Claims

1. A method for reducing the amount of NO_x in a flue gas, the method comprising:
   (a) reacting the NO_x in the flue gas with a catalyst in a fluidized bed reactor at a temperature between 120°C to 200°C; and
   (b) discharging the flue gas containing a reduced amount of NO_x to the atmosphere;

wherein the activation of the catalyst and NO_x removal occur simultaneously in the fluidized bed reactor.

2. The method according to claim 1, wherein the temperature is between 120°C to 150°C.

3. The method according to claim 1, further comprising precipitating the catalyst prior reacting it with the NO_x in the flue gas.

4. The method according to any one of claims 1 or 2, wherein the catalyst is a rare earth metal oxide.

5. The method according to any one of claim 3, wherein the catalyst is cerium dioxide.

6. The method according to claim 5, wherein the cerium dioxide is doped with 0.5mol% to 20mol% copper oxide and/or zirconium dioxide based on the weight of cerium dioxide.

7. The method according to any one of the preceding claims, wherein the catalyst is present in powder form.

8. The method according to claim 7, wherein the particle size of the catalyst is between 5.5nm to 30nm.

9. The method according to any one of the preceding claims, wherein the flue gas is introduced into the reactor at a flow rate from 25L/h.

10. The method according to claim 9, wherein the flow rate is from 25 L/h to 50 L/h.

11. The method according to any one of the preceding claims, wherein the concentration of NO_x in the flue gas is 200ppm.

12. The method according to any one of the preceding claims, further comprising reacting the NO_x with the catalyst in the presence of a balance gas.

13. The method according to claim 12, wherein the balance gas is argon.

14. The method according to claim 13, wherein the concentration of NO_x present in the flue gas is 200ppm.

15. The method according to any one of the preceding claims, wherein up to 83% of the NO_x in the flue gas is removed.