

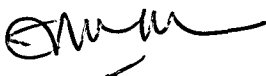
**THE EFFECT OF HEATING TIME IN SULFONATED POLY ETHER
ETHER KETONE CHITOSAN (SPEEK-CS) BASED BY MICROWAVE
IRRADIATION TECHNIQUE**

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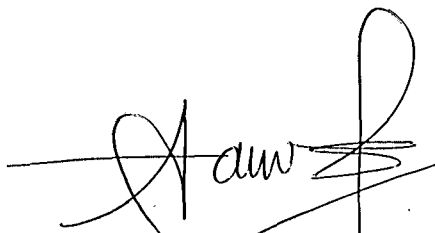
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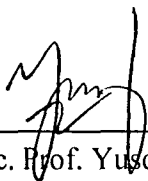
This Final Year Project entitled “**The Effect Of Heating Time In Sulfonated Poly Ether Ether Ketone Chitosan (SPEEK-CS) Based By Microwave Irradiation Technique**” was submitted by Nordiana Nabilla Bt Ramly, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences and was approved by



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Yours Sincerely;

Nordiana Nabilla Ramly

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ABSTRACT

THE EFFECT OF HEATING TIME IN SULFONATED POLY ETHER ETHER KETONE CHITOSAN (SPEEK-CS) BASED BY MICROWAVE IRRADIATION TECHNIQUE

A sulfonated poly(ether ether ketone) (SPEEK) membrane with fairly high degree of sulfonation (DS) swells excessively and even dissolves at high temperature. To solve these problems, Chitosan is blended with the SPEEK matrix with different heating time for different degree of sulfonation. This is an attempt to overcome the excessive swelling while maintaining high proton conductivity. Observation shows the best heating time is 6 hours due to its optimum performance. The decrease in swelling degree and water uptake of the membrane is heating time dependent. We introduced cross-linking between some of the sulfonic groups in the SPEEK membrane, and by adding inorganic particles into the SPEEK matrix. The sulfonated polymer provides high proton conductivity, and the engineering thermoplastic maintains the mechanical integrity. We can note that the proton conductivity enhanced with the increment of water uptake.