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ZEOLITE SYNTHESIS FROM FLY ASH BY FUSION METHOD


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**A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Engineering Program in Chemical Engineering
Department of Chemical Engineering
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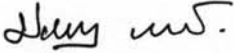
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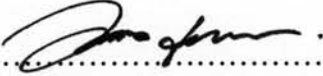

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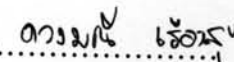
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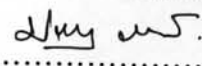
The objective of this work was to investigate the possibility in converting coal fly ash to zeolite, and to determine optimal conditions for the synthesis of such zeolite from coal fly ash. Coal fly ash was obtained from the local power plant in Prachinburi. Several samples of coal fly ash were collected in the period of 3 months to examine for the consistency of the results. Coal fly ashes from different collection periods contained various ratio of Silicon and Aluminium, but the deviation of the quality of the raw material did not seem to have significant effects on the synthetic conditions, and the zeolite was found to be of type. The NaOH to coal fly ash ratio of 1.75 was found to be optimal for the synthesis of zeolite X as this gave reasonably good cation exchange capacity (CEC) and high yield. The Silicon to Aluminium molar ratio of gave the highest crystallinity level for zeolite which also provided high CEC level. The amount of water that resulted in the zeolite with high CEC value (289 meq/100 g) was 65 ml for The optimal mixing temperature was 30°C which gave CEC value of 279 meq/100 g. The crystallization temperature and time were 90°C at 2 h and this resulted in the CEC value of 250 meq/100g.

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