



HeeJoon KIM, Dr. Eng.

Professor

Program: Advanced Materials Science and Technology

Area: Applied Chemistry and Chemical Engineering

Undergraduate: Dept. of Engineering

Professional Expertise

Kim's research focuses on searching the solution of energy and environmental problems for the developing country. One of his pioneering contributions is development of the bio-coal-briquette with self-desulfurization and denitrification function. He also has developed the PFC/CFC gas decomposition system with fluorine-recycle performance. Recently, He and his group have developed the energy-conversion system and phosphorus-recovery process from the various sludge/bio-waste. Experimental works with bench-scale reactors as well as theoretical studies have been conducted.

Research Fields of Interest

- Developing of renewable Energy and Solving the Environmental Problem.

For examples:

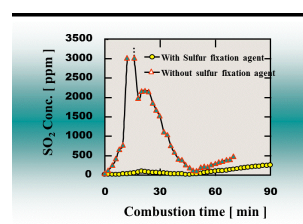
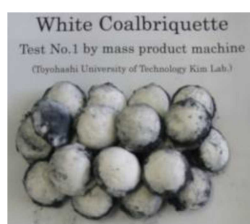


Fig. New Biocoalbriquette and combustion process

- Developing of new method for radical control in plasma.

For examples:

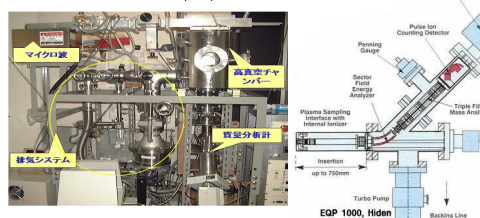
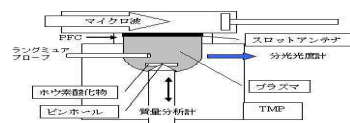


Fig. Radical detecting equipment.

Education

1992: Ph.D. (Engineering), Graduate School of Engineering, Course of Chemical Energy Engineering, Tokyo University

1980: Bachelor Eng., Department of Chemical Engineering, Chonnam National University

Professional Societies and Activities

1. Member of Society of Chemical Engineers, Japan (SCEJ)
2. Member of The Japan Society of Applied Physics
3. Member of The Japan Institute of Energy
4. Member of Japan Society of Material Cycles and Waste Management

Major Publications

Papers

- [1] J. Han, T. Shimizu, W. Minami, H.J. Kim and G. Wang, "Polypropylene combustion in a fluidized bed combustor", **Energy Source Part A**, Recovery, Utilization, and Environmental Effects, Vol. 32, pp. 1121-1129, 2010
- [2] Angelito Velasco, Tatsuo Oguchi and Hee Joon Kim, "Captured" Intermediates in the CVD of ZnO from DEZ and H₂O by TGA-DTA and quadrupole Mass Spectroscopy", **Journal of Crystal Growth**, Vol. 311, pp. 2731-2735, 2009
- [3] Indra Nasution, Angelito Velasco and Hee Joon Kim, "Atmospheric pressure chemical vapor deposition mechanism of Al₂O₃ film from AlCl₃ and O₂", **Journal of Crystal Growth**, Vol. 311, pp. 429-434, 2009
- [4] J. Han and H.J. Kim, "Pyrolysis Characteristic and Kinetic of Sawdust-Polypropylene Blend", **Energy Source Part A**, Recovery, Utilization, and Environmental Effects, Vol. 31, Issu. 4, pp. 364-371, 2009
- [5] Angelito Velasco, Yasuhiro Takasaki, Hiroshi Mitsuji, Wataru Minami, Jeong Ik Lee, Hiroshi Komiyama and Hee Joon Kim, "Determination of the surface reactivity of growth species in the AP-MOCVD of ZnO from DEZ and H₂O and thermal analysis of the "captured" intermediate species", **Journal of Crystal Growth**, Vol. 310, pp. 3837-3842, 2008
- [6] Jun Han, Hee-Joon Kim, Wataru Minami, Tadaaki Shimizu, Guanghui Wang, "The effect of particle size of alumina sand on the combustion and emission behavior of cedar pellets in a fluidized bed combustor", **Bioresource Technology**, Vol. 99, pp. 3782-3786, 2008
- [7] Jun Han, Hee-Joon Kim, Yuhei Sakaguchi and Yao Hong, "Reduction of NO_x and SO₂ in a non thermal plasma reactor combined with catalyst and methanol", **Journal of Physics D: Applied Physics**, Vol. 41, pp. 205-213, 2008
- [6] Hee-Joon Kim, Jun Han, Yuhei Sakaguchi, Wataru Minami, "Reduction of NO_x and SO₂ by a New Non Thermal Plasma Reactor Enhanced by Catalyst and Additive, Plasma science technology", **Plasma science technology**, Vol. 10(1), pp. 56-59, 2008
- [8] Hee-Joon Kim, Jun Han, Ikuo Kawaguchi, and Wataru Minami, "Simultaneous Removal of NO_x and SO₂ by a Nonthermal Plasma Hybrid Reactor", **Energy & Fuels**, Vol. 21, pp. 141-144, 2007
- [8] Hee-Joon Kim, Jun Han, Kawaguchi, Wataru Minami, "The Effect of Promoters and Additives on Removing SO₂ at TiO₂ Catalyst Surface with Plasma", **Journal of Chemical Engineering of Japan**, Vol. 40(2), pp. 123-127, 2007
- [9] S.Y. Choi, W. Minami, L.H. Kim and H.J. Kim, "Characteristics of 2.45GHz Microwave Plasma by Langmuir Probe Measurements", **Solid State Phenomena**, Vol. 124-126,

pp.1621-1624, 2007

- [10] S. Choi, Y. Taguchi, W. Minami, L. Kim and H.J. Kim, "Decomposition Characteristics of Carbon Tetrafluoride Using 2.45GHz Microwave at Various Gases", **Materials Science Forum**, Vol. 544-545, pp. 701-704, 2007
- [11] W. Minami, H. Fujii and Hee Joon Kim, "Combustion Decomposition Treatment of Freon", **Kagaku Kougaku Ronbunshu**, Vol. 32(2), pp. 190-195, 2006
- [12] Hee-Joon Kim, Dong Young Jang, Prem Kumar Shishodia and Akira Yoshida, "Growth of Highly Oriented Zinc Oxide Thin Films by Plasma Enhanced Chemical Vapor", **Key Engineering Materials**, Vol. 321-323, pp. 1687-1690, 2006
- [13] Hee-Joon Kim and Tianji Li, "Denitrification Mechanism in Combustion of Biocoal Briquettes", **Environmental Science & Technology**, Vol. 39 [4], pp. 1180-1183, 2005
- [14] Tianji Li, Wataru Minami and Hee Joon Kim, "Denitrification Mechanism of NaOH in the Presence of Carbon", **Environmental Science & Technology**, Vol. 39 [24], pp. 9665-9668, 2005

Books Chapters

- [1] Hee-Joon Kim et al., 1997. Generation and control-technology of combustion products, Teknosystem, pp. 94-139
- [2] Hee-Joon Kim et al., 2001. Coal-briquette experiments and China's environmental problems, Kyeo Univ. Press. pp. 33-75
- [3] Hee-Joon Kim et al., 2002. Economic development and environmental conservation in Asia (Volume 3) Improvement and dissemination of coal combustion technology, Keio Economic Observatory, pp. 41-63