

## Development of NO oxidation and reduction catalysts for the Fast SCR Process

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A number of candidate catalysts have been prepared by using different preparation methods (impregnation and precipitation methods) for the fast SCR process and these catalysts have been tested to determine their reaction activities in a fixed bed differential reactor. Among all the developed NO oxidation catalysts, supported/unsupported, Co<sub>3</sub>O<sub>4</sub> based catalyst seems to be the most active but unfortunately these catalysts are not suitable for NO oxidation in the presence of SO<sub>2</sub> stream. Similarly, for the DeNO<sub>x</sub> process, several different catalysts have also been developed and among all these catalysts Co-W mixed oxide catalyst proved to be excellent as it converts all NO<sub>x</sub> (100%) at very low temperatures (150 - 350 °C) and at a high space velocity (200000 h<sup>-1</sup>). It also overcomes the problems exhibited by the commercial catalyst having specific a temperature window (300 - 400 °C) and needs a relatively high volume and also it requires complex manufacturing method as it has a number of promoters. Furthermore, the effects of calcination temperature, SO<sub>2</sub> concentration and optimum SV for 50% conversion of NO to NO<sub>2</sub> and N<sub>2</sub>O formation over Co<sub>3</sub>O<sub>4</sub> based catalysts on NO oxidation and NO<sub>x</sub> reduction were also determined.