CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The synthesis of ITQ-21 was achieved by using these following conditions: hydrolyzing time of 3 days; aging time of 1 day; and, crystallization time of 3 days.

The presence of ITQ-21 in ITQ-21/H-MOR significantly increased the acidity of catalyst. In contrast, ITQ-21 did not affect to the acid strength.

In the activity measurements, the presence of metals showed enhancement in NO conversion, but it decreased N_2 selectivity from decreasing the support's acidity. The increase in reaction temperatures also increased the NO conversion depending on the type of metal, but it did not affect on N_2 selectivity. Different types of metal had different effects on SCR reaction. Copper catalysts expressed the high NO conversion, especially at low temperatures. Fe/ITQ-21/H-MOR showed the maximum NO conversion at 400°C. And, the presence of germanium increased NO conversion at 300-350°C, but it was still not the appropriate type of deNO_x metal. The use of ITQ-21 as a co-support with H-MOR in metal-containing catalysts always increased NO conversion when compared with the H-MOR support. The 3D-pore structure of ITQ-21 may improve the accessibility of the reactants and intermediates to the catalyst's active sites, which is the better than 1D-pore structure of H-MOR. In addition, the metal dispersion, the structure of support, and surface area should have the combination effects on SCR activities.

For recommendations, Pyridine-FTIR should be performed to quantitative analyze of Bronsted and Lewis acid sites to clarify that which type of acid sites can be improved by ITQ-21 and affects on SCR activity.