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# & 6<sup>th</sup> International Conference on Environmental Chemistry and Engineering

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## Numerical and experimental investigation of mixture uniformity and predicted performance of Urea-SCR system with vanadium-based catalysts based NH<sub>3</sub>-Temperature programming desorption experiment

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The SCR technology for the control of NO<sub>x</sub> emission from Marine Diesel engine was brought to the IMO Tier 3 regulation for marine diesel engine applications. SCR system is effective over a wide temperature region to reduce NO<sub>x</sub> emission from engine exhaust emission during rich and lean operations. In this paper, SCR catalyst of V<sub>2</sub>O<sub>5</sub>-WO<sub>3</sub>/TiO<sub>2</sub> is investigated and modeled. A global ammonia SCR reaction mechanism has been used, kinetic parameters for SCR system of NO<sub>x</sub> by Urea was developed for V<sub>2</sub>O<sub>5</sub>-WO<sub>3</sub>/TiO<sub>2</sub> SCR catalysts. The kinetic analysis was carried out using a commercial one-dimensional aftertreatment code, coupled with an optimizer. In this paper, the development of a steady kinetic model of the Urea-SCR process for vanadium-based catalysts is presented. The model was based on the results from reactivity, chemistry, catalytic mechanism, and kinetics of NH<sub>3</sub>-TPD, NH<sub>3</sub> oxidation, NO oxidation, NO: NO<sub>2</sub> ratio, space velocity and NH<sub>3</sub>/NO<sub>x</sub> ratio over a commercial V<sub>2</sub>O<sub>5</sub>-WO<sub>3</sub>/TiO<sub>2</sub> catalyst performed in our laboratories.

### Biography

Changhee LEE completed his PhD at the age of 35 years from Hanyang University and postdoctoral studies from OKAYAMA University School of Mechanical engineering. He is the professor of Songwon University in Korea. He has published more than 45 papers in reputed journals and has been serving as a member of repute.

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