Dr. Tej Singh

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ACADEMIC EDUCATION

2020/06 **Ph.D. Homologation**
From Szent István University Gödöllő, Hungary.

2014/12 **Ph.D. in Mechanical Engineering**
Title of dissertation: *Tribo-performance evaluation of fiber reinforced and nano-filled composite friction materials*
Mechanical Engineering Department, National Institute of Technology, Hamirpur, India

2008/11 **Master of Technology: Nanoscience and Nanotechnology**
Centre for Emerging Area in Science & Technology, Panjab University, Chandigarh, India

PROFESSIONAL CAREER

2018/09 **Associate Professor**
Eötvös Loránd University, Faculty of Informatics: Savaria Institute of Technology

AREA OF INTEREST AND EXPERTISE

- Polymer composites; Tribology; Nanoparticle synthesis; Optimization methods and techniques; Waste and natural renewable materials utilization for potential applications

EDUCATION ACTIVITIES

- Subject (B. Sc.): Fundamental of Engineering
- Subject (B. Sc.): Structure of Materials I
- Subject (B. Sc.): Basic Thermodynamics
- Subject (B. Sc.): Quality Assurance
- Subject (B. Tech.): Material Science and Engineering
- Subject (B. Tech.): Manufacturing Science and Technology

LANGUAGE SKILLS

- English: Writing, reading, speaking (Fluent)
- Hindi: Native

PUBLICATIONS

Peer reviewed journal papers with impact factor:

1. Shashi Kant Verma, Brijesh Gangil, Ashutosh Gupta, Nitesh Singh Rajput, **Tej Singh**. Dolomite dust filled glass fiber reinforced epoxy composite: Influence of fabrication techniques on physicomechanical and erosion wear properties. Polymer Composites, 2021; https://doi.org/10.1002/pc.26398. (IF= 3.171)
2. **Tej Singh**. Utilization of cement bypass dust in the development of sustainable automotive brake friction composite materials. Arabian Journal of Chemistry, 2021; 14: 103324. (IF=5.165)
3. **Tej Singh**. Optimum design based on fabricated natural fiber reinforced automotive brake friction composites using hybrid CRITIC-MEW approach. Journal of Materials Research and Technology, 2021; 14: 81-92. (IF=5.039)
4. **Tej Singh**, László Lendvai, Gábor Dogossy, Gusztáv Fekete. Physical, mechanical and thermal properties of Dalbergia sissoo wood waste filled poly(lactic acid) composites. Polymer Composites, 2021; 42(9): 4380-4389. (IF= 3.171)
5. Ashutosh Sharma, Mehmet Ali Kallioğlu, Anchal Awasthi, Ranchan Chauhan, Gusztáv Fekete, **Tej Singh**. Correlation formulation for optimum tilt angle for maximizing the solar radiation on solar collector in the Western Himalayan region. Case Studies in Thermal Engineering, 2021; 26: 101185. (IF=4.724)
6. Raj kumar, Rakesh Kumar, Sushil Kumar, Sashank Thapa, Muneesh Sethi, Gusztáv Fekete, **Tej Singh**. Impact of artificial roughness variation on heat transfer and friction characteristics of solar air heating system. Alexandria Engineering Journal, 2022; 61: 481-491. (IF=3.732)
7. Vishal Ahlawat, Ujjawal Yadav, Sunil Nain, **Tej Singh**. Potential of white ark shell powder in automotive brake friction composites. Journal of Materials Engineering and Performance, 2021; 30: 4053-4062. (IF=1.819)
8. Ankit D. Oza1, Abhishek Kumar, Vishvesh Badheka, Amit Arora, Manoj Kumar, Catalin I. Pruncu, **Tej Singh**. Improvement of the machining performance of the TW-ECDM process using magnetohydrodynamics (MHD) on quartz material. Materials, 2021; 14(9): 2377. (IF=3.623)
9. **Tej Singh**, Manish Puri, Sachin Tejyan, Ravi Kant Ravi. Abrasive wear and dynamic-mechanical behavior of marble dust filled bagasse fiber reinforced hybrid polymer composites. Polymer Composites, 2021; 42(6): 2817-2828. (IF=3.171)
10. Sunil Nain, Vishal Ahlawat, Sanjay Kajal, Parinam Anuradha, Ashutosh Sharma, **Tej Singh**. Performance analysis of different U-shaped heat exchangers in parabolic trough solar collector for air heating applications. Case Studies in Thermal Engineering, 2021; 25: 100949. (IF=4.724)
11. László Lendvai, **Tej Singh**, Gusztáv Fekete, Amar Patnaik, Gábor Dogossy. Utilization of waste marble dust in poly(lactic acid)-based biocomposites: mechanical, thermal and wear properties. Journal of Polymers and the Environment, 2021; 29: 2952-2963. (IF=3.667)
12. **Tej Singh**, Brijesh Gangil, Lalit Ranakoti, Amit Joshi. Effect of silica nanoparticles on physical, mechanical and wear properties of natural fiber reinforced polymer composites. Polymer Composites, 2021; 42: 2396-2407. (IF=3.171)
13. Mahavir Choudhary, Ankush Sharma, Pankaj Agarwal, **Tej Singh**, Tapan Patnaik, Amar Patnaik. Experimental and numerical investigation of mechanical and erosion behavior of barium sulphate filled glass fiber reinforced polymer composites. Polymer Composites, 2021; 42(2): 753-773. (IF=3.171)
14. Deepika Shekhawat, Amit Singh, M.K. Banerjee, **Tej Singh**, Amar Patnaik. Bioceramic composites for orthopaedic applications: A comprehensive review of mechanical, biological, and microstructural properties. Ceramics International, 2021; 47(3): 3013-3030. (IF=4.527)
15. Kumari Jyoti, Devender Arora, Gusztáv Fekete, László Lendvai, Gábor Dogossy, **Tej Singh**. Antibacterial and anti-inflammatory activities of Cassia fistula fungal broth-capped silver nanoparticles. Materials Technology: Advanced Performance Materials, 2021; 36(14): 883-893. (IF=3.846)
16. **Tej Singh**, Sachin Tejyan, Amar Patnaik, Ranchan Chauhan, Gusztáv Fekete. Optimal design of needlepunched nonwoven fiber reinforced epoxy composites using improved preference selection index approach. Journal of Materials Research and Technology, 2020; 9: 7583-7591. (IF=5.039)

17. **Tej Singh**, Punyasloka Pattnaik, Catalin I. Pruncu, Avinash Tiwari, Gusztáv Fekete. Selection of natural fibers based brake friction composites using hybrid ELECTRE-entropy optimization technique. Polymer Testing, 2020; 89: 106614. (IF=4.282)
18. **Tej Singh**, Amar Patnaik, Ranchan Chauhan, István Bíró, Endre Jánosi and Gusztáv Fekete. Performance assessment of phenolic based non-asbestos organic brake friction composite materials with different abrasives. Acta Polytechnica Hungarica, 2020; 17(5): 49-67. (IF=1.806)
19. Kumari Jyoti, Ajeet Singh, Gusztáv Fekete, **Tej Singh**. Cytotoxic and radiosensitizing potential of silver nanoparticles against HepG-2 cells prepared by biosynthetic route using Picrasma quassioides leaf extract. Journal of Drug Delivery Science and Technology, 2020; 55: 101479. (IF=3.981)
20. Ranchan Chauhan, **Tej Singh**, Amar Patnaik, N.S. Thakur, Sung Chul Kim, Gusztáv Fekete. Experimental investigation and multi objective optimization of thermal-hydraulic performance in a solar heat collector. International Journal of Thermal Sciences, 2020; 147: 106130. (IF=3.744)
21. **Tej Singh**, Catalin I. Pruncu, Brijesh Gangil, Vedant Singh, Gusztáv Fekete. Comparative performance assessment of pineapple and Kevlar fibers based friction composites. Journal of Materials Research and Technology, 2020; 9(2): 1491-1499. (IF=5.039)
22. Shashi Kant Verma, Ashutosh Gupta, **Tej Singh**, Brijesh Gangil, Endre Jánosi, Gusztáv Fekete. Influence of dolomite on mechanical, physical and erosive wear properties of natural-synthetic fiber reinforced epoxy composites. Materials Research Express, 2019; 6: 125704. (IF= 1.62)
23. **Tej Singh**, Brijesh Gangil, Bharat Singh, Shashi Kant Verma, Don Biswas, Gusztáv Fekete. Natural-synthetic fiber reinforced homogeneous and functionally graded vinylester composites: Effect of bagasse-Kevlar hybridization on wear behaviour. Journal of Materials Research and Technology, 2019; 8(6): 5961-5971. (IF=5.039)
24. **Tej Singh**, Naresh Kumar, Ashok Raj J., J.S. Grewal, Amar Patnaik, Gusztáv Fekete. Natural fiber reinforced non-asbestos brake friction composites: Influence of ramie fiber on physico-mechanical and tribological properties. Materials Research Express, 2019; 6(11): 115701. (IF= 1.62)
25. **Tej Singh**, Sachin Tejyan, Amar Patnaik, Vedant Singh, Ibolya Zsoldos, Gusztáv Fekete. Fabrication of waste bagasse fibre reinforced epoxy composites: Study of physical, mechanical and erosion properties. Polymer Composites, 2019; 40(9): 3777-3786. (IF=3.171)
26. Mahavir Choudhary, **Tej Singh**, Ankush Sharma, Maheshwar Dwivedy, Amar Patnaik. Evaluation of some mechanical characterization and optimization of waste marble dust filled glass fiber reinforced polymer composite. Materials Research Express, 2019; 6(10): 105702. (IF= 1.62)
27. Chandramani Goswami, I.K. Bhat, Amar Patnaik, **Tej Singh**, Gusztáv Fekete. Fabrication of ceramic hip implant composites: Influence of silicon nitride on physical, mechanical and wear properties. Silicon, 2020; 12(5): 1237-1245. (IF=2.67)
28. Naresh Kumar, **Tej Singh**, J.S. Grewal, Amar Patnaik, Gusztáv Fekete. Experimental investigation on the physical, mechanical and tribological properties of hemp fiber-based non-asbestos organic brake friction composites. Materials Research Express, 2019; 6(8): 085710. (IF= 1.62)
29. Sandeep Kumar, V.K. Patel, K.K.S. Mer, Brijesh Gangil, **Tej Singh**, Gusztáv Fekete. Himalayan natural fiber reinforced epoxy composite: Effect of Grewia optiva/Bauhinia vahlii fibres on physicomechanical and dry sliding wear behaviour. Journal of Natural Fibers, 2021; 18(2): 192-202. (IF=5.323)
30. Zhen-yu WANG, Jie WANG, Feng-hong CAO, Yun-hai MA, **Tej Singh**, Gusztáv Fekete. Influence of banana fiber on physicomechanical and tribological properties of phenolic based friction composites. Materials Research Express, 2019; 6(7): 075103. (IF= 1.62)
31. Mahavir Choudhary, **Tej Singh**, Maheshwar Dwivedy, Amar Patnaik. Waste marble dust-filled glass fiber-reinforced polymer composite part I: Physical, thermomechanical, and erosive wear properties. Polymer Composites, 2019; 40(10): 4113-4124. (IF=3.171)
32. Naresh Kumar, **Tej Singh**, J.S. Grewal, Amar Patnaik, Gusztáv Fekete. A novel hybrid AHP-SAW approach for optimal selection of natural fiber reinforced non-asbestos organic brake friction composites. Materials Research Express, 2019; 6(6): 065701. (IF= 1.62)

33. **Tej Singh**, Brijesh Gangil, Amar Patnaik, Don Biswas, Gusztáv Fekete. Agriculture waste reinforced cornstarch-based biocomposites: Effect of rice husk/walnut shell on physicomechanical, biodegradable and thermal properties. Materials Research Express, 2019; 6(4): 045702. (IF= 1.62)

34. **Tej Singh**, M.K. Rathi, Amar Patnaik, Ranchan Chauhan, Sharafat Ali, Gusztáv Fekete. Application of waste tire rubber particles in non-asbestos organic brake friction composite materials. Materials Research Express, 2019; 6(3): 035703. (IF= 1.62)

35. **Tej Singh**, Brijesh Gangil, Amar Patnaik, Sandeep Kumar, Ankit Rishiraj, Gusztáv Fekete. Physico-mechanical, thermal and dynamic mechanical behaviour of natural-synthetic fiber reinforced vinylester based homogenous and functionally graded composites. Materials Research Express, 2019; 6(2): 025704. (IF= 1.62)

36. Gusztáv Fekete, Rong Ming, R. Rozs, **Tej Singh**, S. Shao. Numerical study on medial and lateral wear propagation in total knee replacements under squat movement. Journal of Medical Imaging and Health Informatics, 2019; 9(3): 573-578. (IF=0.659)

37. Vinayaka R. Kiragi, Amar Patnaik, **Tej Singh**, Gusztáv Fekete. Parametric optimization of erosive wear response of TiAlN coated aluminium alloy using Taguchi method. Journal of Materials Engineering and Performance, 2019; 28(2): 838-851. (IF=1.819)

38. Vinayaka R. Kiragi, Amar Patnaik, **Tej Singh**. Impact of high-velocity oxy-fuel sprayed TiAlN surface coating on mechanical and slurry erosion performance of aluminium alloys. Materials Science & Engineering Technology, 2019; 50(10): 1250-1261. (IF= 0.854)

39. Amit Aherwar, **Tej Singh**, Amit Singh, Amar Patnaik, Gusztáv Fekete. Optimum selection of novel developed implant material using hybrid entropy-PROMETHEE approach. Materials Science & Engineering Technology, 2019; 50(10): 1232-1241 (IF= 0.854)

40. Sandeep Kumar, V.K. Patel, K.K.S. Mer, Gusztáv Fekete, Brijesh Gangil, **Tej Singh**. Influence of woven bast-leaf hybrid fiber on the physico-mechanical and sliding wear performance of epoxy based polymer composites. Materials Research Express, 2018; 5(10): 105705. (IF= 1.62)

41. Sachin Tejyan, **Tej Singh**, Amar Patnaik, Gusztáv Fekete, Brijesh Gangil. Physico-mechanical and erosive wear analysis of polyester fiber based nonwoven fabric reinforced polymer composites. Journal of Industrial Textiles, 2019; 49(4): 447-464. (IF=3.721)

42. **Tej Singh**, Amar Patnaik, Gusztáv Fekete, Ranchan Chauhan, Brijesh Gangil. Application of hybrid analytical hierarchy process and complex proportional assessment approach for optimal design of brake friction materials. Polymer composite, 2019; 40(4): 1602-1608. (IF=3.171)

43. Chandramani Goswami, I.K. Bhat, Sivaiah Bathula, **Tej Singh**, Amar Patnaik. Physico-mechanical and surface wear assessment of magnesium oxide filled ceramic composites for hip implant application. Silicon, 2019; 11: 39-49. (IF=2.67)

44. Ranchan Chauhan, **Tej Singh**, N.S. Thakur, Nitin Kumar, Raj Kumar, Anil Kumar. Heat transfer augmentation in solar thermal collectors using impinging air jets: A comprehensive review. Renewable and Sustainable Energy Reviews, 2018; 82(3): 3179-3190. (IF=14.982)

45. **Tej Singh**, Ranchan Chauhan, Amar Patnaik, Brijesh Gangil, Ramesh Nain, Anil Kumar. Parametric study and optimization of multi-walled carbon nanotube filled friction composite materials using Taguchi method. Polymer Composites, 2018; 39(S2): E1109-E1117. (IF=3.171)

46. **Tej Singh**, Kumari Jyoti, Amar Patnaik, Ajeet Singh, S.C. Chauhan. Spectroscopic, microscopic characterization of Cannabis sativa leaf extract mediated silver nanoparticles and their synergistic effect with antibiotics against human pathogen. Alexandria Engineering Journal, 2018, 57(4): 3043-3051. (IF= 3.732)

47. **Tej Singh**, Amar Patnaik, Ranchan Chauhan, Pankit Chauhan. Selection of brake friction materials using hybrid analytical hierarchy process and vise kriterijumska optimizacija kompromisno resenje approach. Polymer Composites, 2018; 39(5): 1655-1662. (IF=3.171)

48. **Tej Singh**, Amar Patnaik, Ranchan Chauhan, Pankit Chauhan, Naresh Kumar. Physico-mechanical and tribological properties of nanoclay filled friction composite materials using Taguchi design of experiment approach. Polymer Composites, 2018; 39(5): 1575-1581. (IF=3.171)

49. Shiv Ranjan Kumar, Amar Patnaik, I.K. Bhat, **Tej Singh**. Optimum selection of nano- and micro sized filler for the best combination of physical, mechanical, and wear properties of dental composites. Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials Design and Applications, 2018; 232(5): 416-428. (IF=2.311)
50. Rahul Nadda, Raj Kumar, **Tej Singh**, Ranchan Chauhan, Amar Patnaik, Brijesh Gangil. Experimental investigation and optimization of cobalt bonded tungsten carbide composite by hybrid AHP-TOPSIS approach. Alexandria Engineering Journal, 2018, 57(4): 3419-3428. (IF= 3.732)
51. **Tej Singh**, Avinash Tiwari, Amar Patnaik, Ranchan Chauhan, Sharafat Ali. Influence of wollastonite shape and amount on tribo-performance of non-asbestos organic brake friction composites. Wear, 2017; 386-387: 157-164. (IF=3.892)
52. Ranchan Chauhan, **Tej Singh**, Avinash Tiwari, Amar Patnaik, N.S. Thakur. Hybrid entropy-TOPSIS approach for energy performance prioritization in a rectangular channel employing impinging air jets. Energy, 2017; 134: 360-368. (IF= 7.147)
53. Ranchan Chauhan, **Tej Singh**, Nitin Kumar, Amar Patnaik, N.S. Thakur. Experimental investigation and optimization of impinging jet solar thermal collector by Taguchi method. Applied Thermal Engineering, 116; 2017: 100-109. (IF= 5.295)
54. Ashutosh Sharma, Ranchan Chauhan, **Tej Singh**, Anil Kumar, Raj Kumar, Anil Kumar, Muneesh Sethi. Optimizing discrete V obstacle parameters using a novel Entropy-VIKOR approach in a solar air flow channel. Renewable Energy, 106; 2017: 310-320. (IF= 8.001)
55. Anil Kumar, Ranchan Chauhan, Raj Kumar, **Tej Singh**, Muneesh Sethi, Anil Kumar, Ashutosh Sharma. Developing heat transfer and pressure loss in an air passage with multi discrete V-blockages. Experimental Thermal and Fluid Science, 84; 2017: 266-278. (IF= 3.232)
56. **Tej Singh**, Amar Patnaik. Thermo-mechanical and tribological properties of multi-walled carbon nanotube filled friction composite materials. Polymer Composites, 2017; 38(6): 1183-1193. (IF=3.171)
57. Ranchan Chauhan, **Tej Singh**, N.S. Thakur, Amar Patnaik. Optimization of parameters in solar thermal collector provided with impinging air jets based upon preference selection index method. Renewable Energy, 99; 2016: 118-126. (IF= 8.001)
58. **Tej Singh**, Amar Patnaik, Ranchan Chauhan. Optimization of tribological properties of cement kiln dust- filled brake pad using grey relation analysis. Materials and Design, 89; 2016: 1335-1342. (IF=7.991)
59. **Tej Singh**, Amar Patnaik, Brijesh Gangil. Thermal stability analysis of nano particulate filled phenolic based friction composite materials. Journal of Industrial Textile, 2016; 45(6): 1335-1349. (IF=3.721)
60. **Tej Singh**, Amar Patnaik, Brijesh Gangil, Ranchan Chauhan. Optimization of tribo-performance of brake friction materials: Effect of nano filler. Wear, 2015; 324-325: 10-16. (IF=3.892)
61. **Tej Singh**, Amar Patnaik. Performance assessment of lapinus-aramid based brake pad hybrid phenolic composites in friction braking. Archives of Civil and Mechanical Engineering, 2015; 15: 151-161. (IF= 4.369)
62. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Friction braking performance of nanofilled hybrid fibre reinforced phenolic composites: Influence of nanoclay and carbon nanotubes. NANO, 2013; 8(3): 1350025: 1-15. (IF= 1.556)
63. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy, Bharat S. Tomar, Mukesh Kumar. Effect of nanoclay reinforcement on the friction braking performance of hybrid phenolic friction composites. Journal of Materials Engineering and Performance, 2013; 22(3): 796-805. (IF= 1.819)
64. Swati Gangwar, Vikas Kukshal, Amar Patnaik, **Tej Singh**. Mechanical and fracture toughness behavior of TiO2 filled A384 metal alloy composites. Science and Engineering of Composite Materials, 2013, 20(3): 209-220. (IF= 1.295)
65. Sunil Kumar, Nitu Kumari, Sudhanshu Singh, **Tej Singh**, Sanyog Jain. Doping studies of Tb (terbium) and Cu (copper) on CdSe nanorods. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2011; 389(1-3): 1-5. (IF= 4.539)

Peer reviewed papers:

1. **Tej Singh**. A hybrid multiple-criteria decision-making approach for selecting optimal automotive brake friction composite. Material Design & Processing Communications, 2021; 3(5): e266.
2. **Tej Singh**, Gusztáv Fekete. Wear analysis of natural-inorganic fiber reinforced brake composites using Taguchi's technique. ENGINEERING AND IT SOLUTIONS, 2021; II: 336-44. https://doi.org/10.37775/EIS.2021.2.4.
3. Priya, Prayagraj Singh Deora, Yash Verma, Ram Avtar Muhal, Chandramani Goswami, **Tej Singh**. Biofuels: An alternative to conventional fuel and energy source. Materials Today: Proceedings, 2021; https://doi.org/10.1016/j.matpr.2021.08.227.
4. Ajay Gupta, Renu, Shiv Ranjan Kumar, Chandramani Goswami, **Tej Singh**. Wear behavior of Al6061 nanocomposite reinforced with nanozirconia. Materials Today: Proceedings, 2021; https://doi.org/10.1016/j.matpr.2021.07.508.
5. Naresh Kumar, J.S. Grewal, **Tej Singh**, Nitin Kumar. Mechanical and thermal properties of chemically treated Kenaf natural fiber reinforced polymer composites. Materials Today: Proceedings, 2021; https://doi.org/10.1016/j.matpr.2021.03.368.
6. **Tej Singh**, Chandramani Goswami, Shiv Ranjan Kumar, Sudhanshu Singh. Tribological properties of fiber reinforced phenolic composites under sliding condition. Materials Today: Proceedings, 2021; 47(17): 6231-6234.
7. Sachin Tejyan, Nitin Kumar, **Tej Singh**. Physico-mechanical characterizations of epoxy composites reinforced with lathe waste materials. Materials Today: Proceedings, 2021; 47(14): 4326-4329.
8. Chandramani Goswami, Amar Patnaik, I.K. Bhat, **Tej Singh**. Mechanical physical and wear properties of some oxide ceramics for hip joint application: A short review. Materials Today: Proceedings, 2021; 44(6): 4913-4918.
9. Sachin Tejyan, Divyesh Sharma, Brijesh Gangil, Amar Patnaik, **Tej Singh**. Thermo-mechanical characterization of nonwoven fabric reinforced polymer composites. Materials Today: Proceedings, 2021; 44(6): 4770-4774.
10. Ashutosh Sharma, Ranchan Chauhan, Mehmet Ali Kallioğlu, Veerakumar Chinnasamy, **Tej Singh**. A review of phase change materials (PCMs) for thermal storage in solar air heating systems. Materials Today: Proceedings, 2021; 44(6): 4357-4363.
11. Abhishek Gupta, Amit Joshi, Sachin Tejyan, Brijesh Gangil, **Tej Singh**. Comparative study of mechanical properties of orange peel filled epoxy composites joined by a mechanical fastener. Materials Today: Proceedings, 2021; 44(6): 4671-4676.
12. Sachin Tejyan, Nitin Kumar Baliyan, Vinay Kumar Patel, Amar Patnaik, **Tej Singh**. Polymer green composites reinforced with natural fibers: A comparative study. Materials Today: Proceedings, 2021; 44(6): 4767-4769.
13. Sanjay Manghnani, Deepika Shekhawat, Chandramani Goswami, Tapan Kumar Patnaik, **Tej Singh**. Mechanical and tribological characteristics of Si3N4 reinforced aluminium matrix composites: A short review. Materials Today: Proceedings, 2021; 44(6): 4059-4064.
14. Mehmet Ali Kallioğlu, Ashutosh Sharma, Veerakumar Chinnasamy, Ranchan Chauhan, **Tej Singh**. Optimum insulation thickness assessment of different insulation materials for mid-latitude steppe and desert climate (BSH) region of India. Materials Today: Proceedings, 2021; 44(6): 4421-4424.
15. Kumari Jyoti, Punyasloka Pattnaik, **Tej Singh**. Green synthesis of silver nanoparticles using sustainable resources and their use as antibacterial agents: A review. Current Materials Science, 2021, 14(1): 40-52.
16. Vedant Singh, Indu Chadha, Somesh Sharma, **Tej Singh**. Investigating the moderating effects of multi group on safety performance: The case of civil aviation. Case Studies on Transport Policy, 2019, 7: 477-488.
17. Naresh Kumar, Gusztáv Fekete, **Tej Singh**, J. S. Grewal. Natural fiber reinforced brake friction composites: Optimization using hybrid AHP-MOORA approach. American Institute of Physics Conference Proceeding, 2019; 2142: 150015.
18. Vedant Singh, Akshay Kumar, **Tej Singh**. Impact of TQM on organisational performance: The case of Indian manufacturing and service industry. Operations Research Perspectives, 2018; 5: 199-217.

19. **Tej Singh**, Dharmender Singh Shekhawat, Kumari Jyoti. Spectroscopic and microscopic characterization of silver nanoparticles synthesized using *Justicia adhatoda* flower. American Institute of Physics Conference Proceeding, 2018; 1953: 030155.

20. Mukesh Kumar Rathi, **Tej Singh**, Ranchan Chauhan. Dynamic mechanical analysis of waste tyre rubber filled brake friction composite materials. American Institute of Physics Conference Proceeding, 2018; 1953: 090082.

21. Naresh Kumar, **Tej Singh**, G.S. Grewal. Tribo-performance evaluation of ecofriendly brake friction composite materials. American Institute of Physics Conference Proceeding, 2018; 1953: 090083.

22. Rohit Khargotra, Sunil Dhingra, Ranchan Chauhan, **Tej Singh**. Performance investigation and comparison of different turbulator shapes in solar water heating collector system. American Institute of Physics Conference Proceeding, 2018; 1953: 130029.

23. Ranchan Chauhan, N.S. Thakur, **Tej Singh**, Muneesh Sethi. Exergy based modeling and optimization of solar thermal collector provided with impinging air jets. Journal of King Saud University: Engineering Sciences, 2018; 30(4): 355-362.

24. **Tej Singh**, Amar Patnaik, Ranchan Chauhan, Ankit Rishiraj. Assessment of braking performance of lapinus-wollastonite fibre reinforced friction composite materials. Journal of King Saud University: Engineering Sciences, 2017; 29: 183-190.

25. **Tej Singh**, Kumari Jyoti, Amar Patnaik, Ajeet Singh, Ranchan Chauhan, S.S. Chandel. Biosynthesis, characterization and antibacterial activity of silver nanoparticles using an endophytic fungal supernatant of *Raphanus sativus*. Journal of Genetic Engineering and Biotechnology, 2017; 15(1): 31-39.

26. **Tej Singh**, Ranchan Chauhan, Sachin Tejyan. Thermal stability analysis correlation with fade performance of phenolic based composite friction materials. International Advanced Research Journal in Science, Engineering and Technology, 2017; 4(3): 18-20.

27. **Tej Singh**, Amar Patnaik, Ranchan Chauhan, Naresh Kumar, Pankit Chauhan. Dry sliding wear assessment of organic-inorganic fibre reinforced friction composites using design of experiment approach. Advanced Science Letters, 22(11); 2016: 3958-3960.

28. Naresh Kumar, **Tej Singh**, R.S. Rajoria, Amar Patnaik. Optimum design of natural fiber reinforced brake friction material using hybrid entropy-VIKOR approach. Advanced Science Letters, 22(11); 2016: 3961-3964.

29. Ranchan Chauhan, **Tej Singh**, N.S. Thakur. Investigation of the thermal performance of solar thermal collector provided with impinging air jets. Advanced Science Letters, 22(11); 2016: 3928-3932.

30. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Development and optimization of hybrid friction materials consisting of nanoclay and carbon nanotubes by using analytical hierarchy process (AHP) and technique for order preference by similarity to ideal solution (TOPSIS) under fuzzy atmosphere. Walailak Journal of Science and Technology, 2013; 10 (4): 343-362.

31. Sachin Tejyan, Amar Patnaik, **Tej Singh**. Effect of fibre weight percentage on thermo-mechanical properties of needlepunched nonwoven reinforced polymer composites. International Journal of Research in Mechanical Engineering & Technology, 2013; 2(3): 41-44.

32. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Thermo-mechanical characterization of nano filled and fibre reinforced brake friction materials. American Institute of Physics Conference Proceeding, 2013; 1536: 259-260.

33. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy, Mukesh Kumar. Performance analysis of organic friction composite materials based on carbon nanotubes-organic-inorganic fibrous reinforcement using hybrid AHP-FTOPSIS approach. Composites: Mechanics, Computations, Applications. An International Journal, 2012; 3(3): 189-214.

34. Swati Gangwar, Vikas Kukshal, Amar Patnaik, **Tej Singh**. Computational optimization of TiO_2 filled A384 alloy composites in erosive environment. International Journal of Computational Material Science and Engineering, 2012; 1(3): 1250025: 1-23.

35. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Effect of carbon nanotubes on tribo-performance of brake friction materials. American Institute of Physics Conference Proceeding 2011; 1393: 223-224.

Book, book chapter, monograph:

1. Nikita Agrawal, Muktishree Mahendra, **Tej Singh**, Brijesh Gangil. Nanobiology in medicine. Nanomedicine Manufacturing and Applications, Micro and Nano Technologies, 2021, pp. 57-71.
2. Brijesh Gangil, Manoj Gupta, Lalit Ranakoti, **Tej Singh**. Thermal and thermo-mechanical analysis of vinyl-ester-carbon/CBPD particulate-filled FGMS and their homogenous composites. In book: Advances in Engineering Design, 2021, pp. 159-167. DOI: 10.1007/978-981-33-4018-3_15.
3. Brijesh Gangil, Lalit Ranakoti, Shashikant Verma, **Tej Singh**, Sandeep Kumar. Natural and synthetic fibers for hybrid composites. In book: Hybrid fiber composites, 2020; DOI: 10.1002/9783527824571.ch1.
4. Chandramani Goswami, Amar Patnaik, I.K. Bhat, **Tej Singh**. Synthesis and characterization of Al_2O_3-Cr_2O_3-based ceramic composites for artificial hip joint. Innovative Design, Analysis and Development Practices in Aerospace and Automotive Engineering (I-DAD 2018). Lecture Notes in Mechanical Engineering. ISBN: 978-981-13-2717-9.
5. **Tej Singh**, Amar Patnaik, Ranchan Chauhan. Tribo-performance evaluation and optimization of fibre-reinforced phenolic based friction composites. "Primary and Secondary Manufacturing of Polymer-Matrix Composites" CRC Press, USA (Taylor and Francis Group), 2017, pp. 143-153.
6. **Tej Singh**, Brijesh Gangil, Amar Patnaik. Influence of nano fillers on the tribo-performance of brake friction materials. "Nanotechnology: Novel Perspectives and Prospects". McGraw-Hill, USA, 2015, pp. 403-409.
7. Kumari Jyoti, Ajeet Singh, **Tej Singh**. A comparative study on the antibacterial activity of silver nanoparticles synthesized from the leaf and endophytic fungal extract of *Raphanus Sativus*. "Nanotechnology: Novel Perspectives and Prospects". McGraw-Hill, USA, 2015, pp. 513-518.

Conference proceedings:

1. **Tej Singh,** Jánosi, E. and Fekete, G. Friction performance assessment of phenolic based non-asbestos organic brake materials. XXVIII. Online International Mechanical Conference - OGÉT 2020. 28, (Apr. 2020), 81-84.
2. **Tej Singh,** Fekete, G. and Jánosi, E. Analysis of dolomite-filled fiber reinforced epoxy composites. XXVIII. Online International Mechanical Conference - OGÉT 2020. 28, (Apr. 2020), 77-80.
3. **Tej Singh**, Gusztáv Fekete. Development of innovative materials/products by utilizing waste and natural resources. 2nd Workshop on Innovative Materials Processing, Applications in Energy Engineering and System Control. Eötvös Loránd University, Faculty of Informatics, Savaria Institute of Technology, Szombathely, Hungary 30 May 2019. ISBN 978-963-489-125-3.
4. **Tej Singh**, Kumari Jyoti, Amar Patnaik, Ranchan Chauhan, Naresh Kumar. Application of silver nanoparticles synthesized from *Raphanus sativus* for catalytic degradation of organic dyes. International Conference on Advancements in Engineering and Technology (ICEAT) at Bhai Gurdas Institute of Engineering and Technology Sangrur, 18-19 March 2016.
5. Naresh Kumar, **Tej Singh**, R.S. Rajoria, Amar Patnaik. Optimum design of brake friction material using hybrid entropy-GRA approach. International Conference on Advancements in Engineering and Technology (ICEAT) at Bhai Gurdas Institute of Engineering and Technology Sangrur, 18-19 March 2016.
6. Naresh Kumara, **Tej Singh**, RadheySham, Mukesh Kumar Rathi. Review on potential of natural fibres in brake friction materials. International Conference on Latest Developments in Materials, Manufacturing and Quality Control (MMQC-2016), 2016 at Giani Zail Singh Campus College of Engineering & Technology Bathinda India. ISBN No: 978-93-5212-858-7.
7. Mukesh Kumar Rathi, Kamal Kasyap, Naresh Kumar, **Tej Singh**. Thermogravimetric analysis of reclaim rubber filled brake friction materials for assessing thermal degradation. International Conference on Latest Developments in Materials, Manufacturing and Quality Control (MMQC-2016), 2016 at Giani Zail Singh Campus College of Engineering & Technology Bathinda India. ISBN No: 978-93-5212-858-7.
8. **Tej Singh**, Vipul Sharma, Ravinder Singh, Sachin Tejyan, Brijesh Gangil. Selection of brake friction materials using compromise ranking method. International conference on mathematics and engineering sciences (ICMES) at Chitkara University, Himachal Pradesh, 20-22 March 2014.

9. **Tej Singh**, Ravinder Singh, Vipul Sharma, Sachin Tejyan, Brijesh Gangil. Compatibility of cement kiln dust (CKD) with different phenolic resin for friction braking applications. International conference on advances in engineering and technology (ICAET) at Chandigarh, 7-8 February 2014.
10. **Tej Singh**, Sachin Tejyan, Brijesh Gangil, Amar Patnaik. A decision-making structure for friction material selection problem using a preference selection index method. International conference on advances in materials and manufacturing technology (AMMT) at Chitkara University, Chandigarh, 20th September 2013.
11. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Investigation of physical, chemical, mechanical and thermal properties of nanoclay filled friction composite materials. International conference on advances in mechanical and computer engineering (ICAMCE) at Yamuna Nagar, 18-19 January 2013.
12. **Tej Singh**, Chirag, Naresh Kumar, Vipul Sharma. Thermo-gravimetric analysis of metal sulphide filled composite friction materials. National Conference on "converging technologies beyond 2020 (2CTB-2020) at Kurukshetra University, 28-29 November 2014.
13. **Tej Singh**, Vipul Sharma, Naresh Kumar, Ranjeet Singh. Physico-mechanical properties of metal-sulphide filled brake friction materials. National conference on mechanical engineering (NCME) at PU regional centre, Hoshiarpur, 7-8 November 2014.
14. Naresh Kumar, **Tej Singh**, Vipul Sharma, Ranjeet Singh, R.S. Rajoria. Potential exploration of natural fibres in brake friction materials. National conference on mechanical engineering (NCME) at PU regional centre, Hoshiarpur, 7-8 November 2014.
15. **Tej Singh**, Brijesh Gangil, Sachin Tejyan. Dry sliding wear performance of Kevlar-lapinus fibre reinforced phenolic based composite friction material. National conference on recent advances in mechanical engineering (NCRAME) at Govind Ballabh Pant Engineering College, Pauri, 26-27 September 2014.
16. **Tej Singh**, Ranchan Chauhan. Determination of metallic and semiconducting transition in single-walled carbon nanotubes by UV-Vis spectroscopy. National conference on multifunctional advanced materials (MAM) at Shoolini University, Solan, 11-13 June 2014.
17. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Thermal and mechanical properties of multiwalled carbon nanotube filled composite friction materials. National conference on recent advances in mechanical engineering (NCRAME) at Govind Ballabh Pant Engineering College, Pauri, 8-9 July 2013.
18. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Selection of nano filled friction composite materials based on physical, mechanical and thermo-mechanical properties by using TOPSIS approach. National conference on recent advances in condensed matters physics (RACMP) at National Institute of Technology, Hamirpur, 1-2 June 2013.
19. **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Characterization of physical, mechanical and dynamic mechanical properties of carbon nanotube filled brake friction materials. National conference on recent advances in polymer nanocomposites (NCPN) at Zakir Husain College Delhi, 14-15 January 2011.
20. **Tej Singh**, Bhabani K. Satapathy, Amar Patnaik. Synergistic effect of lapinus and Kevlar fiber for friction applications. National conference on advances in polymer science and technology (APST) at National Institute of Technology, Hamirpur, 22-24 October 2010.

SCIENTIFIC ACTIVITIES

Scientific reviewer/editor

- **Book Edited:** Tribology in Materials and Manufacturing: Wear, Friction and Lubrication. IntechOpen, London, UK, 2020.
- **Guest Editor:** Materials Today: Proceedings, ELSEVIER, 2020.
- **Guest Editor:** Special Issue "Wear Behavior of Polymer Composites" in COATINGS- MDPI, 2020.
- **Guest Editor:** Volume 23, Issue 2: "Sustainable Engineering for Science and Technology" in Journal of Discrete Mathematical Sciences and Cryptography, Taylor & Francis, 2020.

- **Guest Editor:** Special Issue "Current Scenario in Sustainable Engineering" in Recent Patents on Engineering- Bentham Science, August 2019.
- **Guest Editor:** Special Issue "Polymeric Engineering Materials with Superior Surface Properties" in International Journal of Polymer Science – Hindawi, June 2019.
- **Reviewer:** Archives of Civil and Mechanical Engineering; Wear; Tribology International; Composites Science and Technology; Journal of Radiation Research and Applied Sciences; Food Hydrocolloids; Journal of King Saud University: Engineering Sciences; Engineering Science and Technology, an International Journal; Journal of the Saudi Society of Agricultural Sciences; Polymer; Heliyon; Composites Part B: Engineering; International Journal of Mechanical Sciences; Transportation Research Part D: Transport and Environment; Materials Today Proceedings; Sustainable Energy Technologies and Assessments; Composites Part C: Open Access; Arabian Journal of Chemistry; MethodsX – ELSEVIER
- **Reviewer:** Journal of Industrial Textiles; Part J: Journal of Engineering Tribology; Polymers and Polymer Composites – SAGE
- **Reviewer:** Polymer Composites; Material Science and Engineering Technology; Polymers for Advanced Technologies; Heat Transfer – WILEY
- **Reviewer:** Silicon; Friction; Journal of Materials Engineering and Performance; Polymer Bulletin; Water, Air, & Soil Pollution; Annals of Operations Research; Mechanics of Composite Materials; Fibers and Polymers – SPRINGER
- **Reviewer:** Journal of Natural Fibers; International Journal of Management Science and Engineering Management; Tribology Transactions – TAYLOR & FRANCIS
- **Reviewer:** International Journal of Surface Science and Engineering; International Journal of Environment and Sustainable Development – INDERSCIENCE
- **Reviewer:** Materials Research Express – IOPscience
- **Reviewer:** Coatings; Metals; Crystals – MDPI
- **Reviewer:** International Journal of Polymer Science; Advances in Materials Science and Engineering; Advances in Tribology – Hindawi

Invited Presentations:

- **Keynote Speaker,** Online International Conference on "New Frontier in Energy, Engineering and Science" NFEES- 2021, 19th - 20th March 2021, Arya College of Engineering and IT Jaipur, India.
- **Invited Talk,** International Workshop on "Advancements in Nanomaterials with Futuristic Engineering Applications" 18th - 22nd January 2021, Career Point University Hamirpur, India.
- **Invited Talk**, Online Short-Term Course on "Advanced Manufacturing Technology & Applications" (AMTA 2020), 23rd to 28th November 2020, SLIET Longowal Punjab, India.
- **Keynote Speaker,** Online International Conference on "Advances in Materials Processing & Manufacturing Applications (iCADMA 2020)" 5th - 6th November 2020, MNIT Jaipur, India.
- **Invited Talk,** International Faculty Development Program on "Tribology for Reliability-2020" 5th - 9th October 2020, GITAM School of Technology, Bangalore, India.
- **Invited Talk,** Faculty development program on "Tools and Scientific Communication for Research Article and Proposal Writing" 19th - 23rd September 2020, GBPEIT Pauri Garhwal, Uttarakhand, India.
- **Invited Talk**, Faculty development program on "Experimental and Numerical Methods for Mechanical Engineers" 17th - 28th August 2020, GBPEIT Pauri Garhwal, Uttarakhand, India.
- **Keynote Speaker**, International Conference on "Cutting Edge Technological Challenges in Mechanical Engineering (CETCME-2020)" 21st - 22nd August 2020, NIET Greater Noida, India.
- **Keynote Speaker**, International Conference on "Innovative Engineering Design (ICoIED-2020)" 18th - 20th January 2020, NIT Uttarakhand, India.).