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Mechanical Engineer
Diesel Engine and Emissions Research
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Experience

Argonne National Laboratory (1999–Present)

Mechanical Engineer
Morphology, microstructure and chemistry of diesel particulates
High-pressure diesel spray

University of Illinois, Dept. of Chemical Eng. (1997-1999)

Postdoctoral Research Associate
Combustion synthesis of ceramic materials.

Ssangyong Motor Company, Seoul, Korea (1989–1991)

Design Engineer
Design of thermal and lubrication parts of diesel engines

Achievements/Honors

- Invention disclosure; “Thermophoretic Particulate Sampling Device for Practical Engines and Combustors”
- Best paper presentation award at the Central States Section of the Combustion Institute
- General officer in Korean-American Scientists and Engineers Association (KSEA)
- Reviewer for
 - *The Combustion Institute* and *The American Society of Mechanical Engineers*
 - The Combustion Institute
 - American Institute of Aerospace and Aeronautics
 - Institute of Liquid Atomization and Spray Systems
 - American Society of Mechanical Engineers
 - Society of Automotive Engineers

Education

Ph.D., University of Illinois at Chicago, 1997

- Microgravity Droplet Combustion

M.S., University of Illinois at Chicago, 1993

M.S., Inha University, Korea, 1987

B.S. Inha University, Korea, 1985

Publications

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Journal Publications

1. Lee, K.O. and Cheroudi, B.: "Structure of a Swirl-Stabilized Spray Flame Relevant to Gas Turbines and Furnaces," AIAA Journal of Propulsion and Power, Vol. 11, No.6, PP. 1110-1117, 1995.
2. Vander Wal, R.L., Choi, M.Y., and Lee, K.O.: "The Effect of Rapid Heating of Soot: Implications When Using Laser-Induced Incandescence for Soot Diagnostics," Combustion and Flame, Vol. 102, PP. 200-204, 1995.
2. Choi, M.Y. and Lee, K.O.: "Investigation of Sooting in Microgravity Droplet Combustion," Twenty-sixth Symposium (Int'l) on Combustion, The Combustion Institute, Pittsburgh PA, PP. 1243-, 1996.
3. Lee, K.O., Jensen, K.A. and Choi, M.Y.: "Investigation of Sooting in Normal-Gravity Droplet Combustion Using Light Extinction and Gravimetric Technique," Twenty-sixth Symposium (Int'l) on Combustion, The Combustion Institute, Pittsburgh PA, PP. 1251-, 1996.
4. Lee, K.O. and Choi, M.Y.: "Observations on the Sooting Behavior of Microgravity Droplet Flames under Reduced Pressures," Microgravity Science and Technology, X/2, PP. 86-94, 1997.
5. Lee, K.O., Lee, C.E. and Oh, S.C.: "Measurements of Sooting in Single Droplet Combustion Under the Normal-Gravity Condition," Korea Society of Mechanical Engineers, Vol. 22, No. 4, PP. 468-480, 1998.
6. Lee, K.O., Manzello, S.L. and Choi, M. Y.: "The Effect of Initial Diameter on Sooting and Burning Behavior of Isolated Droplets under Microgravity Conditions," Combustion Science and Technology, Vol. 132, PP. 139-156, 1998.
7. Lee, K. O., Megaridis, C. M., Zelepuga, S. and Kennedy, L. A.: "Soot Formation Effects of Varying Oxygen Concentrations in the Oxidizer Stream of Laminar Coannular Non-Premixed Methane Diffusion Flames," Combustion and Flame, 121:323-333, 2000.
8. Lee, K.O., Cohen, J.J. and Brezinsky, K.: "Fluidized-Bed Combustion Synthesis of Titanium Nitride," Twenty-eighth Proceedings of the Combustion Institute, 2000.
9. Guvenç, A., Megaridis, C.M., Campbell, A., Lee, K.O. and Choi, M.Y.: "Measurement of Fractal Properties of Soot Agglomerates in Laminar Coflow Diffusion Flames using Thermophoretic Sampling in Conjunction with Transmission Electron Microscopy and Image Processing", Combustion Science and Technology, 171:71-87, 2001.
10. Lee, K.O., Cole, R., Sekar, R., Choi, M., Kang, J., Bae, C. and Shin, H.: "Morphological Investigation of Microstructure, Dimensions and Fractal Geometry of Diesel Particulates," Twenty-ninth Proceedings of the Combustion Institute, 2002.
11. Lee, K.O., Cole, R., Sekar, R., Choi, M.Y., Zhu, J., Kang J.S. and Bae, C.S.: Detailed Characterization of Morphology and Dimensions of Diesel Particulates via Thermophoretic Sampling," Accepted by the SAE Transaction, 2002.
12. B.D. Urban, K. Kroenlein, L. Ernst, A. Kazakov, F.L. Dryer, A. Yozgatligil, L. Shor, M.Y. Choi, S. L. Manzello, K.O. Lee, and R. Dobashi, "Initial Observations of Soot Formation During Ethanol Droplet Combustion at Elevated Pressures", Submitted to International Journal of Microgravity Science and Technology, 2002.
13. Kang, J.S., Lee, H.K., Bae, C.S. and Lee, K.O.: "Initial Development of Non-evaporating Diesel Sprays in Common-rail Injection Systems", Submitted to International Journal of Engine Research, 2002.
14. Hwang, C.H., Lee, C.E. and Lee, K.O.: "Numerical Investigation on Combustion Characteristics of Methane in a Hybrid Catalytic Combustor", Submitted to Catalyst Today, 2002.

Conference Proceedings

1. Lee, K. O.: "Turbo-lag Characteristics of Turbo-charged Diesel Engine under Transient Operations," Periodicals of Ssangyong Motor Co, Korea, 1990.
2. Vander Wal, R.L., Choi, M.Y., and Lee, K.O.: "The Effect of Rapid Heating of Soot :Implications When Using Laser-Induced Incandescence for Soot Diagnostics," Proceedings of the Technical Meeting of the Eastern States Section of the Combustion Institute, Dec. 1994.
3. Lee, K.O., Jensen K.A. and Choi, M.Y.: "Measurement of Soot Volume Fraction of Single Droplets Using Light Extinction Technique," Central State/Western State/Mexican National Sections of the

- Combustion Institute and American Flame Research Committee Conference, San Antonio, Texas, PP. 797-802 March 1995.
4. Lee, K.O., Jensen K.A. and Choi, M.Y.: "The Effect of Sooting In Droplet Combustion," Third International Microgravity Combustion Workshop, NASA Conference Publication 10174, PP. 53 - 58, April 1995.
 5. R.L. Vander Wal, M.Y. Choi and K.O. Lee, AIAA Conference Paper 96-0538, 34th AIAA Aerospace Science Meeting and Exhibit, Reno, NV, Jan. 1996.
 6. Lee, K.O. and Choi, M.Y.: "Investigation of Sooting in Microgravity Droplet Combustion," Proceeding of the Technical Meeting of the Central States Section of the Combustion Institute, Saint Louis, Iowa, PP. 146-150, 1996.
 7. Lee, K.O. and Choi, M.Y.: "Sooting in Microgravity Droplet Combustion," The 7th International Conference on Liquid Atomization and Spray Systems, Seoul Korea, PP. 1090-1097, August 1997.
 8. Lee, K.O., Manzello, S.L. and Choi, M.Y.: "Sooting in Microgravity Droplet Combustion," Proceeding of the Technical Meeting of the Central States Section of the Combustion Institute, Point Clear, Alabama, PP 130-135, April 1997.
 9. Lee, K.O., Manzello, S.L. and Choi, M.Y.: "The Effects of Sooting and Radiation on Droplet Combustion," Fourth International Microgravity Combustion Workshop, NASA Conference Publication 10194, PP. 461 - 466, May 1997.
 10. Manzello, S.L., Lee, K.O., and Choi, M.Y.: "Influence of Initial Diameter on Burning of Droplets under Microgravity Conditions," 1998 Technical Meeting of Central States Section, The Combustion Institute, Lexington, Kentucky, PP. 98-102, May 31-June 2, 1998.
 11. Lee, K.O., Cohen, J.J. and Brezinsky, K.: "Combustion Synthesis of Titanium Nitride under Fluidization," 1998 NASA Microgravity Materials Science Conference, Huntsville, AL, July 14-16, 1998.
 12. Lee, K.O., Cohen, J.J. and Brezinsky, K.: "Fluidized Bed Combustion Synthesis of Titanium Nitride," Work-in-Progress Poster (#W2G09), Twenty-seventh Symposium (Int'l) on Combustion, The Combustion Institute, Boulder, Colorado, Aug. 2-7, 1998.
 13. Lee, K.O., Cohen, J.J. and Brezinsky, K.: "Self-Propagating High-Temperature Synthesis of Titanium Nitride," AIAA, 37th AIAA Aerospace Sciences Meeting and Exhibit, Paper No. AIAA 99-0697, Reno, Nevada, Jan. 11-14, 1999.
 14. Cohen, J.J., Lee, K.O. and Brezinsky, K.: "Combustion Synthesis of Nitride," The Joint Meeting of the United States Section of the Combustion Institute, Washington, D.C., Mar. 14-17, 1999.
 15. Gupta, S., Poola, R. Lee, K.O. and Sekar, R.: "Particulate Emission Characteristics of a Port-Injected SI Engine", ASME Spring Engine Technology Conference, San Antonio, Texas, April 9-12, 2000.
 16. Lee, K.O., Cole, R., Sekar, R., Zhu, J., and Choi, M.Y.: "Morphology, Microstructure and Dimensions of Diesel Engine Particulates", 2nd Joint Meeting of the U.S. Section of the Combustion Institute, Oakland CA, March 26-28, 2001.
 17. Urban, B.D., Kroenlein, K., Ernst, L.F., Kazakov, A., Dryer, F.L., Yozgatligil, A., Shor, L., Choi, M.Y., Manzello, S.L., Lee, K.O. and Dobashi, R.: "Initial Observations of Soot Formation During Ethanol Droplet Combustion at Elevated Pressures", the 2nd Joint Meeting of the U.S. Section of the Combustion Institute, Oakland CA, March 26-28, 2001.
 18. Lee, K.O., Cole, R., Sekar, R., and Choi, M.Y.: "Microscopic Structure, Dimensions and Fractal Geometry of Diesel Particulates", Third Asia-Pacific Conference on Combustion, Seoul Korea, pp. 359-363, June 25-27, 2001.
 19. Lee, K.O., Cole, R., Sekar, R., Choi, M.Y., Zhu, J., Kang J.S. and Bae, C.S.: Detailed Characterization of Morphology and Dimensions of Diesel Particulates via Thermophoretic Sampling," SAE 2001-01-3572.
 20. Bae, C.S., Kang, J.S., Kong, J.S. and Lee, K.O.: "Effects of Nozzle Geometry on Common-rail Diesel Sprays", SAE 2002-01-1625.