

VISHAL BHALLA

Ph.D. Scholar
Department of Mechanical Engineering
Indian Institute of Technology Ropar
Nangal Road, Rupnagar – 140001
Punjab
INDIA

Phone: +91-90411-46310
vishal.bhalla@iitrpr.ac.in
<https://sites.google.com/a/iitrpr.ac.in/vishal-bhalla/>
<http://www.iitrpr.ac.in/vishal-bhalla>
<https://goo.gl/SSz47S>
ORCID ID: 0000-0003-4546-8793

EDUCATIONAL DETAILS

Ph.D.	Mechanical Engineering	Indian Institute of Technology Ropar, Rupnagar, Punjab, India (Expected Date of Graduation: Early 2018)
M.E.	Mechanical Engineering	Thapar University, Patiala, Punjab, India, 2012
B.Tech.	Mechanical Engineering	Punjab Technical University, Punjab, India, 2008

RESEARCH AND PROFESSIONAL EXPERIENCE

2017 - present	Research Associate, Indian Institute of Technology Ropar
2015 - 2017	Ph.D. Senior Research Scholar, Indian Institute of Technology Ropar
2013 - 2015	Ph.D. Junior Research Scholar, Indian Institute of Technology Ropar
2012	Assistant Professor, Mechanical Engineering Department, Lovely Professional University, Phagwara
2008 - 2009	Lecturer, Mechanical Engineering Department, Lovely Professional University, Phagwara

PROFESSIONAL INTERESTS

Research: Heat transfer, nanofluids, solar thermal energy
Teaching: Internal Combustion Engines, heat and mass transfer, theory of Machines, manufacturing

TECHNICAL SKILLS

Software/ Programming Skills MATLAB, scilab, Minitab, C/C++, COMSOL Multiphysics
Experimental Skills UV-Visible-NIR spectroscopy, IR camera, National Instruments DAQ system & Lab View, Thermometry System

AWARD AND ACHIEVEMENTS

- Recipient of the **International Travel Award** awarded by the Department of Science and Technology (DST-SERB), Govt. of India, for attending SOLARIS Conference held at London, UK, July 2017.
- Recipient of **Institute fellowship, Ministry of Human Resource Development (MHRD)**, Govt. of India, Jan. 2013- Dec. 2017.

SHORT TERM WORKSHOPS ORGANIZED/ATTENDED

- Organized and participated in Indo-US Workshop on **Recent Advances in Micro/Nanoscale Heat Transfer and Applications in Clean Energy Technologies**, held at Indian Institute of Technology Ropar, Rupnagar, Dec. 21-22, 2013.
- Organized and participated in a conference on **Emerging Trends on Mechanical Engineering**, held at Thapar University, Patiala, Feb. 24-26, 2011.
- Participated in a training program on **Modeling of Renewable Energy System using CFD**, held at Thapar University, Patiala, March 17-18, 2011.
- Participated in a national workshop on **Recent Developments in Energy Conversion Technologies**, held at Thapar University, Patiala, March 22-23, 2010.

PUBLICATIONS

Peer-reviewed Journals (Published)

- [A06] **Bhalla, V.**, Khullar, V., and Tyagi, H., 2018, "Experimental Investigation of Photo-Thermal Analysis of Blended Nanoparticles ($\text{Al}_2\text{O}_3/\text{Co}_3\text{O}_4$) for Direct Absorption Solar Thermal Collector", Accepted for publication at *Renewable Energy*.
- [A05] **Bhalla, V.**, and Tyagi, H., 2018, "Parameters Influencing the Performance of Nanoparticles-laden Fluid-based Solar Thermal Collectors: A Review on Optical Properties", *Renewable & Sustainable Energy Reviews*, Vol. 84, pp. 12–42. (doi:10.1016/j.rser.2017.12.007)
- [A04] Khullar, V., **Bhalla, V.**, and Tyagi, H., 2018, "Potential Heat Transfer Fluids (Nanofluids) for Direct Volumetric Absorption-Based Solar Thermal Systems", *ASME Journal of Thermal Science and Engineering Applications*, Vol. 10(1), p. 011009. (doi:dx.doi.org/10.1115/1.4036795)
- [A03] **Bhalla, V.**, and Tyagi, H., 2017, "Solar Energy Harvesting By Cobalt Oxide Nanoparticles, A Nanofluid Absorption Based System", *Sustainable Energy Technologies and Assessments*, Vol. 24, pp. 45–54. (doi: 10.1016/j.seta.2017.01.011)
- [A02] Saroha, S., Mittal, T., Modi, P. J., **Bhalla, V.**, Khullar, V., Tyagi, H., Taylor, R. A., and Otanicar, T. P., 2015, "Theoretical Analysis and Testing of Nanofluids-Based Solar Photovoltaic/Thermal (PV/T) Hybrid Collector", *ASME Journal of Heat Transfer*, Vol. 137(9), p. 091015. (doi:10.1115/1.4030228)
- [A01] Gulati, R., Reddy, A., Khullar, V., **Bhalla, V.**, Tyagi, H., Zhao, Y., Law, E., and Taylor, R. A., 2013, "Enhancing the efficiency of absorption refrigeration cycle by seeding nanoparticles directly in the working fluid", *International Journal of Environmental Studies*, Vol. 70(5), pp. 808-823. (doi:10.1080/00207233.2013.798503)

Book Chapters

- [B02] **Bhalla, V.**, Khullar, V., Singh, H., and Tyagi, H., 2018, "Solar Thermal Energy: Use of Volumetric Absorption in Domestic Application", In: Tyagi, H., Agarwal, A., Chakraborty, P., Powar, S., (eds.), *Applications of Solar Energy*, Springer. (doi:10.1007/978-981-10-7206-2_6)
- [B01] **Bhalla, V.**, Khullar, V., and Tyagi, H., 2018, "Community-level Solar Thermal Systems", In: Ting, D., Cariveau, R., (eds.), *Wind and Solar based Energy Systems for Communities*, *Institution of Engineering and Technology (IET)*, In Press.

Peer-reviewed Conferences

- [C08] **Bhalla, V.**, Garg, K., Salvi, S., Badarla, V., Fulwani, D., Khullar, V., Rao, M., Charkrapani A., Krishnan, N., and Tyagi, H., "Utilization of Nanoparticle-Based Solar Energy Systems for Improving The Overall Energy Efficiency of Buildings", Paper No. SEEC-2018-146, *International Conference on Sustainable Energy and Environmental Challenges (SEEC-2018)*, IISC Bangalore, India, Dec. 31, 2017- Jan 3, 2018.

- [C07] **Bhalla, V.**, Garg, K., Khullar, V., and Tyagi, H., "Performance Characteristics of Nanospheroid Based Solar Thermal Collectors for Industrial Heating", Paper No. IHMTTC2017-07-0775, *24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTTC-2017)*, Hyderabad, India, Dec. 27-30, 2017.
- [C06] Garg, K., **Bhalla, V.**, Khullar, V., Das, S. K., and Tyagi, H., "Performance Evaluation of Single Stage Flash Evaporation Desalination System Coupled with Nano-Fluid based Direct Absorption Solar Collector", Paper No. IHMTTC2017-19-0699, *24th National and 2nd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTTC-2017)*, Hyderabad, India, Dec. 27-30, 2017.
- [C05] **Bhalla, V.**, Khullar, V., Singh, H., and Tyagi, H., "Liquid Layer Envelope for Curbing Radiative Losses in Nanofluid-Based Volumetric Receivers", *SOLARIS 2017 International Conference*, Brunel University London, London, U.K., Jul. 27-28, 2017.
- [C04] Garg, K., **Bhalla, V.**, Khullar, V., Das, S. K., and Tyagi, H., "Numerical Study of Multi-Stage Flash Desalination Method Coupled with Nano-Fluid based Direct Absorption Solar Collector", *SOLARIS 2017 International Conference*, Brunel University London, London, U.K., Jul. 27-28, 2017.
- [C03] **Bhalla, V.**, Khullar, V., and Tyagi, H., "Performance Characteristics of Direct Absorption Solar Collector for Residential Purposes", Paper No. SEEC-2017-004, *International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017)*, Mohali, India, Feb. 26-28, 2017.
- [C02] **Bhalla, V.**, Khullar, K., and Tyagi, H., "Enhancement in optical properties of heat transfer fluid by using nanoparticles", *5th International and 41st National Conference on Fluid Mechanics and Fluid Power*, IIT Kanpur, Kanpur, India, Dec. 12-14, 2014.
- [C01] Mittal, T., Saroha, S., **Bhalla, V.**, Khullar, V., Tyagi, H., Taylor, R. A., and Otanicar, T. P., "Numerical Study of Solar Photovoltaic/Thermal (PV/T) Hybrid Collector Using Nanofluids", Paper No. MNHMT2013-22090, *ASME 2013 4th Micro/Nanoscale Heat & Mass Transfer International Conference*, Hong Kong, China, Dec. 11-14, 2013.