

Tapan Krishnakumar Mankodi

Assistant Professor, Indian Institute of Technology Guwahati
Room No D-308, Dept. of Mech. Engg., IIT Guwahati, Guwahati, Assam, India.
Mobile: (+91) 88799 27573, E-mail: tapan.mankodi@iitg.ac.in, tapan.1403@gmail.com

Experience

Indian Institute of Technology Guwahati Assistant Professor	Guwahati, Assam, India January 2020-present
Gyeongsang National University Post-Doctoral Researcher; Advisor: Dr. Rho Shin Myong	Jinju, Gyeongsangnam-do, Republic of Korea October 2018-December 2019
Indian Institute of Technology Bombay Project Staff; Advisor: Dr. S Gopalakrishnan	Mumbai, Maharashtra, India June 2018-October 2018

Education

Indian Institute of Technology Bombay <ul style="list-style-type: none">• M.Tech+ Ph.D. Dual Degree, Dept. of Mech. Engg. Graduate Researcher; Advisor: Dr. Upendra V. Bhandarkar Thesis: Development of Ab-initio based chemical reaction model for Direct Simulation Monte Carlo <ul style="list-style-type: none">• CGPA: 9.23/10	Mumbai, Maharashtra, India June 2018
Sardar Vallabhbhai National Institute of Technology <ul style="list-style-type: none">• B.Tech., Dept. of Mech. Engg.• CGPA: 9.16/10	Surat, Gujarat, India May 2012
Anandalaya Education Society, CBSE <ul style="list-style-type: none">• XII Board. Marks: 91.8 %• X Board. Marks: 92.0 %	Anand, Gujarat, India May 2008 May 2006

Peer Reviewed Publication

- Mankodi T.K., Bhandarkar U.V., Myong R.S., *Collision cross-sections and nonequilibrium viscosity coefficients of N₂ and O₂ based on molecular dynamics*, *accepted* Physics of Fluids, (2020)
- Chae J.H., Mankodi T.K., Choi S.M., Myong R.S., *Combined Effects of Thermal Non-equilibrium and Chemical Reactions on Hypersonic Air Flows Around An Orbital Reentry Vehicle*, International Journal of Aeronautical and Space Sciences, pp 1-15, (2019)
- Mankodi T.K., Myong R.S., *QCT based Non-Equilibrium Chemical Reaction Models for Hypersonic Air Flows*, Physics of Fluids, Volume 31, pp 106102 (2019)
- Mankodi T.K., Bhandarkar U.V., Puranik B.P., *Hypersonic flow over Stardust Re-entry Capsule using ab-initio based chemical reaction model*, Acta Astronautica, Volume 182, pp. 243, (2019)
- Mankodi T.K., Bhandarkar U.V., Puranik B.P., *Collision Induced Dissociation Cross-section for High Energy N₂-O₂ Collisions*, Chemical Physics Letters, Volume 706, pp 1, (2018)
- Mankodi T.K., Bhandarkar U.V., Puranik B.P., *Cross-sections for O₂ + N system using the QCT method*, Chemical Physics Letters, Volume 704, pp 21, (2018)

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Dissociation Cross-section for High Energy O₂-O₂ collisions*, The Journal of Chemical Physics, Volume 148, Issue 14, pp 144305, (2018)

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Global potential energy surface of ground state singlet spin O₄*, The Journal of Chemical Physics, Volume 148, Issue 8, pp 074305, (2018)

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *An ab initio chemical reaction model for the direct simulation Monte Carlo study of non-equilibrium nitrogen flows*, The Journal of Chemical Physics, Volume 147, Issue 8, pp 084305, (2017)

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Dissociation cross sections for N₂ + N → 3N and O₂ + O → 3O using the QCT method*, The Journal of Chemical Physics, Volume 146, Issue 20, pp 204307, (2017)

Manuscripts Under Review/Under Preparation

Mankodi T.K., Myong R.S., *Development of second order Nonlinear Coupled Constitutive Relations solver in OpenFOAM Framework: nccrFoam*, Computers and Fluids, (2020)

Mankodi T.K., Myong R.S., *Boltzmann-based second-order vibrational relaxation models for highly non-equilibrium flows of diatomic and polyatomic gases*, Physics of Fluid, (2020)

Chourushi T., Rahimi A., Ejtehad O., Singh S., Mankodi T.K., Myong R.S., *Unveiling the thermo-physical characteristics of diatomic and polyatomic gases in a cylindrical Couette flow using the non-linear coupled constitutive relations*, International Journal of Heat and Mass Transfer, (2020)

Conferences

Mankodi T.K., Myong R.S., *Investigating Non-Equilibrium Reacting Air Flow around Stardust Re-entry Vehicle*, The Korean Society for Aeronautical and Space Sciences Spring Conference, Byeonsan, Republic of Korea, 2019.

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *DSMC study of Shock-Shock Interaction at Rarefied Ambient Conditions*, 23rd International Shock Interaction Symposium, Skukuza National Park, South Africa 2018.

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Computational and Accuracy Analysis of a Reduced and Full Scale Ab-initio Based Chemical Model in DSMC*, 5th National Symposium on Shock Waves, Terminal Ballistics Research Laboratory, Chandigarh, India 2018. Awarded the best presentation of the symposium.

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Comparison of DSMC Chemistry Models for Rarefied Shock Tube Simulations with Nitrogen*, 31st International Symposium on Shock Wave, Nagoya, Japan 2017.

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Comparison of Chemical Reaction Models with various Experimental Reentry Capsules using DSMC*, 30th International Symposium on Shock Wave, Tel Aviv, Israel 2015.

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *DSMC simulation of a Micro-turbine Blade Cascade Assembly*, 24th International Conference on Discrete Simulation of Fluid Dynamics, Edinburgh, 2015.

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Density Distribution based Interpolated Grid for DSMC*, 29th International Symposium on Rarefied Gas Dynamics, Xi'an, China 2014.

Poster Presentation

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Chemical Reaction Model for Direct Simulation Monte Carlo*, 4th National Symposium on Shock Waves, Karunya Institute of Technology and Sciences, Coimbatore, India 2016.

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *Effect of LB Model Parameters on the Convective Heat Flux in DSMC*, 1st International ISHMT-ASTFE Heat and Mass Transfer Conference, Thiruvananthapuram, India 2015.

Mankodi T.K., Bhandarkar U.V. , Puranik B.P., *DSMC Simulations to Study Heat Flux Over SA Model Re-entry Vehicle*, 3rd National Symposium on Shock Waves, IIT Bombay, Mumbai, India 2014. Awarded the best poster presentation of the symposium.

Teaching Experience

Indian Institute of Technology Guwahati

- ME324 Heat and Mass Transfer
- ME101 Engineering Mechanics

Guwahati, Maharashtra, India

Spring 2020

Spring 2020

References

Professor Upendra Bhandarkar
Dept. of Mechanical Engineering
Indian Institute of Technology Bombay
Powai, Mumbai 400 076
(+91)-22-25767594
bhandarkar@iitb.ac.in

Professor Rho Shin Myong
Dept. of Aerospace Engineering
Gyeongsang National University
Jinju, Republic of Korea
(+82)-10-9557-6107
myong@gnu.ac.kr

Professor Bhalchandra Puranik
Dept. of Mechanical Engineering
Indian Institute of Technology Bombay
Powai, Mumbai 400 076
(+91)-22-25767536
puranik@iitb.ac.in