CV

SURJYA K PAL

Lord Kumar Bhattacharyya Chair Professor in Manufacturing

Professor, Department of Mechanical Engineering,
Chairperson, Centre of Excellence in Advanced Manufacturing Technology
Indian Institute of Technology Kharagpur,
Kharagpur, 721 302, WB, India
Email: skpal@mech.iitkgp.ac.in, surjya.pal@icloud.com
Mob: +91-9434701972

RESEARCH INTERESTS:

- Friction Stir Welding and Processing
- Industry 4.0
- Modelling and Simulation of Manufacturing Process
- Ultrafast Cooling Methodologies for Metal Strips in Rolling Process

EDUCATION/QUALIFICATIONS:

- Bachelor of Engineering (1991, Government Engineering College, Jalpaiguri, WB)
- Master of Technology (1993, I.I.T Kanpur)
- Doctor of Philosophy (1999, I.I.T Kharagpur)
- Postdoctoral Research Associate (1999-2002), The University of Sheffield, UK

RESPONSIBILITY:

- **PRESENT:**
  - Professor, Department of Mechanical Engineering
  - Associate Dean, Alumni Affairs and Branding
  - Chairperson, Centre of Excellence in Advanced Manufacturing Technology
  - Professor-in-Charge, Metrology & Friction Stir Welding Laboratories

- **PAST:**
  - Chairman, Hall Management Centre
  - Organizing Vice Chairman, JEE Advanced – 2014
  - Vice-Chairman, JEE Advanced – 2013
  - Chairman, Steel Technology Centre
  - Executive Advisor, Science and Technology Entrepreneurs' Park

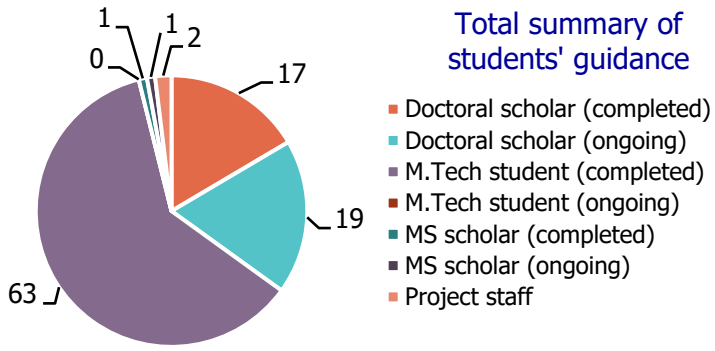
TEACHING EXPERIENCE:

- IIT Guwahati (July 2002- July 2004)
- IIT Kharagpur (July 2004- till date)

INDUSTRIAL EXPERIENCE:

- Engineering & Development Division of Grasim Industries Ltd. (MP) (1994-1995)

STUDENT GUIDANCE:



SPONSORED & CONSULTANCY PROJECTS:

LIST OF PROJECTS AS PI:

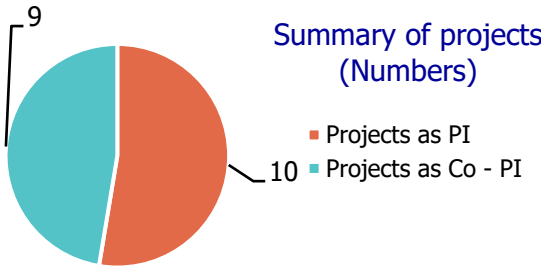
Sl. no.	Title of the project	Start date	End date	Amount (in Rs)
1	Design and fabrication of a cold plate using friction stir channelling for thermal management of electronic systems and battery packs	06.03.2020	05.03.2023	33,25,400
2	Innovation lab	15.12.2017	14.12.2022	24,87,00,000
3	Remote monitoring and real time control of defects in friction stir welding process and preventive health monitoring of friction stir welding machine	15.12.2017	14.12.2022	6,44,66,000
4	Friction stir welding of aluminium and steel sheet metals for automobile components	17.03.2016	16.03.2019	44,04,200
5	Multi sensor-based tool condition monitoring in drilling	30.03.2007	31.03.2010	7,56,000
6	Machine tool vibration monitoring (an Indo-South African) project	11.09.2006	30.09.2009	3,50,000
7	Finite element analysis of stress distribution in electrode-nipple joint under combined loading	01.10.2011	31.03.2012	4,41,200
8	Through process modelling and simulation of hot rolling using bond graph	21.08.2003	31.08.2006	4,68,000

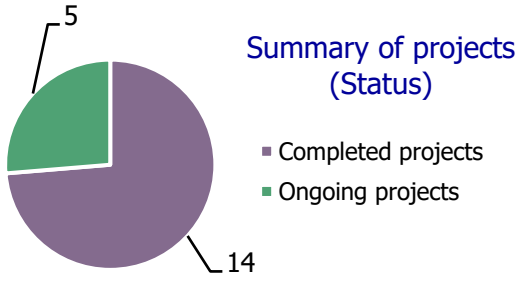
9	Drill wear monitoring using soft computing techniques	02.11.2004	01.11.2007	3,00,000
10	Design and development of mathematical model for ultrafast cooling of steel strips	01.09.2006	31.12.2007	5,61,200
			Total (in Rs)	**32,37,72,000**

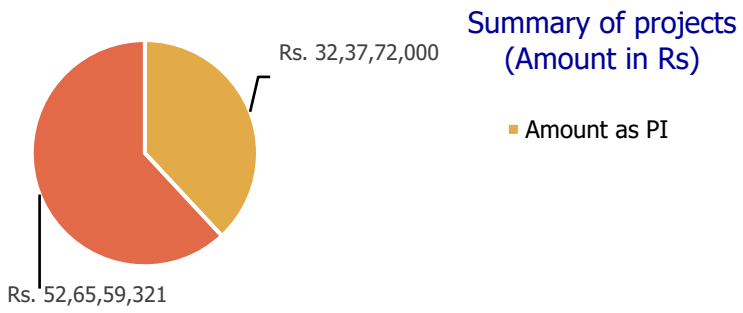
LIST OF PROJECTS AS Co-PI:

Sl. no.	Title of the project	Start date	End date	Amount (in Rs)
1	Establishment of TIH on AI and ML for ICPS	11.03.2020	10.09.2020	7,25,00,000
2	Opened & intelligent plug-in hybrid electric vehicle (PHEV) technologies for smart Indian cities	13.10.2016	05.11.2021	19,89,00,000
3	Microstructure property correlation in hot and cold rolled high strength steels	25.01.2017	19.07.2019	41,64,000
4	Research on AGV	27.06.2014	31.08.2018	2,18,30,000
5	Thermomechanically processed high strength bainitic steel rails for Indian railways	01.09.2012	28.02.2017	1,99,65,000
6	Thermo-mechanically processed high strength baintic steel rails for Indian Railways – TBR Bridge Project	01.06.2016	30.09.2016	4,25,000
7	Steel Technology Centre	19.12.2007	18.12.2012	20,25,86,400
8	Heat transfer characterisation of nozzles used in continuous caster & designing of heat transfer simulator for secondary cooling region	10.08.2016	09.08.2017	24,84,000
9	Laser additive manufacturing of tungsten carbide tool for friction stir welding of aluminium to steel	08.03.2020	07.03.23	37,04,921
			Total (in Rs)	**52,65,59,321**

SUMMARY OF PROJECTS:







Total amount of projects (completed + ongoing) = Rs 85,03,31,321

(~ INR 85 Cr)

RESEARCH PUBLICATIONS:

LIST OF PATENTS FILED:

Sl. no.	Title of the patent	Year
1	Banerjee, A., Mishra, D., Nayak, P., Pal, S. K., Chakravarty, D. "Low-cost real-time machine vision based quality inspection system" (Filed Ref No: 202031050404)	2020
2	Kumar, K., Majumdar, A., Chandra M. G., Kumar, A., Mishra, D., Pal, S. K., "Method and system for multi sensor fusion using transform learning" (Filed Ref No: 202021036163)	2020
3	Racherla, V., Sharma, V. M., Pal, S. K., "A system for fabrication of bonded metal foam metal sandwich structures and process thereof" (Filed Ref No: 202031010846)	2020
4	Sarkar, P., Pal, S. K., Bhattacharya, A., Mishra, P., "Friction Stir Spiral Tunneling in Pipe" (Filed Ref No: 202031010846)	2020
5	Racherla, V., Sharma, V. M., Pal, S. K., "A System for Solid State Sintering of Hollow Metallic Cylindrical Components and A Method of such Sintering" (Filed Ref No: 202031006307)	2020
6	Mishra, D., Pal, S. K., Gupta, A., Raj, P., Kumar A., Anwer S., Chakravarty, D., Pal, S., Chakravarty, T., Pal, A., Misra, P., and Misra, S. "A System for Real Time Monitoring, Prediction and Control of Weld Quality in Friction Stir Welding" (Filed Ref No: 202031000072)	2020
7	Pal, S. K., Khan, A. R., Ranjan, R., Parikh, C., Pal, S., Chakravarty, D., Maiti, A., "Real Time Surface Defect Analysis and Correction in Friction Stir Welding Process by Image Processing", (Filed Ref No: 201831035477)	2018
8	Pal, S. K., Rohan Basu, R., Singh, A. K., Barua, A., Kumar, A., Ghosh, A., Majumdar, S., Riya, Mishra, D., Pal, S., "Cloud based Remote Manufacturing with Machine Learning based Real Time Control", (Filed Ref No: 201831024813)	2018
9	Racherla, V., Sharma, V. M., Pal, S. K., "Add-on Kit for Doing Cost Effective, Energy Efficient, Rapid, Solid-State Friction Sintering on Vertical Milling/Drilling/Friction Stir Welding Machines", (Filed Ref No: 201731037839)	2017
10	Pal, S. K., Kumari, K., Mahto, R. P., Sharma, V., "A Counter Rotating Pin and Shoulder Tool Arrangement for Friction Stir Weld System", (Filed Ref No: 201631016398)	2016

11	Pal, S. K., Kumari, K., Sharma, V., “Counter Rotating Twin Tool with Variable Gap Setup for Friction Stir Welding”, (Filed Ref No: 1297/KOL/2014)	2014
	Total (in nos.)	**11**

LIST OF INTERNATIONAL BOOK CHAPTERS:

Sl. no.	Title of the book chapter	Year
1	Sarkar, P., Pal, S.K., Bhattacharya, A., Shollock, B., "An Application from a Defect—A Friction Stir Channeling Approach", In: Welding Technology, Series Title: Materials Forming, Machining and Tribology, Editor: J. Paulo Davim, Springer International Publishing, DOI: 10.1007/978-3-030-63986-0	2021
2	Sahu, S., Pal, S.K., Shome, M., Srirangam, P., "Welding of Dissimilar Metals—Challenges and a Way Forward with Friction Stir Welding", In: Welding Technology, Series Title: Materials Forming, Machining and Tribology, Editor: J. Paulo Davim, Springer International Publishing, DOI: 10.1007/978-3-030-63986-0	2021
3	Nayak, S.S., Mahto, R.P., Pal, S.K., Srirangam, P., "Microstructure and Texture in Welding: A Case Study on Friction Stir Welding", In: Welding Technology, Series Title: Materials Forming, Machining and Tribology, Editor: J. Paulo Davim, Springer International Publishing, DOI: 10.1007/978-3-030-63986-0	2021
4	Sen, D., Pal, S.K., Panda, S.K., "Tubular Structures: Welding Difficulty and Potential of Friction Stir Welding", In: Welding Technology, Series Title: Materials Forming, Machining and Tribology, Editor: J. Paulo Davim, Springer International Publishing, DOI: 10.1007/978-3-030-63986-0	2021
5	Mishra, D., Pal, S.K., Chakravarty, D., "Industry 4.0 in Welding", In: Welding Technology, Series Title: Materials Forming, Machining and Tribology, Editor: J. Paulo Davim, Springer International Publishing, DOI: 10.1007/978-3-030-63986-0	2021
6	Mishra, D., Sahu, S.K., Mahto, R.P., Pal, S.K., Pal, K., “Friction stir welding for joining of polymers. In: Dixit U., Narayanan R. (eds), Strengthening and Joining by Plastic Deformation. Lecture Notes on Multidisciplinary Industrial Engineering, Springer, 123-162	2019
7	Joshi, H. S., Pal, S. K., Chakraborty, G., “Study on the delamination of GFRP composites in drilling: A finite element model”, Simulation for Design and Manufacturing, Springer, 1-43	2018
8	Jain, R., Pal, S. K., Singh, S. B., “Thermomechanical simulation of friction stir welding process using lagrangian method”, Simulation for Design and Manufacturing, Springer, 103-146	2018
9	Rout, M., Pal, S. K., Singh, S. B., “Finite element modeling of hot rolling: Steady- and unsteady-state analyses”, Computational Methods and Production Engineering, Woodhead Publishing (Elsevier), 83-124	2017
10	Jain, R., Pal, S. K., Singh, S. B., “Numerical modeling methodologies for friction stir welding process”, Computational Methods and Production Engineering, Woodhead Publishing (Elsevier), 125-168	2017
11	Jain, R., Kumari, K., Kesharwani, R., Kumar, S., Pal, S. K., Singh, S. B., Panda, S. K., Samantaray, A. K., “Frictions stir welding: scope and recent development”, Modern Manufacturing Engineering: Research, Development and Education, Springer, 179-229	2015
12	Rout, M., Pal, S. K., Singh, S. B., “Cross rolling: A metal forming process”, Modern Manufacturing Engineering: Research, Development and Education, Springer, 41-64	2015
13	Sardar, S., Mandal, A., Pal, S. K., Singh, S. B., “Solid-State Joining by Roll Bonding and Accumulative Roll Bonding”, in Advances in Material Forming and Joining, Springer, 351-377	2015
14	Dutta, S., Pal, S. K., Sen, R., “Digital image processing in machining”, Modern Mechanical Engineering, Springer, 367-410	2014

15	Priyadarshini, A, Pal, S. K., Samantaray, A. K., “Finite element modeling of chip formation in orthogonal machining”, Statistical and Computational Techniques in Manufacturing, Springer, 101-144	2012
	Total (in nos.)	**15**

LIST OF INTERNATIONAL JOURNAL PAPERS:

Sl. no.	Title of the paper	Year
1	Mishra, D., Gupta, A., Raj, P., Kumar, A., Anwer, S., Pal, S. K., Chakravarty, D., Pal, S., Sensor-based real-time information for monitoring and control of a manufacturing process, Engineering Research Express, IOP Publishing.	2021
2	Sahu, S., Mypati, O., Pal, S.K., Shome, M., Srirangam, P., "Effect of weld parameters on joint quality in friction stir welding of Mg alloy to DP steel dissimilar materials", CIRP Journal of Manufacturing Science and Technology, Elsevier Publications (Accepted: 11 June 2021).	2021
3	Mishra, D., Shree, S., Gupta, A., Priyadarshi, A., Das, S., Pal, S. K., Chakravarty, D., Pal, S., Chattopadhyay, T., Pal, A., “Weld defect localization in friction stir welding process”, Welding in the World, Springer, Accepted on November 18, 2020	2020
4	Kumar, K. Majumdar, A., Chandra, M. G., Kumar, A., Mishra, D., Pal, S. K., “TransFuse: A Transform Learning based Multi-Sensor Fusion Framework”, IEEE Sensors Letters, IEEE, Accepted on November 11, 2020	2020
5	Sahu, S., Mishra, D., Pal, K., Pal, S. K., “Multi-sensor based strategies for accurate prediction of friction stir welding of polycarbonate sheets”, Proceedings of the Institution of Mechanical Engineers, Part: C Journal of Mechanical Engineering Sciences, Sage Publications, Accepted on August 31, 2020	2020
6	Iqbal, Md P., Vishwakarma, R., Pal, S. K., Mandal, P., “Influence of plunge depth during friction stir welding of aluminum pipes”, Proceedings of the Institution of Mechanical Engineers, Part: B Journal of Engineering Manufacture, Sage Publications, Accepted on July 18, 2020	2020
7	Iqbal, Md P., Tripathi, A., Jain, R., Mahto, R. P., Pal, S. K., Mandal, P., “Numerical modelling of microstructure in friction stir welding of aluminium alloys”, International Journal of Mechanical Sciences, Elsevier Publications, 185, 105882, 2020.	2020
8	Mahto, R. P., Pal, S. K., “Friction Stir Welding of Dissimilar Materials: An Investigation of Microstructure and Nano-Indentation Study”, Journal of Manufacturing Processes, Elsevier Publications, 55, 103-118	2020
9	Roy, R. B., Mishra, D., Pal, S. K., Chakravarty, T., Panda S., Chandra M. G., Pal, A., Misra P., Chakravarty, D., Misra S., “Digital twin: current scenario and a case study on a manufacturing process”, The Internal Journal of Advanced Manufacturing Technology, Springer Publications (Accepted: 6 April 2020)	2020
10	Sadhu, A., Patrakarmkar, D., Mypati, O., Gopinath, M., Pal, S. K., Nath. A. K., “Performance of additive manufactured Stellite 6 tools in friction stir processing of CuCrZr sheet”, Optics and Laser Technology, Elsevier Publications (Accepted: 22 March 2020)	2020
11	Mishra, D., Gupta, A., Raj, P., Kumar, A., Anwer, S., Pal, S. K., Chakravarty, D., Pal, S., Chakravarty, T., Pal, A., Misra, P., Misra, S., “Real time monitoring and control of friction stir welding process using multiple sensors”, CIRP Journal of Manufacturing Science and Technology, Elsevier Publications (Accepted: 16 March 2020)	2020

12	Sadhu, A., Choudhary, A., Sarkar, S., Nair, A. M., Nayak, P., Dadasaheb, P. S., Gopinath, M., Pal, S. K., Nath. A. K., "A study on the influence of substrate pre-heating on mitigation of cracks in direct metal laser deposition of NiCrSiBC-60%WC ceramic coating on Inconel 718", Surface and Coatings Technology, Elsevier Publications (Accepted: 16 March 2020)	2020
13	Sharma, A., Sharma, V. M., Gugaliya, A., Rai, P., Pal, S. K., Paul, J., "Friction stir lap welding of AA6061 aluminium alloy with a graphene interlayer", Materials and Manufacturing Processes, Taylor & Francis, (Online: 28 Jan 2020). DOI: 10.1080/10426914.2020.1718694	2020
14	Mahto, R. P., Kumar, R., Pal, S. K., "Characterizations of weld defects, intermetallic compounds and mechanical properties of friction stir lap welded dissimilar alloys", Materials Characterization, Elsevier Publications, 160, 110115	2020
15	Sengupta, I., Kumar, S., Pal, S. K., Chakraborty, S., "Characterization of Structural Transformation of Graphene Oxide to Reduced Graphene Oxide during Thermal Annealing", Journal of Materials Research, (Accepted: 21 February 2020)	2020
16	Mypati, O., Mishra, D., Sahu, S., Pal, S. K., Srirangam, P., "A study on electrical and electrochemical characteristics of Lithium-ion battery tabs for electric vehicles" Journal of Electronic Materials, Springer (Accepted: 09 October 2019)	2020
17	Rout, M., Singh, S. B., Pal, S. K., "Microstructure and texture evolution in austenitic stainless steel during low strain rate deformation at elevated temperature", International Journal of Material Forming, Springer (First Online: 23 July 2019)	2019
18	Sarkar, I., Priyanka, V., Jha, J. M., Pal, S. K., Chakraborty, S., "Application of binary mixed surfactant additives in jet impingement cooling of a hot steel plate", Heat and Mass Transfer, Springer (First online: 11 June 2019)	2019
19	Iqbal, Md P., Jain, R., Pal, S. K., "Numerical and experimental study on friction stir welding of aluminum alloy pipe" Journal of Materials Processing Technology, Elsevier Publication, 274, 116258	2019
20	Sengupta. I., Bhattacharya, P., Talukdar, M., Neogi, S., Pal, S. K., Chakraborty, S., "Bactericidal effect of graphene oxide and reduced graphene oxide: Influence of shape of bacteria", Colloid and Interface Science Communications, Elsevier Publication, 28, 60-68	2019
21	Sharma, A., Sharma, V. M., Sahoo, B., Pal, S. K., Paul, J., "Effect of multiple micro channel reinforcement filling strategy on Al6061-graphene nanocomposite fabricated through friction stir processing", Journal of Manufacturing Processes, Elsevier Publications, 37, 53–70	2019
22	Sharma, V. M., Racherla, V., Pal, S. K., "Synthesis of Open-Cell Copper Foam using Friction Sintering", The International Journal of Advanced Manufacturing Technology, (First Published May 09, 2019), 1-12	2019
23	Mypati, O., Sadhu, A., Sahu, S., Mishra, D., Pal, S. K., Singh, S. B., Srirangam, P., "Enhancement of joint strength in friction stir lap welding AA6061 to AISI 304 by adding diffusive coating agents" Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, SAGE Journals (First Published April 26, 2019), 1-14	2019
24	Kumari S., Jain, R., Kuar, U., Yadav, I., Kumar, N., Kumari, K., Kesharwani R. K., Kumar, S., Pal, S., Pal, S. K., Chakravarty, D., "Defect identification in friction stir welding using continuous wavelet transform", Journal of Intelligent Manufacturing, Springer, 30(2), 483-494	2019
25	Mahto, R.P., Gupta, C., Kinjawadekar, M., Meenaa, A., Pal, S. K., "Weldability of AA6061-T6 and AISI 304 by underwater friction stir welding" Journal of Manufacturing Processes, Elsevier Publications, 38, 370–386	2019
26	Mahto, R. P., Anishetty, S., Sarkar, A., Mypati, O., Pal, S. K., Majumdar, J. D., "Interfacial microstructural and corrosion characterizations of friction stir welded AA6061-T6 and AISI304 materials", Metal and Material International, Springer, 25(3), 752–767	2019

27	Chakraborty, S., Sarkar, I., Roshan, A., Pal, S. K., Chakraborty, S., "Spray cooling of hot steel plate using aqueous solution of surfactant and polymer", Thermal Science and Engineering Progress, Elsevier Publications, 10, 217-231	2019
28	Chakraborty, S., Sengupta, I., Sarkar, I., Pal, S. K., Chakraborty, S., "Effect of surfactant on thermo-physical properties and spray cooling heat transfer performance of Cu-Zn-Al LDH nanofluid", Applied Clay Science, Elsevier Publication 168, 43-55	2019
29	Sahu, S. K., Mishra, D., Mahto, R. P., Sharma, V. M., Pal, S. K., Pal, K., Banerjee, S., Dash, P., "Friction stir welding of polypropylene sheets", Engineering Science and Technology, an International Journal, Elsevier Publications, 21(2), 245-254	2018
30	Sarkar, I., Chakraborty, S., Ashok, A., Sengupta, I., Pal, S. K., Chakraborty, S., "Comparative study on different additives with a jet array on cooling of a hot steel surface", Applied Thermal Engineering, Elsevier Publications, 137, 154-163	2018
31	Sarkar, I., Chakraborty, S., Roshan, A., Behera, D. K., Pal, S. K., Chakraborty, S., "Application of TiO2 nanofluid-based coolant for jet impingement quenching of a hot steel plate", Experimental Heat Transfer, Taylor & Francis, 32(4), 322-336	2018
32	Sengupta I., Chakraborty S., Talukdar M., Pal S. K., Chakraborty S., "Thermal reduction of graphene oxide: How temperature influences purity" Journal of Materials Research, Cambridge Core, 33(23), 4113-4122	2018
33	Sharma, A., Sharma, V. M., Mewar, S., Pal, S. K., Paul, J., "Surface modification of Al6061 by graphene impregnation through a powder metallurgy assisted friction surfacing", Surface and Coatings Technology, Elsevier Publication, 337, 12-23	2018
34	Sharma, V. M., Racherla, V., Pal, S. K., "Friction sintering of brass powder, Advances in Materials and Processing Technologies, Taylor & Francis Online, 5(1), 95-103	2018
35	Roy, R. B., Ghosh, A., Bhattacharyya, S., Mahto, R. P., Kumari, K., Pal, S. K., Pal, S., "Weld defect identification in friction stir welding through optimized wavelet transformation of signals and validation through X-ray micro-CT scan",The International Journal of Advanced Manufacturing Technology, Springer, 99(1–4), 623–633	2018
36	Rout, M., Ranjan, R., Pal, S. K., Singh, S. B., "EBSD study of microstructure evolution during axisymmetric hot compression of 304LN stainless steel: Materials Science & Engineering A, Elsevier Publication, 711, 378-388	2018
37	Rout, M., Pal, S. K., Singh, S. B., "Prediction of edge profile of plate during hot cross rolling", Journal of Manufacturing Processes, Elsevier Publication, 31, 301-309	2018
38	Rout, M., Biswas, S., Ranjan, R., Pal, S. K., Singh, S. B., "Deformation behavior and evolution of microstructure and texture during hot compression of AISI 304LN stainless steel", Metallurgical and Materials Transaction A, Springer, 49(3), 864-880	2018
39	Mishra, D., Roy, R. B., Dutta, S., Pal, S. K., Chakravarty, D., "A review on sensor based monitoring and control of friction stir welding process and a roadmap to Industry 4.0", Journal of Manufacturing Processes, 36, 373-397	2018
40	Jain, R., Kumari, K., Pal, S. K., Singh, S. B., "Counter rotating twin-tool system in friction stir welding process: a simulation study", Journal of Materials Processing Technology, Elsevier Publication, 255, 121-128	2018
41	Jain, R., Pal, S. K., Singh, S. B., "Investigation on effect of pin shapes on temperature, material flow and forces during friction stir welding: A simulation study", Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, SAGE Journals, First Published October 20, 2019, 1-14	2018
42	Jain, R., Pal, S. K., Singh, S. B., "Finite element simulation of pin shape influence on material flow and forces in friction stir welding", International Journal of Advanced Manufacturing Technology, Springer, 94 (5-8), 1781-1797	2018
43	Mahto, R. P., Kumar, R., Pal, S. K., Panda, S. K., "A comprehensive study on force, temperature, mechanical properties and micro-structural characterizations in friction stir lap welding of	2018

	dissimilar materials (AA6061-T6 & AISI304)", Journal of Manufacturing Processes, Elsevier Publications, 31, 624–639	
44	Chauhan, P., Jain, R., Pal, S. K., Singh, S. B., "Modeling of defects in friction stir welding using coupled Eulerian and Lagrangian method", Journal of Manufacturing Processes, Elsevier Publication, 34(A), 158-166	2018
45	Chakraborty, S., Sarkar, I., Ashok, A., Sengupta, I., Pal, S. K., Chakraborty S., "Thermo-physical properties of Cu-Zn-Al LDH nanofluid and its application in spray cooling", Applied Thermal Engineering, Elsevier Publication, 141, 339-351	2018
46	Chakraborty, S., Sarkar, I., Ashok, A., Sengupta, I., Pal, S. K., Chakraborty, S., "Synthesis of Cu-Al LDH nanofluid and its application in spray cooling heat transfer of a hot steel plate", Powder Technology, Elsevier Publications, 335, 285-300	2018
47	Sharma, A., Sharma, V. M., Mewar, S., Pal, S. K., Paul, J., "Friction stir processing of Al6061-SiC-graphite hybrid surface composites", Materials and Manufacturing Processes, Taylor & Francis Online, 33 (7), 795-804	2018
48	Sarkar, I., Chakraborty, S., Jha, J. M., Pal, S. K., Chakraborty, S., "Ultrafast cooling of a hot steel plate using Cu-Al layered double hydroxide nanofluid jet", International Journal of Thermal Sciences, Elsevier Publication, 116, 52-62	2017
49	Tiara, A. M., Chakraborty, S., Sarkar, I., Pal, S. K., Chakraborty, S., "Effect of alumina nanofluid jet on the enhancement of heat transfer from a steel plate", Heat and Mass Transfer, Springer, 53 (6), 2187-2197	2017
50	Tiara, A. M., Chakraborty, S., Sarkar, I., Pal, S. K., Chakraborty, S., "Synthesis and characterization of Zn-Al layered double hydroxide nanofluid and its application as a coolant in metal quenching", Applied Clay Science, Elsevier Publication, 143, 241-249	2017
51	Tiara, A. M., Chakraborty, S., Sarkar, I., Ashok, A., Pal, S. K., Chakraborty, S., "Heat transfer enhancement using surfactant based alumina nanofluid jet from a hot steel plate", Experimental Thermal and Fluid Science, Elsevier Publication, 89, 295-303	2017
52	Parikh, C., Ranjan, R., Khan, A. R., Jain, R., Mahto, R. P., Chakravarty, D., Pal, S., Pal, S. K., "Volumetric defect analysis in friction stir welding based on three dimensional reconstructed images", Journal of Manufacturing Processes, Elsevier Publication, 29, 96-112	2017
53	Jha, J M., Sarkar, I., Pal, S. K., Chakraborty, S., "Heat transfer from a hot moving steel plate by using Cu-Al layered double hydroxide nanofluid based air atomized spray", Experimental Heat Transfer, Taylor & Francis Online, 30 (6), 500-516	2017
54	Kesharwani, R. K., Basak, S., Panda, S. K., Pal, S. K., "Improvement in limiting drawing ratio of aluminum tailored friction stir welded blanks using modified conical tractrix die", Journal of Manufacturing Processes, Elsevier Publication, 28 (1), 137-155	2017
55	Chakraborty, S., Sarkar, I., Behera, D. K., Pal, S. K., Chakraborty, S., "Experimental investigation on the effect of dispersant addition on thermal and rheological characteristics of TiO2 nanofluid", Powder Technology, Elsevier Publication, 307, 10-24	2017
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9	Mypati, O., Sadhu, A., Sahu, S., Mishra, D., Pal, S. K., "Formation of kamacite (Fe, Ni) to increase the mechanical strength of friction stir lap welding of aluminium to steel aided with coating", 7th Asia Steel International Conference, Bhubaneswar, Odisha	2018
10	Sahu, S., Mypati, O., Pal, S. K., Singh, S. B., "Effect of tool geometry on weld strength and hardness in friction stir lap welding of dissimilar materials", 7th Asia Steel International Conference, Bhubaneswar, Odisha	2018
11	Mahto, R. P., Gaikwad, J., Kumar, R., Pal, S. K.; "Friction stir lap welding of AA6061-T6 and AISI304: Mechanical and metallurgical properties of stir zone", 7th Asia Steel International Conference, Bhubaneswar, Odisha	2018
12	Rout, M., Singh, S. B., Pal, S. K., "Study on static recrystallisation behaviour of 304ln stainless steel by two-stage compression test", 7th Asia Steel International Conference, Bhubaneswar, Odisha	2018
13	Sengupta I., Talukdar, M., Pal, S. K., Chakraborty S., "Modified synthesis and reduction of graphene oxide by thermal treatment", MRS Spring Meeting and Exhibit 2018, Phoenix, Arizona, USA	2018
14	Talukdar, M., Sengupta I., Pal, S. K., Chakraborty S., "Characterization of thermo physical properties of graphene oxide and reduced graphene oxide nanofluids", MRS Spring Meeting and Exhibit 2018, Phoenix, Arizona, USA	2018
15	Mishra, D., Basu Roy, R., Dutta, S., Pal S. K., Chakravarty D., "Concept of industry 4.0 in friction stir welding", Industry 4.0 summit	2018
16	Mahto, R. P., Pal, S. K., "Friction stir lap welding of thin AA6061-T6 and AISI304 sheets at different values of pin penetrations", ASME 2018 13th International Manufacturing Science and Engineering Conference	2018
17	Sharma, V. M., Maity, D., Racherla, V., Pal, S. K., "Friction sintering of copper powder using a new rapid, cost effective and energy efficient process", ASME 2018 13th International Manufacturing Science and Engineering Conference	2018
18	Sahu, S., Mypati, O., Nayak, S. S., Sarkar, P., Pal, S. K. Singh, S. B., "Friction stir welding for joining of dissimilar materials", 7th International and 28th All India Manufacturing Technology, Design and Research Conference, Anna University, Chennai	2018
19	Mahto, RP, Kinjawadekar, M., Gupta, C., Pal, S. K., "Effect of pin diameter in underwater friction stir lap welding of dissimilar materials: AA6061-T6 & AISI 304", 7th International and 28th All India Manufacturing Technology, Design and Research Conference, Anna University, Chennai	2018
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21	Pal, S. K.; "Industry 4.0 in friction stir welding", National Conference on Advanced Functional Materials Processing and Manufacturing (NCAMMM), CMERI Durgapur	2018
22	Sarkar, I., Pal, S. K., Chakraborty S. "Synthesis of titanium dioxide nanofluid and application in jet impingement cooling in steel industries", ACS 254th National Meeting and Exposition	2017
23	Iqbal, Md P., Jain, R., Pal, S. K., "Finite element modeling of friction stir pipe welding", National conference on Advanced Functional Materials Processing And Manufacturing, CMERI Durgapur, Excel India Publishers, New Delhi, 72-75	2017
24	Sahu, S. K., Panda, M., Mahto, R. P., Pal, S. K., Pal, K., Das, P., "Experimental investigation to join Al 6063 alloy to polypropylene using friction stir welding", Proceedings of the 10th International Conference on Precision, Meso, Micro and Nano Engineering (COPEN 10), 727-731	2017

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26	Jain, R., Pal, S. K., Singh, S. B., “Simulation of material flow in friction stir welding”, Proceedings of the International Conference on Advances in Materials and Manufacturing, (ICAMM), Hyderabad, 51-56	2016
27	Rout, M., Pal, S. K., Singh, S. B., Biswas, S. “Evolution of microstructure and texture in 304 austenitic stainless steel by two different modes of hot rolling”, Proceedings of the International Conference on Advances in Materials and Manufacturing, (ICAMM), Hyderabad, 411- 416	2016
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34	Chakraborty S, Pal, S. K., Chakraborty S., “Spray cooling of hot steel plate using water based TiO2 nanofluid”, AICHE Annual Meeting, 2016	2016
35	Rout, M., Krishna, K. S., Pal, S. K., Singh, S. B., “Experimental study of plastic anisotropy in hot cross rolling”, 2nd International Conference on Rolling & Finishing Technology of Steel, SAIL, RDCIS, Ranchi, India, Iron & Steel Review, 59(4), 155-158	2015
36	Pal, S. K., Kumari, K., “Friction stir welding: Application and development”, 4th National Conference on Advances in Metrology (Ad-Met), CSIR-CMERI, XIV-XV	2015
37	Kesharwani, R., Panda, S. K., Pal, S. K., “Multi objective optimization of friction stir welding parameters for joining of two dissimilar thin aluminum sheets” 3rd International Conference on Material Processing and Characterization (ICMPC), GRIET Hyderabad	2014
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39	Sardar, S., Mandal, A., Pal, S. K., Singh, S. B., “Accumulative roll bonding of aa6005 and aa1060 metal strip: Study on microstructure, mechanical properties and minimum bonding criteria”, 5th International and 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR), IIT Guwahati	2014
40	Kumari, K., Pal, S. K., “Study on the novel twin-tool system in friction stir welding process”, 5th International and 26th All India Manufacturing Technology, Design and Research Conference (AIMTDR), IIT Guwahati	2014

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45	Jain, R., Pal, S. K., Singh, S. B., "Finite element simulation of effect of process parameters on forces and spindle torque in friction stir welding", International Conference on Friction Based Processes, (ICFP), IISc, Bangalore	2014
46	Pal, K., Pal, S. K., "Artificial neural network based monitoring of weld quality in pulsed metal inert gas welding using wavelet packets of current signal" National conference on recent trends in manufacturing science and technology (RTMST), NITTTR, Kolkata	2013
47	Pal, Kamal, Pal, S. K., "Neural network based modeling of joint mechanical properties in pulsed MIG welding using statistical features of sensor signals", National Conference on Advances in Simulation and Optimization Techniques in Mechanical Engineering, KIIT University, Orissa	2012
48	Chatterjee, S., Chatterjee, R., Pal, S., Pal, K., Pal, S. K., "Accurate detection of weld defects using chirplet transform", 4th International Conference on Computer and Automation Engineering (ICCAE), Mumbai, India	2012
49	Joshi H. S., Pal S. K., Chakraborty, G., Mandal P. S., "Estimation of thrust force using finite element analysis during drilling of GFRP composites", International Conference on Global Technology Initiatives, Mumbai, India	2012
50	Pal, K., Pal, S. K., "Multi-sensor based prediction of weld quality characteristics in pulsed GMAW using artificial neural network", 4th International and 25th All India Manufacturing Technology, Design and Research Conference (AIMTDR), Jadavpur University	2012
51	Mohapatra, S. S., Palleti, V. R., Chakraborty, S., Pal, S. K., "Experimental study of ultra-fast cooling of a hot steel plate by air-assisted spray at high mass flux" International Conference on Advanced in Materials and Materials Processing (ICAMMP), IIT Kharagpur, India, 32	2011
52	Datta, A., Dutta, S., Pal, S. K., Sen, R., Mukhopadhyay, S., "Texture analysis of turned surface images using grey level co-occurrence technique", International Conference of Future Materials Engineering and Industrial Applications (ICFMEIA), Bali, Indonesia	2011
53	Saha, P., Pal, S.K., Saha, P., "Parametric optimization in wedm of wc-co composite by neuro-genetic technique", Proc. of the International Conference on Mechanical Engineering, Imperial College, London, 2204-2209	2011
54	Ravi Shankar, S. N., Pal, S. K., Samantaray A. K., "Drilling of glass fibre reinforced plastic (GFRP) composite: experimental investigation on effects of process parameters", International Conference on Advances in Mechanical Engineering (ICMAE), S.V. National Institute of Technology, Surat	2010
55	Ghosh, M., Das, D., Mandal, S., Chakraborty, C., Pal, M., Maity, A., Pal, S. K., Ray, A. K., "Statistical pattern analysis of white blood cell nuclei morphometry", IEEE Students' Technology Symposium, IIT Kharagpur	2010
56	Patra, K., Pal, S. K., Bhattacharyya, K., "Strategies for intelligent tool wear prediction in a machining process", 23rd International congress on Condition Monitoring and Diagnostic Engineering Management (COMADEM), 623-626, Nara, Japan	2010
57	Saha, P., Pal, S. K., Saha, P., "Modeling and multi-objective optimization in wire electro-discharge machining of in-situ tic reinforced austenitic manganese steel matrix composite", National	2010

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58	Jain, R., Pal, S. K., "Effect of process parameters on cutting forces and temperature in turning aisi 4340 using finite element approach", National Conference on Recent Advances in Manufacturing Technology and Management (RAMTM), Jadavpur University, Kolkata	2010
59	Das Chakladar, N., Pal, S. K., Mandal, P. S., "Finite element estimation of cutting parameters in drilling glass fiber reinforced plastic (GFRP) plates", National Conference on Recent Advances in Manufacturing Technology and Management (RAMTM), Jadavpur University, Kolkata	2010
60	Pal, K., Pal, S. K., "Artificial neural network based prediction of metal deposition in pulsed MIG welding using sensor signals", National Conference on Recent Advances in Manufacturing Technology and Management (RAMTM), Jadavpur University, Kolkata, 169-174	2010
61	Pal, K., Pal, S. K., "Modeling and control of a gas metal arc welding process using soft computing tools and sensor signals: A review", International Conference Emerging Research and Advances in Mechanical Engineering (ERA), Chennai	2009
62	Priyadarshini, A., Pal, S. K., Samantaray, A. K., "Estimation of heat generation and cutting tool temperature in orthogonal machining: A review", International Conference Emerging Research and Advances in Mechanical Engineering (ERA), Chennai	2009
63	Ravishankar, S. N., Pal, S. K., Samantaray A. K., "Drilling of glass fibre reinforced plastics: A review", International Conference Emerging Research and Advances in Mechanical Engineering (ERA), Chennai	2009
64	Priyadarshini, A., Pal, S. K., Samantaray, A. K., "Finite element study of serrated chip formation", International Conference on Advances in Mechanical Engineering (ICMAE), S.V. National Institute of Technology, Surat	2009
65	Pal, K., Pal, S. K., "Characterization of weld quality and process stability in pulsed MIG welding using sensor signals", International Conference on Advances in Mechanical Engineering (ICMAE), S.V. National Institute of Technology, Surat, 1019-1023	2009
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67	Garg, S., Chakraborty D., Deb, S., Pal, S. K., "A neuro-memetic model for the prediction of drill flank wear", International Conference on Advances in Manufacturing and Technology Management (ICAMTM), Mumbai, India, 9-15	2007
68	Ranjan, R., Abhishek K., Patra, K., Pal, S. K., Samantaray, A. K., "Prediction of drill flank wear using a neuro-GA model" Proceedings of the Global Conference on Production and Industrial Engineering, (CPIE), NIT Jalandhar	2007
69	Sarkar, A., Pal, S., Pal, S. K., Samantaray, A. K., "Prediction of welding joint strength and bead geometry in pulsed gas metal arc welding using artificial neural network" Proceedings of the Global Conference on Production and Industrial Engineering, (CPIE), NIT Jalandhar	2007
70	Saha, P., Singha, A., Pal, S. K., Saha, P., "A neural network approach for modeling the wire electro discharge machining of tungsten carbide cobalt composite", Proceedings of the Global Conference on Production and Industrial Engineering, (CPIE), NIT Jalandhar, 38	2007
71	Pal, S., Pal, S. K., Samantaray, A., K., "Determination of optimal pulse metal inert gas welding parameters using neuro-GA technique", Proceedings of the 4th International Conference of Theoretical, Applied Computational and Experimental Mechanics (ICTACEM), IIT Kharagpur, 301	2007
72	Patra, K., Pal, S. K., Bhattacharyya, K., "Artificial neural network based tool condition monitoring in drilling using vibration signal analysis", Proceedings of the 4th International Conference of Theoretical, Applied Computational and Experimental Mechanics (ICTACEM), IIT Kharagpur, 476.	2007

73	Saha, P., Pal, S. K., Saha, P., "Application of fully supervised radial basis function network for prediction of machining performance in wire-EDM", International Conference of Precision, Meso, Micro and Nano Engineering (COPEN), 81-86	2007
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76	Panda, S. S., Chakraborty, D., Pal, S. K., "Prediction of drill flank wear using radial basis function neural network", Proceedings of the National Conference on Soft Computing Techniques for Engineering Applications, NIT Rourkela, 94-102	2006
77	Mandal, D., Pal, S. K., Saha, P., "Modelling of electric discharge machining using artificial neural network", Proceedings of the National Conference on Soft Computing Techniques for Engineering Applications, NIT Rourkela, 153-158	2006
78	Pal, S., Pal, S. K., Samantaray, A. K., "A review on gas metal arc welding process modelling and control using soft computing", Proceedings of the National Conference on Soft Computing Techniques for Engineering Applications, NIT Rourkela, 145-152	2006
79	Patra, K., Pal, S. K., Bhattacharyya, K., "Application of a soft computing technique in drilling", Proceedings of the National Conference on Soft Computing Techniques for Engineering Applications, NIT Rourkela, 137-144	2006
80	Saha, P., Pal, S. K., Saha, P., "A survey of soft computing methods used in wire-edm", Proceedings of the 12th National Conference on Machines and Mechanisms, IIT Guwahati, 243-248	2005
81	Patra, K., Pal, S. K., "Soft computing techniques applied to tool condition monitoring in drilling-a review", Proceedings of the 12th National Conference on Machines and Mechanisms, IIT Guwahati, 189-194	2005
82	Mandal, M., Pal, S. K., "Bond graph modelling of temperature distribution within a slab in reheat furnace", Proceedings of the National Conference on Advance Manufacturing and Robotics, Durgapur, India, 427-434	2004
83	Pal, S. K., Muramalla, B. S., "Finite element application in metal cutting", Lecture Notes on Application of Finite Element Method in Manufacturing (QIP-Short-Term Course), IIT Guwahati, 43-56	2004
84	Pal, S. K., Mukherjee, A., Karmakar, R., "A novel approach to metallurgical process modelling", International Conference on Advances in Materials and Materials Processing (ICAMMP), I.I.T., Kharagpur, India, 591-598	2002
85	Pal, S. K., Talamantes-Silva, J., Linkens, D. A., Howard, I. C., "Bond graph and finite element analysis of temperature distribution in hot rolling processes", International Conference on Thermomechanical Processing: Mechanics, Microstructure, Control, Sheffield, U.K	2002
86	Pal, S. K., Linkens, D. A., "An integrated bond graph model for multipass rolling processes", IEEE International Conference on Systems, Man and Cybernatics, Tunisia, 50	2002
87	Pal, S. K., Linkens, D. A., "Bond graph modelling of thermal phenomena in hot rolling", International Conference of Bond Graph Modelling (ICBGM), Society for Computer Simulation, Arizona, USA, 33(1), 253-256	2001
88	Pal, S. K., Linkens, D. A., "Effect of roll gap on temperature distribution in slab during steel hot rolling: A bond graph approach", IFAC Symposium on Automation in Mining, Mineral and Metal Processing, Tokyo, Japan, 59-62	2001
89	Pal, S. K., Linkens, D. A., "Effect of roll speed on temperature in hot metal rolling: A bond graph approach", European Simulation Symposium, Marseilles, France, 818-821	2001

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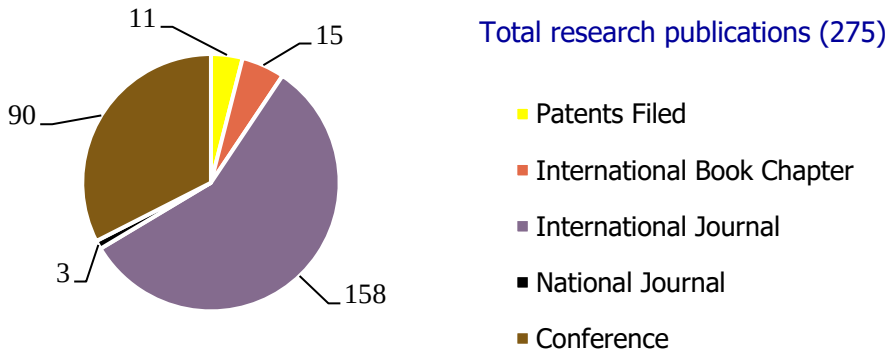
	Total (in nos.)	**90**

SUMMARY OF RESEARCH PUBLICATIONS:

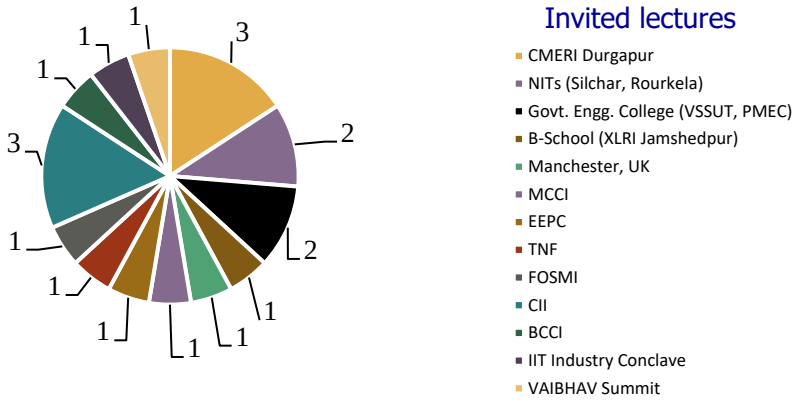


RESEARCH CITATIONS AND SCORE:

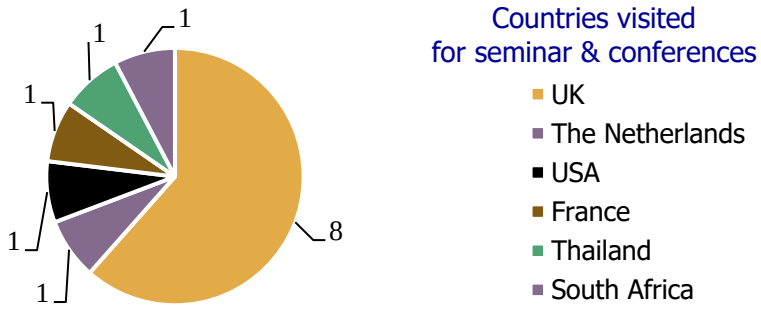
Google scholar profile: https://scholar.google.co.in/citations?user=rj8w-HgAAAAJ&hl=en

Research Gate profile: https://www.researchgate.net/profile/Surjya-Pal

INVITED LECTURES *(Seminar, Webinar, Conference, Workshop, Short-term course etc.)*:



ABROAD & FOREIGN VISITS FOR SEMINARS & CONFERENCES:



INDUSTRY – ACADEMIA JOINT COLLABORATION ACTIVITIES: