

Name : Suthat Turapan
Thesis Title : Development of Fe/SUZ-4 Zeolite Membrane for NO Reduction
Major Field : Chemical Engineering
King Mongkut's University of Technology North Bangkok
Thesis Advisor : Assistant Professor Patcharin Worathanakul, D.Eng
Co-Advisor : Associate Professor Paisan Kongkachuichay, Ph.D.
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Abstract

The objective of this work was to study the removal of nitric oxide by Fe/SUZ-4 zeolite powder and Fe/SUZ-4 zeolite membrane. There are 2 parts of experiments. In the first part, the K/SUZ-4 zeolite was synthesized via hydrothermal process. Different amounts of Fe(II) were loaded in the synthesized K/SUZ-4 with different weight percentages: 1, 3, 5, 8 and 10 by conventional ion exchange method. The reduction of NO by H₂ in excess oxygen was studied with fixed bed reactor at temperature in the range of 100-400 °C. 5 wt.% Fe/SUZ-4 exhibit high activity for NO reduction and NO conversion of 59 % can be achieved at 300 °C. The second part was synthesis of Fe/SUZ-4 zeolite membrane on mullite tube supporter with 5 wt.% Fe/SUZ-4 colloidal solution using spin coating. The reduction of NO was performed in membrane reactor at 300 °C and NO conversion was 18 %. Development of Fe/SUZ-4 zeolite membrane with packing 5 wt.% Fe/SUZ-4 powder has been achieved high activity of NO conversion with 65.5 %

(Total 103 pages)

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catalytic membrane reactor