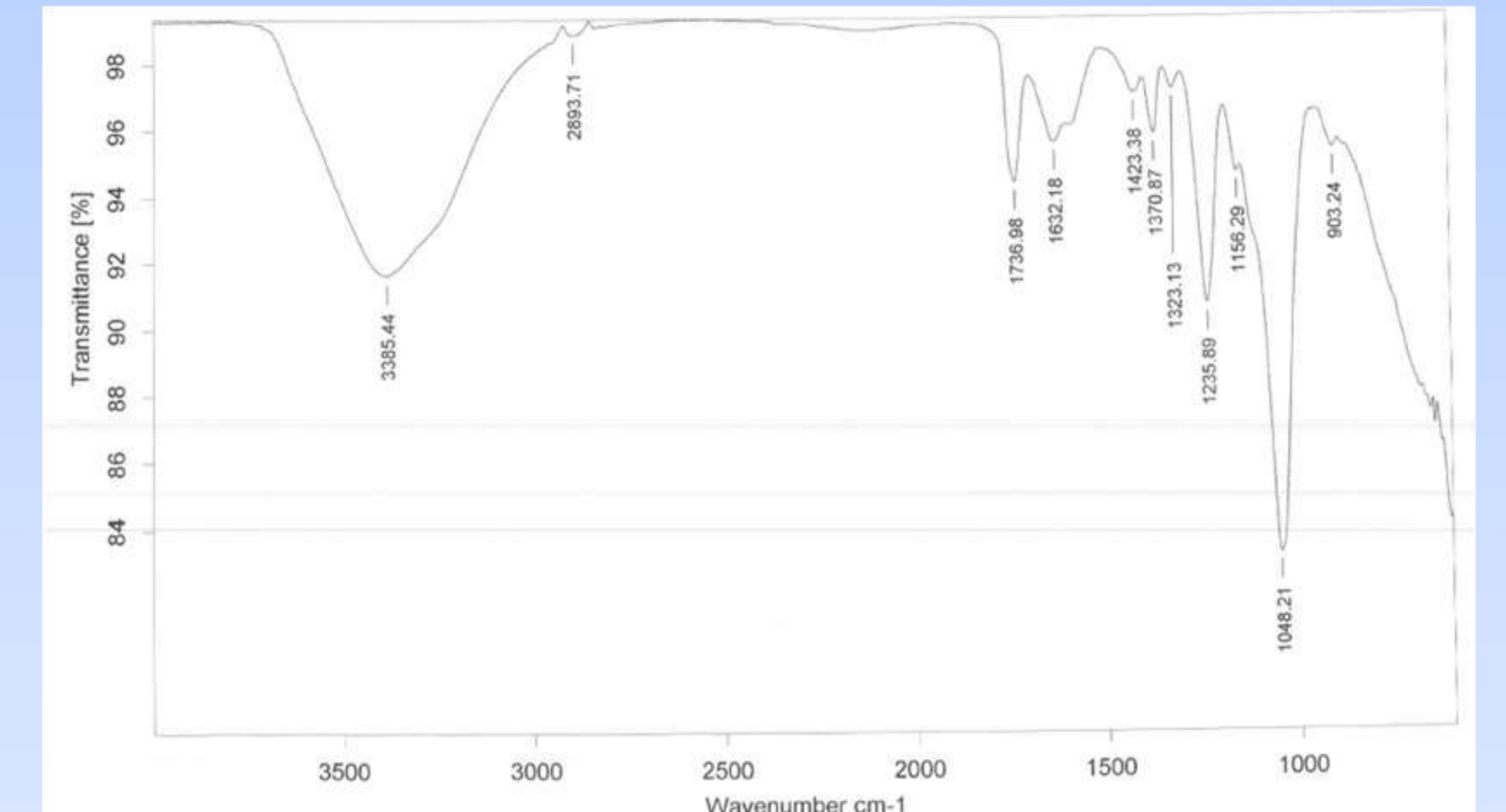
Result and Discussion



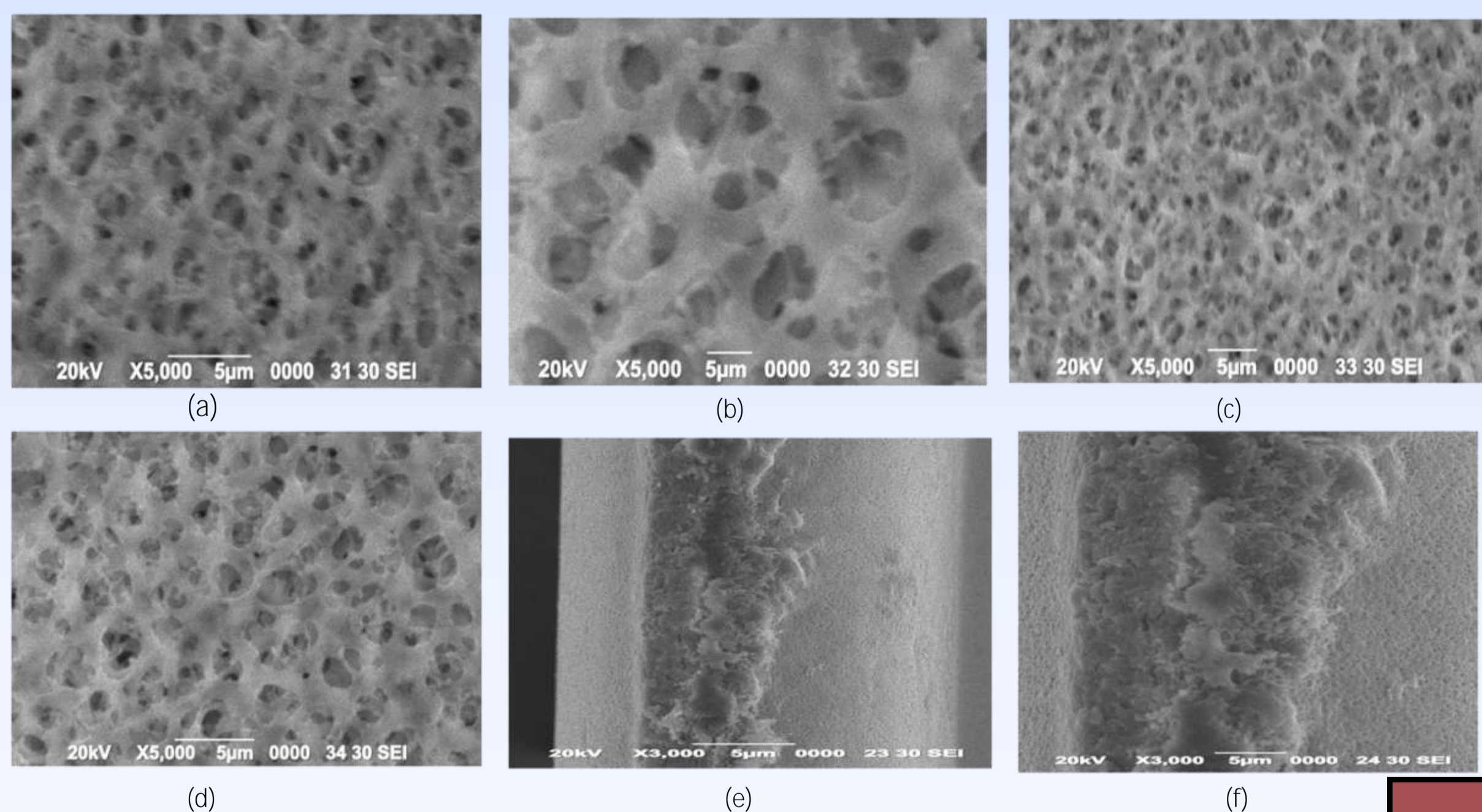
Pic. 1. FTIR of Membrane CA from Commercial CA



Pic. 2. FTIR of Membrane CA from Commercial CA + ZAL



Pic. 3. FTIR of Membrane CA from sugarcane bagasse + ZAL



Pic. 4. SEM analyze results
(a) Top section of Membrane from commercial CA
(b) Top section of Membrane from sugarcane bagasse CA
(c) Top section of Membrane from commercial CA + ZAL
(d) Cross section of Membrane from sugarcane bagasse + ZAL
(e) Cross section of Membrane from commercial CA + ZAL
(f) Cross section of Membrane from sugarcane bagasse + ZAL

No.	Zeolit Concentration (%w-CA)	Total of permeate mass (gr)	Degree of swelling (%)	Fluks (kg/m ² .h)	Selectivity	Ethanol concentration (%)
1.	10	11,933	4,93	3,100	64,024	98,855
2.	20	11,917	4,05	3,143	79,542	99,035
3.	30	10,740	3,65	2,819	111,080	99,270

Table 1. The results of performance tests of commercial CA membranes modified for

Conclusions

1. The characterization CA membrane using FTIR showed that Lampung natural zeolite only act as filler in the membrane CA and SEM images of CA membranes show that the pore of CA membrane that has been modified by natural zeolite Lampung more tightly than membrane unmodified, and commercial CA membranes modified have higher dense pore than bagasse pulp CA membranes modified.
2. The performance tests results of commercial CA membranes modified for the pervaporation process of ethanol-water showed that the addition of 20% w-CA zeolite concentration, the value of flux and selectivity increases.
3. The best purity of ethanol on commercial CA membrane modified was obtained on the addition of 30% w-CA Lampung natural zeolite concentration is 99, 270%.
4. Bagasse pulp CA can be synthesized into membranes for pervaporation, but commercial CA membrane modified performance is better than the bagasse pulp CA membranes modified. The purity of bagasse pulp CA membranes modified only reaches 98.10%.

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