Dr. V. Lijo

❒ Current Areas of Research:

- Shock Waves at Micro-scale
- Unsteady Shock Wave/Boundary Layer Interaction
- Vacuum & High-Altitude Simulation
- Computational Aeroacoustics
- Thrust Augmentation
- Gas Micro-flows in the Slip Flow Regime
- Vortex Levitation

❒ Academics:

- **PhD in Mechanical Engineering,**

Andong Natonal University, Andong, South Korea

Thesis: *Study on the Performance Improvement of an Ejector-Diffuser System with Applications to Rocket Engine Testing*

Supervisor: Prof. H. D. Kim, School of Mechanical Engineering, Andong National University, Andong, South Korea.

❒ Publications: Journal

1. **V. Lijo, H.D.Kim,** and **T. Setoguchi,** Effects of choking on flow and heat transfer in micro-channels, *International Journal of Heat and Mass Transfer* (2012).
2. **V. Lijo, H.D.Kim,** and **T. Setoguchi,** Numerical investigation of the effects of base size on supersonic flow through a sudden duct enlargement, *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* (2011).
3. **V. Lijo, H.D. Kim, T.Setoguchi** and **S. Matsuo,** A study of the supersonic ejector–diffuser system with an inlet orifice, *Aerospace Science and Technology* (2011).

4. **V. Lijo, H.D. Kim, T.Setoguchi** and **S. Matsuo,** Study on the Compressible Viscous Flows through a Straight Pipe, *Journal of Mechanical Science and Technology* (2010): 341-347.
5. **V. Lijo, H.D. Kim, T.Setoguchi** and **S. Matsuo,** Numerical Investigation of Transient Side-Loads in the Start-up Process of a Rocket Nozzle, *Journal of Mechanical Science and Technology* (2010).
6. **V.Lijo, H.D.Kim,** and **T. Setoguchi,** Analysis of choked viscous flows through a constant area duct, *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* (2010).
7. **V. Lijo, H.D. Kim, T.Setoguchi** and **S. Matsuo,** Numerical simulation of transient flows in a rocket propulsion nozzle, *International Journal of Heat and Fluid Flow* (2010).
8. **V.Lijo, H.D. Kim, G.Rajesh,** and **T.Setoguchi,** Numerical simulation of transient flows in a vacuum ejector–diffuser system, *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* (2010).
9. **J. S. Lee, V. Lijo,** and **H. D. Kim,** A Study on the Transitional Shock Separation Patterns in an Over-Expanded Nozzle, *Journal of the Korean Society of Propulsion Engineers* (2010).
10. **Ankit Mittal, G. Rajesh, H. D. Kim** and **V. Lijo,** Starting Transients in Vacuum Ejector-Diffuser System, *AIAA Journal of Propulsion and Power* (2014).
11. **V.Lijo, H.D.Kim,** and **T. Setoguchi,** Analysis of supersonic micronozzle flows, *AIAA Journal of Propulsion and Power* (2015).

❒ Publications: Conferences

- **International Conferences**

1. **Lijo Vincent, John M. George, G. Rajesh** and **H.D.Kim,** Exergetic Analysis of Vapour Absorption Refrigeration System, *12th Asian Congress of Fluid Mechanics (ACFM)*, 18-21 August 2008, Daejeon, Korea.
2. **Lijo Vincent, Dong Sun Kim** and **H.D.Kim,** Control of the Gas Flows with Offensive Odor in a Factory *4th BSME-ASME International Conference on Thermal Engineering*, 27-29 December 2008, Dhaka, Bangladesh.

3. **Lijo Vincent, H. D. Kim, G. Rajesh** and **T.Setoguchi,** A Study on the Transient Flow Process in a Vacuum Ejector-Diffuser System, *20th International Symposium on Transport Phenomena (ISTP)*, 7-10July 2009, Canada.
4. **V. Lijo, H.D. Kim,** and **T. Setoguchi,** Ejector Performance Improvement Using an Orifice System, *9th International Symposium on Experimental and Computational Aerothermodynamics of Internal Flows (ISAIF)*, 8-11 September 2009, Gyeongju, Korea.
5. **V. Lijo, H.D. Kim,** and **T. Setoguchi,** Numerical Analysis of Compressible Viscous Flows through a Constant Area Duct, *9th International Symposium on Experimental and Computational Aerothermodynamics of Internal Flows (ISAIF)*, 8-11 September 2009, Gyeongju, Korea.
6. **Vincent Lijo, Jongsun, Huey Dong Kim, Toshiaki Setoguchi,** and **Shigeru Matsuo,** Unsteady Flow Characteristics and Lateral Forces in an Over Expanded Rocket Nozzle, *9th International Symposium on Experimental and Computational Aerothermodynamics of Internal Flows (ISAIF)*, 8-11 September 2009, Gyeongju, Korea.
7. **Vincent Lijo, Abhilash Suryan, Heuy Dong Kim,** and **Toshiaki Setoguchi,** Performance Control of Supersonic Exhaust Diffuser Using an Orifice System, *Asian Joint Conference on Propulsion and Power (AJCPP)2010*, Miyazaki, Japan, March 4 - 6, 2010.
8. **Jong Sung Lee, Vincent Lijo, Heuy Dong Kim, Toshiaki Setoguchi,** and **Shigeru Matsuo,** Oscillatory Flow Characteristics for Start-up Process in a Rocket Nozzle, *Asian Joint Conference on Propulsion and Power (AJCPP)2010*, Miyazaki, Japan, March 4 - 6, 2010.
9. **Jong-Sung Lee, Vincent Lijo, Huey Dong Kim, Toshiaki Setoguchi,** and **Shigeru Matsuo,** Unsteady Flow Characteristics and Lateral Forces in an Over Expanded Rocket Nozzle, *Asian Joint Conference on Propulsion and Power (AJCPP)2010*, Miyazaki, Japan, March 4 - 6, 2010.
10. **Vincent Lijo, Huey Dong Kim,** and **Toshiaki Setoguchi,** Performance control of supersonic exhaust diffuser using an orifice system, *Asian Joint Conference on Propulsion and Power (AJCPP)2010*, Miyazaki, Japan, March 4 - 6, 2010.
11. **Abhilash Suryan, Vincent Lijo, Heuy Dong Kim, Dong Sun Kim,** and **T. Setoguchi,** Visualization of gas flow through a spiral nozzle, *ISFV14, 14th*

International Symposium on Flow Visualization, June 21-24, 2010, EXCO, Daegu, Korea.

12. **Vincent Lijo, Heuy Dong Kim,** and **Toshiaki Setoguchi,** Computational Study of the Compressible Gas Flow with Heat Transfer in a Micro-Channel, *3rd Asian Joint Workshop on Thermophysics and Fluid Science (AJWTFS)*, Sept. 10-13, 2010, Matsue, Japan.
13. **Vincent Lijo, Heuy Dong Kim,** and **Toshiaki Setoguchi,** A study on the performance improvement of a short ejector-diffuser system with a shock generator, *ISAIF10, 10th International Symposium on Experimental and Computational Aerothermodynamics of Internal Flows*, July 4-7, 2011, Vrije Universiteit Brussel (VUB), Brussels, Belgium.
14. **Vincent Lijo, Heuy Dong Kim,** and **Toshiaki Setoguchi,** A study of the heat transfer in a choked micro-channel flow, *ISAIF10, 10th International Symposium on Experimental and Computational Aerothermodynamics of Internal Flows*, July 4-7, 2011, Vrije Universiteit Brussel (VUB), Brussels, Belgium.
15. **Vincent Lijo, Heuy Dong Kim,** and **Toshiaki Setoguchi,** Performance Improvement of an Ejector-Diffuser System using Shock Generator, *ASME-JSME-KSME Joint Fluids Engineering Conference*, July 24-29, 2011, ACT City Congress Center, Hamamatsu, Japan.
16. **Vincent Lijo, Heuy Dong Kim,** and **Toshiaki Setoguchi,** Study on the Choking Phenomenon in Micro Channel Flows, *4th Asian Joint Workshop on Thermophysics and Fluid Science*, Oct. 14 ~ 17, 2012, Busan, Korea *(to be presented).*

- **Domestic Conferences**

17. **Lijo Vincent, Eun Hwa Song, Hyun Kyu Nam,** and **H.D.Kim,** Numerical simulation of the odor spreading in a factory, *KSME Autumn Conference*, 2008, Pyeongchang.
18. **V. Lijo, H.D Kim,** and **J.K.Kwon,** Study on the Detailed Structure of Choking Flow in a Straight Channel, *KSME Spring Conference*, May, 2009, Busan.
19. **V. Lijo, H.D Kim,** and **T. Setoguchi,** Effect of the Pressure Ratio on the Starting-Up Process of a Vacuum Ejector-Diffuser System, *KSME Spring Conference*, May, 2009, Busan.

20. **A. Suryan, Heuy-Dong Kim** and **Dong-Sun Kim,** PIV measurement of subsonic gas flow through a spiral nozzle, *KSME Spring Conference*, May, 2009, Busan.
21. **Lijo Vincent, H. D. Kim,** and **T.Setoguchi,** A Study on the Transient Flow Process in a Vacuum Ejector-Diffuser System, *KSPE Spring Conference*, June 2009, Jeonju.
22. **V. Lijo, H.D. Kim,** and **T. Setoguchi,** Control of Ejector Performance Using an Orifice System, *KSME Autumn Conference*, November, 2009; Pyeongchang.
23. **V. Lijo, H.D. Kim,** and **T. Setoguchi,** Characteristics of the Choked Flows through Constant area Ducts, *KSME Autumn Conference*, November, 2009; Pyeongchang.
24. **V. Lijo, H.D. Kim,** and **T. Setoguchi,** Numerical Investigation of the Effects of an Orifice Inlet on the Performance of an Ejector, *KSPE Autumn Conference*, November 2009.
25. **Vincent Lijo** and **Heuy Dong Kim,** Numerical Study on the Compressible Internal Flow with Heat Transfer, *KSME Spring Conference*, April, 2010; Mokpo.
26. **Jong Sung Lee, Vincent Lijo,** and **Heuy Dong Kim,** A Computational Study on the Transition of the Shock-Boundary Layer Interaction in an Over-Expanded Nozzle, *KSME Spring Conference*, April, 2010; Mokpo
27. **Vincent Lijo** and **Heuy Dong Kim,** Flow Control in the Vacuum-Ejector System, *KSPE Spring Conference*, May 2010, Seoul
28. **Vincent Lijo** and **Heuy Dong Kim,** Study of the Heat Transfer Phenomenon in Compressible Flows through a Micro Channel, *KSME Autumn Conference*, 3-5, November, 2010, ICC, Jeju Island
29. **Vincent Lijo, Dong Sun Kim, Han Woog Bae, Lee Young Hee,** and **Heuy Dong Kim,** CFD analysis on the After-Cooler of a Turbo-Compressor, *KSME Autumn Conference*, 3-5, November, 2010, ICC, Jeju Island.
30. **Vincent Lijo** and **Heuy Dong Kim,** A Study of short supersonic ejector with shock generators, *KSPE Autumn Conference*, 25-26, November, 2010, Jeju Island.
31. **Vincent Lijo** and **Heuy Dong Kim,** Numerical Investigations on the Supersonic Ejector- Diffuser with a Shock Generator, *KSME Spring Conference*, 15-16, April, 2011, POSTECH, Pohang.
32. **Vincent Lijo** and **Heuy Dong Kim,** Application of Shock Generator to Supersonic Ejector Diffuser System, *KSPE Spring Conference*, May 2011.
33. **Vincent Lijo** and **Heuy Dong Kim,** Characteristics of the Base Pressure in High-Speed Jet Plume, *KSPE Spring Conference*, May 2011.

34. **Vincent Lijo, Jong Soon Nam,** and **Heuy Dong Kim,** Study on Base Pressure Characteristics in Supersonic Flows, *KSME Autumn Conference*, 3-5, November, 2011, EXCO, Daegu.
35. **Vincent Lijo** and **Heuy Dong Kim,** Computational Study of the Effects of Heat Transfer on Choked Flows in a Micro-channel, *KSME Autumn Conference*, 3-5, November, 2011, EXCO, Daegu.
36. **C.K.Muthukumaran, G. Rajesh, V. Lijo,** and **H.D. Kim,** A study on the unsteady aerodynamics of projectiles in overtaking blast flow fields, *KSPE Autumn Conference*, 22-24, November 2011, Busan.
37. **Fanshi Kong, V. Lijo, Yingzi Jin,** and **H.D. Kim,** Study of the Supersonic Ejector-Diffuser System with a Mixing Guide Vane at the Inlet of Secondary Stream, *KSPE Autumn Conference*, 22-24, November 2011, Busan.

Abbreviations

KSME *Korean Society of Mechanical Engineers*

KSPE *Korean Society of Propulsion Engineers*