TEJ SINGH

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Education Qualification:

- **Ph.D.**: From Mechanical Engineering Department, National Institute of Technology, Hamirpur, 2013.
- **Master of Technology:** M. Tech. in Nanoscience and Nanotechnology from Panjab University, Chandigarh, 2008.
- **Master of Science:** M.Sc. in Physics from Barkatullah University, Bhopal, 2004.
- **Bachelor of Science:** B.Sc. from Panjab University, Chandigarh, 2002.

Research Area for Doctoral Thesis:

"Tribo-Performance Evaluation of Fiber Reinforced and Nano-Filled Composite Friction materials"

In this thesis nanomaterials (carbon nanotube and nanoclay) utilized for friction braking application. Thesis highlights the fabrication and characterization (physical, chemical, mechanical, thermal, thermo-mechanical and tribological) of nano-particulate filled polymer based friction composite. The thesis also highlights the use of fuzzy analytic hierarchy process (FAHP) and fuzzy technique for order preference by similarity to ideal solutions (FTOPSIS) for optimal friction formulation selection.

Research Interests for Future:

- Wear performance of composite (Polymer/metal/ceramic matrix) which includes sliding (dry and lubricating), erosive (dry and slurry), abrasive (two and three body)
- Synthesis and structural, dielectric, and electrical characterization of nano filled materials
- Biosynthesis of nanoparticles from leaf extract and their various characterization

Research Publications in Peer Reviewed Journals (09):

- **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.

- **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.
- **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy**.** Thermo-mechanical characterization of nano filled and fibre reinforced brake friction materials**.** American Institute of Physics (AIP) Conference proceeding, 2013; 1536: 259-260.
- **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.
- Swati Gangwar, Vikas Kukshal, Amar Patnaik, **Tej Singh**. Mechanical and fracture toughness behavior of TiO_2 filled A384 metal alloy composites. Science and Engineering of Composite Materials, 2013, 20(3): 209-220.
- **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.
- 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.
- 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.
- **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Effect of carbon nanotubes on tribo-performance of brake friction materials. American Institute of Physics (AIP) Conference proceeding, 2011; 1393: 223-224.

Research Publications Under Communication (06):

- **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Temperature dependence of mechano-tribological performance of MWCNT-filled short fiber reinforced multiscale

phenolic friction composites. Communicated to Journal of Materials Engineering and Performance.

- **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Performance assessment of lapinus-aramid based brake pad hybrid phenolic composites in friction braking. Communicated to Archives of Civil and Mechanical Engineering.
- **Tej Singh**, Amar Patnaik, Brijesh Gangil. Thermal stability analysis of nano particulate filled phenolic based friction composite materials. Communicated to Polymer Testing.
- Vikas Kukshal, Swati Gangwar, Amar Patnaik, **Tej Singh**. Optimization of ceramic dispersoid (SiC/Al_2O_3) content in A356 alloy composite for best combination of physical, mechanical and tribological characteristics. Communicated to Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology.
- **Tej Singh**, Amar Patnaik, Brijesh Gangil. Thermal and dry sliding wear performance of organic-inorganic fibres reinforced nanoclay filled friction composite materials. Communicated.
- **Tej Singh**, Amar Patnaik, Brijesh Gangil. Influence of metal-oxide abrasives on fade-recovery performance of short fibre reinforced phenolic based friction composite materials. Communicated.

Research Papers in International Conferences (07):

- **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Effect of carbon nanotubes on tribo-performance of brake friction materials. International conference on advances in condensed and nano materials (ICACNM), Panjab University Chandigarh, 2011.
- Mukesh Kumar, Amar Patnaik, Bhabani K. Satapathy, **Tej Singh**. Effect of ceramic reinforcements on the fade-recovery performance of hybrid friction materials in friction braking, 8th International Conference on Industrial Tribology at Pune, 7-9 December 2012.
- **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.
- **Tej Singh**, Amar Patnaik, Bhabani K. Satapathy. Thermo-mechanical characterization of nano filled and fiber reinforced brake friction materials. International conference on

recent trends in applied physics and material science (RAM) at Bikaner, 1-2 February 2013.

- **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 chandigarh 2013.
- Brijesh Gangil, **Tej Singh.** Comparativ**e** study on physical, chemical and mechanical properties of cement kiln dust filled friction composite materials. International Conference on advances in materials and manufacturing technology (AMMT) at chandigarh 2013.
- Sachin Tejyan, Amar Patnaik, **Tej Singh**. Effect of fibre weight percentage on thermo-mechanical properties of needlepunched nonwoven reinforced polymer composites. International conference on advances in materials and manufacturing technology (AMMT) at chandigarh 2013.

Research Papers in National Conferences (05):

- **Tej Singh**, Brijesh Gangil. Determination of metallic and semiconducting transition in single-walled carbon nanotubes by UV-Vis spectroscopy. National conference on emerging trends in engineering & sciences (ETES) at Gurukul Kangri University, Haridwar, 2013.
- **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.
- **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.
- **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, 2011.

- **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, 2010.

Personal Data:

Name	: Tej Singh
Date of Birth	: 28/06/80
Sex	: Male
Nationality	: Indian
Marital Status	: Single
Languages Known	: English, Hindi

Declaration:

I hereby declared that the above information given by me is true to the best of my Knowledge.

Date……

Place……...

(Tej Singh)

References:

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