Two phase model for NO removal over CuO/ɣ−Al$_2$O$_3$ catalyst in a bubbling fluidized bed reactor

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A two phase model is proposed to predict the behavior of removal of NO over CuO/ɣ−Al$_2$O$_3$ catalyst in a fluidized bed reactor. The effects of gas velocity, [NH$_3$]/[NO] molar ratio and bed height on NO reduction were determined. The NO reduction increases with increasing [NH$_3$]/[NO] molar ratio up to 1.5, thereafter it decreases due to the increase in ammonia oxidation which takes place usually at higher temperature. The optimum gas velocity and bed height are found to be 2U$_{mf}$ and 0.2 m for the NO reduction in the bed. A model for the NO reduction in a bubbling fluidized bed process by using the two phase theory has been developed and simulated the results by using the MATLAB 7.0.1. These experimental findings are well matched with the model predictions with the knowledge of bubble properties such as bubble velocity, bubble size and bubble fractions.