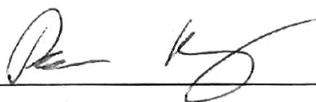


Jirawat Panthanit 2007: Synthesis of SUZ-4 Zeolite from Rice Husk Ash. Master of Engineering (Chemical Engineering), Major Field: Chemical Engineering, Department of Chemical Engineering. Thesis Advisor: Associate Professor Paisan Kongkachuichay, Ph.D. 86 pages.

This research aimed to synthesize SUZ-4 zeolite using rice husk ash (RHA) as a raw material via a hydrothermal process. The structure directing agent used was tetraethyl ammonium hydroxide (TEAOH). The molar ratios of silica from RHA:Silica sol were varied as following: 0:100, 50:50, 70:30, 90:10 and 100:0 while the other conditions were controlled as following:  $\text{SiO}_2/\text{Al}_2\text{O}_3 = 16.21 - 33.28$ ,  $\text{TEAOH}/\text{Al}_2\text{O}_3 = 2.6$ ,  $\text{KOH}/\text{Al}_2\text{O}_3 = 6.47 - 8.60$ , hydrothermal temperature at 145 - 165 °C, starting pressure 1 atm, rotation speed at 250 - 550 rpm, and time hydrothermal at 0 - 4 days. The results show that zeolite SUZ-4 could be synthesized at the RHA: Silica sol of 0:100, 50:50, 70:30 and 90:10,  $\text{SiO}_2/\text{Al}_2\text{O}_3 = 16.21, 21.20$  and  $26.21$ ,  $\text{KOH}/\text{Al}_2\text{O}_3 = 7.35$  and  $7.9$ , The optimum condition for synthesis of SUZ-4 zeolite from Rice Husk Ash (RHA) was found at following condition: hydrothermal temperature at 150 °C, rotation speed at 250 rpm and hydrothermal time 4 days with the molar ratios of silica from RHA:Silica sol at 50:50,  $\text{SiO}_2/\text{Al}_2\text{O}_3 = 21.20$ ,  $\text{KOH}/\text{Al}_2\text{O}_3 = 7.90$ . The maximum yield of 100 % zeolite SUZ-4 was achieved. In addition, the obtained SUZ-4 crystal has a needle-like structure having average diameter of 0.13  $\mu\text{m}$ , average specific surface area of 545  $\text{m}^2/\text{g}$ , and average pore size of 5.3 Å

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Student's signature



Thesis Advisor's signature

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