PHYSICALLY SYNTHESIS AND CHARACTERIZATION OF ZEOLITE NANOPOROUS FOR SODIUM COATED

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ABSTRACT

PHYSICALLY SYNTHESIS AND CHARACTERIZATION OF ZEOLITE NANOPOROUS FOR SODIUM COATED

Different size of zeolite nanoporous were fabricated from zeolite microparticle using wet grinding method. The zeolite nanoporous formation attributed to the bowl mill generation of mechanical stress that fractured zeolite microparticle into smaller fragments. Five samples with different time of grinding which are 2 hours, 4 hour, 6 hours, 8 hours and original zeolite with fixed in mass of zeolite and rotational speed of milling have been used in this project. The result from this hybrid process suggest that it can be used to fabricate differing size of zeolite nanoporous. The coating process was prepared by using immersion method. All samples were coated with two different weight percent of zeolite which is 0.1 and 0.5 weight percent simultaneously. Particle Sizer, Scanning Electron Microscope (SEM), Fourier Transform Infrared Spectroscopy (FTIR), Ultraviolet/Visible (UV-Vis) Spectroscopy and Energy Dispersive Spectrometry (EDS) were employed to characterize the samples. The optimum grinding time of zeolite nanoporous sample obtained is 2 hours with 0.1 weight percent of sodium coated. Structural analysis indicates that the value of absorbance of sodium depends on the porosity of the samples.

CHAPTER 1

1.1 INTRODUCTION

Malaysia is now at the midpoint of its journey towards becoming a developed country by 2020. It is noted that to be successful in the increasingly competitive global market, Malaysia must move out from its "middle development" stage towards human capital driven economy. This can be achieved by several step listed in the National Vision which one of it is to increase the productivity, competitiveness and value add of the established activities in agriculture, manufacturing and service sector. Even though it is necessary for the nation to move up the economy value chain, the needs to balance between the development needs and the environment must be maintained. This can be achieved by better management in environment stewardship since a better quality environment will contribute towards improving the quality of life.

The government have emphasized on improving environmental quality through better management particularly in air and water quality, solid waste management as well as the utilization of cleaner technologies. Nowadays, through the advancement of modern science and technology, zeolites can contribute to a cleaner, safer environment in a great numbers of ways. In powder detergents, zeolites nanoporous have replaced the harmful phosphate builder, which have been banned in many countries due to the water pollution risks. In petroleum and hydrocarbon industry, the chemical process can be more efficient with zeolite acting as the catalyst, thus saving the energy and indirectly reduced