CURRICULUM VITAE

1. **Name in full:** Dr.-Ing. Jyotsna Dutta Majumdar

2. **Address for Correspondence:**
Professor
Department of Metallurgical and Materials Engineering
IIT Kharagpur, West Bengal – 721 3012, INDIA
Ph.: 03222 28 3288 (O)
: 03222 28 3289 (R)/ 03222 220026 (R)
FAX: 03222 55303, 77345
e-mail: jyotsna@metal.iitkgp.ernet.in
jyotsnadmajumdar@hotmail.com
duttamajumdarjyotsna@gmail.com

3. **Nationality:** Indian (by birth).

4. **Academic Qualifications:**

Degree	Board/University	Major	Year
B. E.	Calcutta University (B. E. College)	Metallurgy	1990
M. Tech	I. I. T., Kharagpur	Metallurgical Engineering	1991
Ph.D	I. I. T., Kharagpur	Metal. Engg.	1999
Dr.-Ing	T. U. Clausthal, Germany	Materials Science and Technology	2000

5. **Awards and/or Other Recognitions Received:**

1. POWER Fellow, 2021, Science and Engineering Research Board (SERB), N. Delhi, India

2. Fellow, Institute of Engineers, India, 2017.

3. Distinguished Woman in Engineering, 2017 by Venus International Foundation, Chennai in March, 2017.

4. Fellow, West Bengal Academy of Science and Technology, 2016

5. **Friedrich Wilhelm Bessel Research Award** under Alexander von Humboldt Foundation (AvH), 2015.
6. **MRSI MEDAL – 2013, awarded by Materials Research Society of India**,
7. **2012- Metallurgist of the Year**, awarded by the Ministry of Steel, India.
8. **DAAD Re-invitation fellowship** to visit Institute of Materials Research – I, Karlsruhe Institute of Technology, Germany during May-July, 2012.
9. **Bharat Jyoti Award**, awarded by India International Friendship Society, 2011
10. **Indira Gandhi Siromoni Award**, awarded by India International Friendship Society, 2011
11. Elected as the **Life Member**, National Academy of Science, Allahabad
12. **Editorial Board Member**, Scientific Reports, a journal from Nature Publishing Group, 2012.

13. **Editorial Board Member**, International Journal of Emerging Technologies and Applications in Engineering Technologies and Sciences (IJ-ETA-ETS) and Lasers in Engineering
14. **Lead Guest Editor**, special issue on "Advances in Metallic Materials Processing" under Advanced Materials science and Engineering (Hinwai Publishing Corporation Ltd.)
15. **Editorial Board Member**, Lasers in Engineering, Oldcity Publishing House
16. **2nd best posters award** on the paper entitled "Laser surface coating of Fe-Cr-Mo-Y-B-C bulk metallic glass composition on AISI 4140 steel" by M. Debnath, Anil Chikkam, N. B. Dahotre, J. Dutta Majumdar and I. Manna at the 64th Annual Technical Meeting awarded by the Indian Institute of Metals
17. **2nd best Posters award** on the paper entitled "Laser Surface Nitriding of Ti-6Al-4V for bio-implant Application" by A. Biawas, U. K. Chatterjee, L. Li, I. Manna and J. Dutta Majumdar awarded by the Indian Institute of Metals.
18. **Awarded Young Engineer Award** – 2003 by the Indian National Academy of Engineering (INAE) for contribution in the field of Laser Surface Engineering.
19. **Awarded BOYSCAST fellowship** by the Department of Science and Technology (DST) to carry out research in Laser Material Processing at the University of Institute of Science and Technology (UMIST), UK, 2004.
20. **Awarded a Young Scientist's grant** to carry out research under the FAST TRACK SCHEME of the Department of Science and Technology, 2002.
21. **Awarded Young Metallurgist of the Year-2000** by the Ministry of Steel, India.
22. Selected as a **Best Junior Researcher (among 47 under 35 worldwide)** to participate and present a Paper entitled "Laser Surface Alloying - an Advanced Surface Modification Technology" in "Shaping the Future-Global Dialogue III (Science and Technology-Thinking the Future)" forum held in Hannover, Germany during July 9 to 13th, 2000.
23. **ISCA Young Scientists' Award** (in the Materials Science Section) by the Indian Science Congress Association in the 87th Indian Science Congress, held in Pune during January 3-7, 2000.
24. **Deutscher Akademischer Austauschdienst (DAAD) Fellowship**, 1996-98. (for research work at the Technische Universität, Clausthal, Germany).
25. **Research Associate-ship** of Council of Scientific and Industrial Research to carry out research at IIT, Kharagpur, 1999, 1996; **Senior Research Fellowship** of Council of Scientific and Industrial Research for doctoral study at IIT, Kharagpur, 1995; **Senior Research Fellowship** of the Ministry of Human Resource Development for doctoral study at IIT, Kharagpur, 1992; **Junior Research Fellowship (JRF) and Elligibility for Lecturership (NET)** of Council of Scientific and Industrial Research, 1991.

6. Members of Professional Bodies/Organizations:

a. Life Member, Indian Institute of Metals (IIM)
b. Life Member, Indian Science Congress Association (ISCA)
c. Life Member, Indian Laser Association (ILA)
d. Life Member, Materials Research Society of India (MRSI)
e. Life Member, Indian Institute of Foundrymen (IIF)
f. Life Member, National Association of Corrosion Engineers

7. Areas of Speciallization/Interest: Surface Engineering; Corrosion and Environmental Degradation; Laser Materials Processing; Biomaterials; Advanced Processing of Materials

8. Professional experience:

Organization	Designation	Year From To	Nature of Experience
I. I. T., Kharagpur	Professor	13.12.2011-till date	Teaching and Research
Department of Mechanical Engineering Science (APK), Faculty of Engineering and the Built Environment (FEBE), University of Johannesburg	Visiting Professor	1 Jan. 2017-31 Dec. 2019	Talk once in a year and academic collaboration
Fraunhofer Institute of Laser Technology, Aachen	Visiting Scientist (under Friedrich Wilhelm Bessel Award Scheme)	3.06.15 to 03.12.2015 28.5.2019 to 29.6.2019	Research
Karlsruhe Institute of Technology, Germany	Visiting Scientist (under Friedrich Wilhelm Bessel Award Scheme)	11.5.18 to 15.7.2018	Research
Karlsruhe Institute of Technology, Germany	Visiting Scientist (under Friedrich Wilhelm Bessel Award Scheme)	1.6.19 to 30.6.2019	Research
I. I. T., Kharagpur	Associate Professor	12.4.2007-12.12.2011	Teaching and Research
Univ. of Chile, Santiago	Visiting Professor	17.06.07 to 30.11.07	Teaching and Research
I. I. T., Kharagpur	Assistant Professor	30.8.2000-11.04.07	Teaching and Research
UNIPRESS, Polish Academy of Science, Poland	Guest Scientist	15.05.06 to 14.07.06	Collaborative project under DST-PAS Exchange Program.
UNIPRESS, Polish Academy of Science, Poland	Guest Scientist	24.08.05 to 22.09.05	Collaborative project under DST-PAS Exchange Program.
Laser Processing Research Centre,	Academic visitor	13.01.04 to 28.06.04	Research

UMIST, UK			
B. E. College, Howrah	Lecturer	31.3.2K to 26.8.2K	Teaching and Research
TU Clausthal, Germany	Guest Scientist	1.12.01 to 31.12.01, 10.07.2K to 19.07.2K, 15.4.2K to 15.5.2K, 15.11.2K to 15.12.2K	Research under DST-DAAD PPP program.
I. I. T., Kharagpur	Research Associate (CSIR)	1.04.99 to 30.3.2K	Post Doctoral Research
I. I. T., Kharagpur	Research Fellow (MHRD)	1.10.98 to 31.03.99	Doctoral Research
TU Clausthal, Germany	Guest Scientist	4.6.96 to 30.9.98	Doctoral Research under DAAD Sandwich Program
IIT, Kharagpur	Research Associate (CSIR)	1.2.96 to 31.5.96	Docroral Research
IIT, Kharagpur	Senior Research Fellow (CSIR +MHRD)	27.1.92 to 31.1.96	Doctoral Research

9. Services Rendered to the Institute

1. Serving as Vice Chairperson and Chairperson, Central Research Facility during June to November, 2017 and December 2017 till date.
2. Serving as the Presiding Officer of the Internal Complaint Committee (July 2018 till date)
3. Served as the Professor in Charge, Central Time Table during 1st September, 2016 to 30th September, 2019.
4. Organized the 3rd International Conference on Laser and Plasma Application in Materials Science, 2015 (LAPAMS-2015) during 15th to 17th January, 2015 in Kolkata, India.
5. Organizing committee, 3rd EICOON SCHOOL *on.* Science and Technology of Renewable and Clean Energy Sources. *April 30 – May 1,* 2012
6. Serving as the **Warden** of Ladies Hostel (RLB Hall of Residence) since October, 2009; Served as an **Assistant Warden** for the SN/IG/MT Hall of residence from January 2003 to December, 2004.
7. Acted as **Convener** to organize the Annual Technical Meeting of the Indian Institute of Metals held in Kolkata during Nov. 14-17, 2009; **Convener** to organize the Annual Conference on Materials Professionals involving Students, Industry and Teachers (COMPOSIT) during January 28-29, 2006 and March 17th to 19th 2007; **Treasurer** to organize the conference on 'Structure Property Correlation' during December 14th to 16th, 2008 sponsored by DAAD, N. Delhi; **Treasurer** to organize the International Conference on Advanced Materials and Materials Processing (ICAMMP) during Feb. 1-3, 2002 held at Indian Institute of Technology Kharagpur.
7. **In-Charge**, Optical Emission Spectroscopy Laboratory; In-Charge, Field Emission Scanning Electron Microscope.
8. **Convened** the short term course on 'Introduction to Materials and Materials Processing' as a subject for Graduate Engineers from Hindustan Aeronautics Ltd., held at I. I. T. Kharagpur during Autumn 2006 to Spring 2007.

10. Services Rendered to outside the Institute

1. **Council Member**, Indian Institute of Metals, during June 2016 to June 2019.
2. **Project Assessment Committee (PAC) member** of the Metallurgical, Mining and Minerals Engineering, Science and Engineering Research Board, N. Delhi, Year: 2018 till date.
3. **Member**, Project Assessment Committee (PAC) member of the Empowerment and Equity Opportunities for Excellence in Science (EMEQ), Science and Engineering Research Board, N. Delhi, Year: 2016 till date.
4. **Co-Chair**, 2nd International Conference on Sustainable Materials Processing and Manufacturing held in North West, Sun City Resort, South Africa, during March 8 to 10, 2019.
5. **Co-Chair**, 1st International Conference on Sustainable Materials Processing and Manufacturing held in Kruger National Park, South Africa, during January 23rd to 25th, 2017.
6. **Session chair person**, Session on Surface Engineering, thin film and coating, 3rd Asian Symposium on Materials and Processing held in I. I. T. Madras during 30-31st August, 2012.
7. **Session chair person**, Sessions on laser 1 and laser 2, 26th International Conference on Surface Modification Technology held in Ecully, Lyon, France during June 20th to 22nd, 2012.
8. **External user and collaborator** of the Macro-Nano facility, Karlsruhe Institute of Technology, Karlsruhe, Germany.
9. **Member, Selection Board**, Scientist Grade Selection, CGCRI, Kolkata, December, 2012.
10. **Project evaluator**, Qater National Research Foundation (QNRF), Doha, Qater, 2011.
11. **Project reviewer**, Department of Science and Technology, India.
12. **External Examiner**, PhD thesis, Indian Institute of Technology, Bombay, Powai, Yr.: 2012, 2016
13. **External Examiner**, PhD thesis, Monash University, Australia, Yr.: 2012, 2015
14. **External Examiner**, PhD thesis, Council of Scientific and Industrial Research, Pretoria, Yr.: 2011, 2014
15. **External Examiner**, PhD thesis, Visvesvaraya Technological University, Belgaum, Yr.: 2011.
16. **External Examiner**, PhD thesis, Homi Bhana National Institute, IGCAR, Kalpakkam, Yr.: 2014, 2016.
17. **M. Tech Thesis Examination**, Dept. of Metall. Engg., Jadavpur University, Yr. 2010
18. Conducting SYNOPSIS seminar/viva, Bengal Engineering and Science University, 2010
19. **Visiting faculty**, University of Chile, Santiago, 2007 for 6 months (15th June to 28th Nov, 2010 on leave from Indian Institute of Technology Kharagpur)
20. **Visiting Scientist**, National Laser Centre, CSIR, Pretoria (15th May – 15th July, 2009)
21. **Visiting Professor** in the Department of Mechanical Engineering Science (APK), Faculty of Engineering and the Built Environment (FEBE), University of Johannesburg, 1st January, 2017 to 31st December, 2019.
22. **Session chair-person**, 2nd International Conferences on Laser and Plasma Application in Materials Science- 2010 held in Algier, Algeria.
23. **Lead Guest Editor**, special issue on Advances in Metallic Materials Processing an open axis Journal published by Hindwai Publishers, 2010
24. **Member**, editorial board, Lasers in Engineering, continuing since 2010
25. **Member**, editorial board, International Journal of Peening Techniques, 2016

26. **Reviewer**: Surface and Coating Technology, Materials Science and Engg. B, Tribology International, Metallurgical Transaction, Wear, Surface Engineering.

11. SPONSORED RESEARCH AND CONSULTANCY

#	Project Type	Title	Date of Commencement and Closing	Period	Sponsor	Total Sanctioned Grant	As
1 *	CONSULTANCY	USE OF SCANNING ELECTRON MICROSCOPE OF CRF	01-02-2010 To 30-11-2020	10 YEARS 9 MONS 29 DAYS	VARIOUS GOVT./INDUSTRIAL AGENCIES/PVT ORGS()	1000000.00	PRINCIPAL INVESTIGATOR
2	CONSULTANCY	LIFE CYCLE COST, MECHANICAL AND CORROSION PROPERTIES BEHAVIOR OF COATED (BOTH ERW AND SEAMLESS) MILD STEEL AND AISI 304 STAINLESS STEEL (SEAMLESS AND ERW) FOR AIR BREAK PIPES IN RAILWAYS	15-04-2018 To 14-07-2018	2 MONS 29 DAYS	LAL BABA SEAMLESS TUBES PVT. LTD.(13/A, GOVERNMENT PLACE (E), 2ND FLOOR, KOLKATA - 700 069, WEST BENGAL, INDIA)	221000.00	PRINCIPAL INVESTIGATOR
3	CONSULTANCY	HIGH RESOLUTION TRANSMISSION ELECTRON MICROSCOPY LABORATORY	17-08-2009 To 30-11-2020	11 YEARS 3 MONS 13 DAYS	VARIOUS GOVT./INDUSTRY/PVT ORGS()	110300.00	PRINCIPAL INVESTIGATOR
4	CONSULTANCY	CORROSION RESISTING TEST OF REINFORCEMENT OF EXISTING MAJOR BRIDGE ON KANCHNALLA AND RIVER BHARGAVI	19-10-2012 To 18-12-2012	1 MON 30 DAYS	M/S. BHUBANESWAR EXPRESSWAYS PVT. LTD.(REGISTERED OFFICE : 37-38, JAIN BHAWAN 12, BHAGAT SINGH MARG, NEW DELHI - 110001, INDIA)	110778.00	PRINCIPAL INVESTIGATOR
5 *	RESEARCH	DEVELOPMENT OF FUNCTIONALLY GRADED METALLIC COMPONENTS BY LASER MATERIALS PROCESSING FOR BIO-IMPLANT APPLICATION	01-03-2012 To 28-02-2015	2 YEARS 11 MONS 27 DAYS	DEPARTMENT OF SCIENCE & TECHNOLOGY(DST)(GOVERNMENT OF INDIA,MINISTRY OF SCIENCE & TECHNOLOGY,DEPARTMENT OF SCIENCE & TECHNOLOGY, TECHNOLOGY BHAVAN, NEW MEHRAULI ROAD, NEW DELHI-110 016)	970500.00	PRINCIPAL INVESTIGATOR
6 *	RESEARCH	DEVELOPMENT OF COMPOSITIONALLY GRADED COATING ON MARINE PROPELLER FOR IMPROVING CAVITATION CORROSION RESISTANCE	01-04-2009 To 31-03-2012	2 YEARS 11 MONS 30 DAYS	NAVAL RESEARCH BOARD,, DRDO()	3556000.00	PRINCIPAL INVESTIGATOR
7 *	RESEARCH	MICROSTRUCTURAL CHARACTERIZATION AND ITS OPTIMIZATION FOR IMPROVED WELD STRENGTH, FATIGUE BEHAVIOUR AND CORROSION RESISTANCE OF ELECTRON BEAM WELDED MATERIALS FOR ATOMIC ENERGY SECTORS	01-07-2012 To 30-06-2015	2 YEARS 11 MONS 29 DAYS	BRNS, DAE, MUMBAI(BRNS SECRETARIAT, DEPARTMENT OF ATOMIC ENERGY, GOVERNMENT OF INDIA, CENTRAL COMPLEX, 1ST FLOOR BARC, MUMBAI - 400 085)	2259100.00	PRINCIPAL INVESTIGATOR

8 *	RESEARCH	DEVELOPMENT OF COMPOSITIONALLY MODULATED THERMAL BARRIER COATING BY HYBRID TECHNOLOGY	01-09-2013 To 31-10-2016	3 YEARS 1 MON 30 DAYS	KCSTC(KALPANA CHAWLA SPACE TECHNOLOGY CELL,IIT KHARAGPUR,KHARAGPUR - 721 302, WEST BENGAL, INDIA.)	1520000.00	PRINCIPAL INVESTIGATOR
9 *	RESEARCH	DEVELOPMENT OF ALUMINIUM CENOSPHARE SYNATIC FOAM THROUGH SPRAY FORMING TECHNIQUE FOR AEROSPACE APPLICATIONS	01-12-2012 To 31-03-2017	4 YEARS 3 MONS 30 DAYS	AERONAUTICS R&D BOARD(GOVERNMENT OF INDIA,MINISTRY OF DEFENCE DIRECTORATE OF AERONAUTICS/ DRDO,AERONAUTICS R&D BOARD,DRDO BHAWAN, NEW DELHI - 110 105)	2792035.00	PRINCIPAL INVESTIGATOR
10 *	RESEARCH	THERMO-CHEMICAL TREATMENT ON POROUS TITANIUM AND ITS TRIBO-CORROSION PROPERTY EVALUATION FOR ORTHOPEDIC APPLICATION	02-05-2018 To 01-05-2021	2 YEARS 11 MONS 30 DAYS	COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, EXTRAMURAL RESEARCH DIVISION (CSIR COMPLEX, PUSA, NEW DELHI - 110 012)	2223900.00	PRINCIPAL INVESTIGATOR
11 *	RESEARCH	DEVELOPMENT OF POROUS BIO-ACTIVE TITANIUM BASED COMPOSITE FOR BIO-IMPLANT APPLICATION	02-12-2013 To 01-06-2017	3 YEARS 5 MONS 30 DAYS	DBT, NEW DELHI(GOVERNMENT OF INDIA, MINISTRY OF SCIENCE & TECHNOLOGY, DEPARTMENT OF BIOTECHNOLOGY,BLOCK-2, 6-8TH FLOORS, CGO COMPLEX, LODIROAD, NEW DELHI - 110 003)	3215600.00	PRINCIPAL INVESTIGATOR
12 *	RESEARCH	MICROSTRUCTURAL EVOLUTION AT THE INTERFACE OF BOND COAT AND STEEL SUBSTRATE DURING GALVANIZATION	05-06-2014 To 04-06-2016	1 YEAR 11 MONS 29 DAYS	SCIENCE AND ENGINEERING RESEARCH BOARD (SERB)(TECHNOLOGY BHAWAN, NEW MEHRAULI ROAD, NEW DELHI - 110 016)	1950000.00	PRINCIPAL INVESTIGATOR
13 *	RESEARCH	FUNCTIONALLY GRADED SMART THERMAL BARRIER COATING BY COMBINED PLASMA BASED HYBRID PROCESSING AND LASER BASED 3-D PRINTING ON HS188 SUPERALLOY (IMPRINT-2)	18-01-2019 To 17-01-2022	2 YEARS 11 MONS 30 DAYS	SCIENCE AND ENGINEERING RESEARCH BOARD (SERB)(DEPARTMENT OF SCIENCE AND TECHNOLOGY, 5 AND 5A, LOWER GROUND FLOOR,VASANT SQUARE MALL, PLOT NO. A,COMMUNITY CENTRE, SECTOR - B, POCKET-5VASANT KUNJ, NEW DELHI - 110 070)	5525520.00	PRINCIPAL INVESTIGATOR

14 *	RESEARCH	ESTABLISHMENT OF ULTRA-SHORT PULSED LASER PROCESSING REGIME FOR SURFACE TREATMENT OF TITANIUM BASED IMPLANT FOR THE TAILORED MECHANO-CHEMICAL PROPERTY IN SIMULATED ENVIRONMENT	18-09-2018 To 17-09-2020	1 YEAR 11 MONS 29 DAYS	DEPARTMENT OF SCIENCE AND TECHNOLOGY(DST)(GOVERNMENT OF INDIA,MINISTRY OF SCIENCE AND TECHNOLOGY,DEPARTMENT OF SCIENCE AND TECHNOLOGY, TECHNOLOGY BHAVAN, NEW MEHRAULI ROAD, NEW DELHI-110 016)	4274000.00	PRINCIPAL INVESTIGATOR
15 *	RESEARCH	DEVELOPMENT OF NANO-STRUCTURED CONICRALY BOND COAT BY HVOF SPRAYING FOR THERMAL BARRIER COATING APPLICATION	24-05-2018 To 23-05-2021	2 YEARS 11 MONS 30 DAYS	KCSTC(KALPANA CHAWLA SPACE TECHNOLOGY CELL,IIT KHARAGPUR,KHARAGPUR - 721 302, WEST BENGAL, INDIA.)	2985200.00	PRINCIPAL INVESTIGATOR
16 *	RESEARCH	DEVELOPMENT OF COMPOSITIONALLY AND MICRO STRUCTURALLY GRADED THERMAL BARRIER COATING BY PLASMA SPRAYING	25-08-2009 To 31-08-2012	3 YEARS 6 DAYS	DST, NEW DELHI(NEW DELHI)	3955200.00	PRINCIPAL INVESTIGATOR
17 *	RESEARCH	EURO-INDO FORUM FOR NANOMATERIAL RESEARCH COORDINATION & COOPERATION FOR RESEARCHERS IN SUSTAINABLE ENERGY TECHNOLOGY	31-03-2011 To 31-03-2012	1 YEAR	EUROPEAN EUNION(EUROPEAN EUNION,MESA, INSTITUTE FOR NANOTECHNOLOGY,P.O. BOX - 217, 7500 AE ENSCHEDE, THE NETHERLANDS.)	741428.00	PRINCIPAL INVESTIGATOR

Note: * :: Total sanctioned grant more then Rs. 5L

12. EDITORIAL BOARD MEMBER/SHORT TERM COURSE ORGANIZED

#	Editorial Board Member/ Short-term course	Name	Amount(for Short-term course or Training)	From Date	To Date	National/International
1	Conference Organized	Organized (Session Coordinator on Surface Engineering and Corrosion) the 4th International Conference on Advances in Materials and Materials Processing (ICAMMP-2016), during 5th to 7th November, 2016		05-11-2016	07-11-2016	International
2	Conference Organized	3rd International Conference on Laser and Plasma Application in Materials Science, 2015 (LAPAMS-2015)	2500000	15-01-2015	17-01-2015	International
3	Conference Organized	Annual Technical Meeting of the Indian Institute of Metals		14-11-2009	17-11-2009	National
4	Conference Organized	Annual Conference on Materials Professionals involving Students, Industry and Teachers (COMPOSIT)	700000	28-01-2006	29-01-2006	National
5	Conference Organized	Annual Conference on Materials Professionals involving Students, Industry and Teachers (COMPOSIT)	500000	17-03-2007	19-03-2007	National
6	Conference Organized	Advanced Materials and Materials Processing (ICAMMP)		01-02-2002	03-02-2002	International
7	Conference Organized	1st International Conference on Sustainable Materials Processing and Manufacturing		23-01-2017	25-01-2017	International
8	Editorial Board Member	Scientific report, Nature Publishing Group		01-01-2012	31-12-2002	International
9	Workshop Organized	3rd EICOON SCHOOL on. Science and Technology of Renewable and Clean Energy Sources		30-04-2012	01-05-2012	International
10	Workshop Organized	Structure Property Correlation	500000	14-12-2008	16-12-2008	International

13. COURSE TAUGHT

a. Surface Engineering (theory, undergraduate (Bachelor of Tech.) and postgraduate level (Mater of Tech., Post Graduate Diploma in Steel Technology).
b. Joining of Metals (Theory, Undergraduate)
c. Corrosion and Surface Degradation (theory, undergraduate).
d. Diffusion in Solids (theory, undergraduate and postgraduate level).
e. Introduction to Materials for non-metallurgist (theory, undergraduate).
f. Phase transformation and heat treatment (laboratory, undergraduate level)
g. Physical Metallurgy (laboratory, undergraduate)
h. X-ray and Electron Microscopy (laboratory, undergraduate)
i. Offered online course on "Surface Engineering for Wear and Corrosion Resistance Application" under Massive Open Online Courses (MOOC) program jointly with Prof. I. Manna.

14. DEVELOPMENT WORK DONE

1. Developed a surface engineering laboratory (in collaboration with Prof. I. Manna) well equipped with surface cleaning, coating and wear and corrosion testing facilities.
2. Developed Electron Beam Welding Laboratory as a Co-Investigator in collaboration with Prof. G. L. Dutta, Prof. I. Manna, Prof. G. G. Roy and BARC, Bombay (funded by BARC, Bombay)
3. In the process of Development of Thermal Spraying Laboratory (funded by Naval Research Board and Department of Science and Technology)

15. LABORATORIES HANDLED

Phase Transformation and heat treatment (laboratory, UG level)
Physical Metallurgy (laboratory, UG level)
X-ray and Electron Microscopy (laboratory, UG level)
Metallurgy for non-metallurgists (Laboratory, UG level)
Mechanical Metallurgy (Laboratory, UG level)
Training and Seminar (Seminar, UG level)

16. RESEARCH GUIDANCE

a. Guidance at the doctoral level

Completed

1. Development of Compositionally Graded Coating by Laser Surface Engineering (Name of the candidate: Dr. B. Ramesh Chandra. Collaborator: Prof. Indranil Manna. Year: 2006)
2. Studies on Surface Nitriding of 52100 Steel for Bearing Application (Name of the candidate: Dr. Anindya Basu. Collaborator: Prof. Indranil Manna. Year: 2007)

3. Surface Engineering of Ti-6Al-4V for Bio-implant Application (Name of the candidate: Dr. Amit Biswas. Collaborator: Prof. U. K. Chatterjee. Year: 2009)
4. Development of Al_2O_3-TiB_2-TiN Composite Coating by Self-Propagating High-Temperature Synthesis and Laser Surface Alloying (Name of the candidate: Dr. Satyajit Chatterjee. Collaborator: Prof. A. Roy Choudhury. Year: 2010)
5. Development of Oxide Dispersion Strengthened Ferritic Steel by Mechanical Alloying and Subsequent Processing (Name of the scholar: Mr. Swapan Karak, Collaborator: Prof. Indranil Manna, Year: 2013)
6. Development of Functionally Graded Component by Direct Laser Fabrication (Name of the scholar: Mr. Gururaj Telasang, Collaborator: Prof. Indranil Manna, Year: 2014)
7. Development of Compositionally Graded Thermal Barrier Coating and Its Mathematical Modeling (Name of the scholar: Mr. Subhashis Nath, Collaborator: Prof. I. Manna, Year: 2015).
8. Development of Coating for Hot Corrosion and High Temperature Oxidation by Thermal Spraying (Name of the scholar: Mr. Prashant Sharma, Year: 2016)
9. Surface Engineering of AISI 316L Stainless Steel for Bio-implant Application (Name of the scholar: Mr. Arun Kumar, Year: 2016).
10. Surface Modification and Coatings on Ti6Al4V for Bio-implant Application. (Name of the scholar: Ms. Renu Kumari, Year: 2017).
11. Studies on Improvement of Wear and Corrosion Resistance of Interstitial Free Steel by Plasma Nitriding and Sputtering (Name of the scholar: Mr. Manoj Kr. Debnath, Collaborator: Prof. Indranil Manna, Year: 2014, Year: 2018).
12. Uniaxial Tensile Strength and Susceptibility to Intergranular Corrosion of Hastelloy C-276 Sheets Welded by Ytterbium-fiber Laser Beam and Electron Beam (Name of the scholar: Mr. Kalinga K. Bal, Collaborator: Prof. A. Roy Choudhury, Year: 2019).

Submitted

1. Studies on Electron Beam and Laser Surface Melting and Welding of INCONEL 718 (Name of the scholar: Mr. Sumit K. Sharma, Collaborator: Prof. Koushik Biswas, Year: 2019, awaiting for viva voce examination)
2. Effect of Binder Composition and Process Parameters on Laser Composite surfacing of AISI 304 Stainless Steel with WC (Name of the scholar: Mr. Amitesh Chakraborty)

Continuing

1. Electron Beam Welding of Dissimilar Materials (Name of the scholar: Aakash Rathore)
2. Electron Beam Welding of Zircaloy (Name of the scholar: Sharath Anishetty)
3. Electron Beam Welding of Niobium (Name of the scholar: Jeetendra Singh)
4. Studies on Direct Laser Cladding of Advanced Materials (Name of the scholar: Anupama Dutta)
5. Studies on Direct Laser Cladding of Thermal Barrier Coating (Name of the scholar: Manoj)
6. Development of Nano-structured High Entropy Alloy Composite for Structural Application (Name of the scholar: Sree Krishna)

7. Development of Nano-structured High Entropy Alloy for Structural Application (Name of the scholar: Turin Dutta)
8. Development of Nano-structured Coating for High Temperature Application (Name of the scholar: Annada Dash)
9. Development of Nano-textured Surface for Bio-implant Application (Name of the scholar: Bipasha Basu)
10. Surface Texturing and Plasma Electrolytic Assisted Surface Engineering for Bio-implant Application (Name of the scholar: Dileep Kr.)
11. Development of Nano-textured Surface for Bio-implant Application (Name of the scholar: Bipasha Basu)

b. Guidance at the Masters level, M. Tech

Completed

1. Some studies on Surface Modification of Mg Alloys by Laser and Ion Beam Techniques, Name: A. Krishna Mohan (year: 2001. Collaborator: Prof. S. K. Roy)
2. Laser Composite Surfacing of Magnesium with SiC, Al_2O_3 and WC, Name: B. Ramesh Chandra (Year: 2002)
3. Studies on Residual stress Developed in Laser Surface Alloying, Name: N. K. Sukhdeve (Year: 2002)
4. Studies on Laser Surface Melting of Steels, name: S. S. Bhoyar (Year: 2003)
5. Studies on Laser Surface Melting and Nitriding Of AISI 52100 Ball Bearing Steel, Name: Angad Kumar Churendra (Year: 2006. Collaborator: Prof. Indranil Manna)
6. Characteristics and Properties of Direct Laser Clad Layer for Bio-implant Application, Name: Ajeet Kumar (Year: 2007)
7. Studies on TiB Dispersed Ti and AISI 316L Stainless Steel Developed by Direct Laser Cladding for Bio-implant Application, Name: Dilip sarkar (Year: 2007).
8. Studies on Thermal Oxidation Of Ti-6Al-4V and Mg-Alloy (AZ91) For Improving Biocompatibility, Name: Upamanyu Bhattacharyya (Year: 2007. Collaborator: Prof. Indranil Manna).
9. Surface Engineering of Interstitial Free Steel and Low Alloy Steel, Name: Anil Chikkam (Year: 2008. Collaborator: Prof. Indranil Manna)
10. Electron Beam Assisted Surface Engineering of Low Alloy Steel and Zircaloy, Name: Y. B. Patil (Year: 2008. Collaborator: Prof. Indranil Manna).
11. Surface engineering for bioimplant application, Sarat (Year: 2009)
12. Electron-beam assisted hardening and welding of materials, Shilani (Year: 2009. Collaborator: Prof. G. G. Roy)
13. Surface Engineering of steel for Defence Application (Name: Mr. Arun Kumar, Collaborator: Sanjeev Kumar Bhola , Director, ODC, Kanpur)
14. Studies on Oxidation Behavior of Oxide Dispersed Ferritic Steel, Name: Rohit Satapathy (Year: 2010. Collaborator: Prof. I. Manna)
15. Laser Surface Alloying of AISI 304 Stainless Steel with WC+Ni+NiCr for Improved Wear Resistance (Name: Mr. S. Anandan, Yr.: 2011))
16. Development of Nano-structured alumina (Al_2O_3), ceria stabilized zirconia (CSZ) and titania (TiO_2) by mechanical alloying and subsequent processing (Name: Mr. Monobala, Collaborator: Prof. I. Manna, Yr.: 2011).

17. Electron Beam Surface Melting of Austenitic Cr-Mn Stainless Steel: Process Optimization, Kabiraj Pradhan (Yr.: 2013)
18. Study of Cyclic Oxidation Behaviour of Thermal Barrier Coatings by Plasma Spraying, Kartik Bhandari (2013).
19. Effect of Grain Size on the Characteristics and Performance of CoNiCrAlY Bond Coat for Thermal Barrier Applications, Rajesh. A (Yr.: 2013
20. Synthesis and characterization of ZnO, Fe_3O_4 and ZnO/Fe_3O_4 nanostructures at different pH values, Ankur Sisodia (Yr. 2014)
21. Laser surface alloying of $Fe_{48}Cr_{15}Mo_{14}Y_2C_{15}B_6$ (at.%) on AISI 4130 structural steel and $Fe_{65}Cr_{<10}Mo_{<14}Y_2C_{<5}B_{<5}$ on AISI 4140 steel for improving wear & corrosion resistance, Ganesh Gavali (12MT61R36) (2014)
22. Studies on Pulse Electrolytic Oxidation on Commercially Pure Magnesium, KOLLA RAJASHEKAR (2014)
23. *Study on Laser Surface Alloying on Ti-6Al-4V with Mo_2C and Mo_2C + MoS_2 by preplaced powder technique, Preeti Priya (Yr. 2014).*
24. Studies on Characterization and Mechanical Properties of Titanium Cenosphere Syntactic Foam Developed by Powder Metallurgy Route, S. V. Singh Chauhan (Yr. 2014).
25. *Studies on electron beam surface melting of Ti-6Al-4V, Manoj Kumar (Yr: 2015.*
26. *Study on Electron Beam Surface Melting of* AISI 304 Stainless Steel, by Abhishek Chandwani,(Yr. 2015)
27. Studies on Mechanical properties of Aluminium Cenosphere Syntactic Foam Developed by Powder Metallurgy Route, Kaustabh Khot (Yr. 2015).
28. *Characterization and Electrochemical Property Evaluation of Aluminium Cenosphere Syntactic Foam by Powder Metallurgy Route,* Rajgire Shanmukh Harishchandra (Yr: 2015).
29. Electron Beam Welding of Inconel 718, Prashant Agarwal, (Yr. 2016)
30. Structural Materials for Nuclear Energy Application: Corrosion Studies and Surface Enhancement by Electron Beam Melting (EBM), Soumyabrata Basak, IIT Bhubaneswar, *(Yr. 2016)*
31, Studies on Thermal Oxidation of Ti-6Al-4V for bio-implant Application, Ashutosh Tiwari (Roll No.16MT61R57), Yr.: 2017.
31, Studies on Anodizing of Ti-6Al-4V for bio-implant Application, Ashutosh Tiwari (Roll No.16MT61R57). Yr.: 2017
32. Study on Plasma Electrolytic Oxidation of Magnesium Alloys and Titanium Alloys for Biomedical Applications, **Shweta Lata Ekka (Roll No: 16MT61R26)** Yr.: 2017

M. S. Thesis

1. Laser Assisted Fabrication of Hip and Femoral Prosthesis (year: 2006. collaborator: Prof. I. Manna)

b. Guidance at the Undergraduate level

B. Tech (completed)

1. Theoretical Model to Predict Residual Stress Developed in Laser Surface Hardening, Name: Nishant Tewari (Yr.: 2002).

2. Mathematical Modeling of Heat Transfer in Laser Surface Hardening, Name: Aniruddha Ghosh (Year: 2002).
3. Some Studies on Laser Surface Alloying of a Mg Alloy (AZ91), Name: Praveen Kumar (Yr. 2003).
4. Laser Bending of Stainless Steel, Name: Somak Roy (Year: 2003)
5. Laser Surface Alloying of Armacor on mild steel for improved wear property (Yr. 2004. collaborator: Prof. I. Manna)
6. *Laser Surface Alloying of Mild Steel for Wear Resistance Application, Name: Ajit Kumar Jain (Year: 2006)*
7. Particle Dispersion by Laser Surface Engineering on Metals and Alloys for Tribological Studies, Name: Deepanjan Biswas (year: 2006)
8. Surface Modification of Titanium alloys and Stainless Steel for bio-medical applications, Name: P. V. S. Srikant (Year: 2007)
9. Studies on Laser Surface Melting of Al-Si Alloy for Improving Wear Resistance, Name: Subrata Das (Year: 2007).
10. Development of Wear-resistant of Cu-alloy with Nano-Ceramic Oxide Dispersion by Mechanical Alloying and Sintering for Electrical Contacts. Name: Rajesh Kumar Mesram (Year: 2007. collaborator: Prof. I. Manna).
11. Surface treatment of Mg AM50 alloy and Cu-Al-Mn Shape Memory Alloy for Corrosion and Wear Resistant Applications. Name: Arjit Gautam (Year: 2008. collaborator: Prof. I. Manna)
12. Surface Treatment of Steel and Cu-Al-Mn Alloys for Wear Resistance Application, Name: Sujoy Kumar (Year: 2008. collaborator: Prof. I. Manna).
13. Surface Engineering of Cu-based shape memory alloy for corrosion resistance application, Ankit (Year: 2009)
14. Surface Engineering of Cu-based shape memory alloy for corrosion resistance application, Ankit (Year: 2009)
15. Studies on Oxidation Behavior of Oxide Dispersed Ferritic Steel, Name: Ansul (Year: 2010. Collaborator: Prof. I. Manna)
16. Surface Engineering of IF Steel for wear and Corrosion Resistance Application. Name: Jayakanth (Year 2010. Collaborator: Prof. I. Manna))
17. Effect of Cold Deformation of Mechanical and Electro-Chemical Properties and Nitriding Kinetics of AISU 304 Stainless Steel (Name: Devendra, Year: 2011).
18. Electron Beam Surface Melting of AISI 304 Stainless Steel for improved Intergranular Corrosion Resistance (Name: Ishan, Year: 2013).
19. Development of Amorphous Coating on Steel by Laser Surface Cladding(Name: Vivek Kumar, Yr.: 2013).
20. Electron Beam Welding of Materials - Present Status (Name: Virendra Singh, Yr.: 2014).
21. Laser Shock Peening of Steel, Bobbili Swetha (Yr.: 2013)
22. Studies on Effects of Surface Roughness on Wear Behaviour of Electron Beam Melted AISI 304 Stainless Steel, Animesh Lahiri (Yr.: 2014)
23. Improving corrosion resistance of IF steels by Sputter deposition, GAURAV NYATI (2015)
24. Studies on Electron Beam Melting of sensitized AISI304 Stainless Steel, Rakesh Kumar Sahoo (2015)
25. Studies on Electron Beam Welding to Optimize the Parameters Ravi Kumar Verma (2015).

Post Graduate Diploma in Steel Technology, PGDST (Completed)

1. Surface Engineering of Low Nickel Austenitic Stainless Steel, Name: L. Sivakiumar (year: 2008)
2. Surface Treatment of Mild Steel for Improved Wear and Corrosion Resistance, Nilu Kumar and P. Udaya Bhanu (Year: 2008)

16. Significant research contribution

Research Contribution
(From 13th Dec. 2011 till date)

1. Laser Assisted Microprocessing of Materials

A high energy density pulsed laser may be used to microprocess materials by ablation, melting and plasma formation. Prof. Dutta Majumdar has contributed significantly on laser surface texturing of titanium, and laser shock peening of steel in collaboration with Karlsruhe Institute of Technology, Karlsruhe, Germany. The notable contributions of the work may be summarized as follows:

Understanding the effect of texturing morphology on the properties (mechanical, electrochemical and biocompatibility of Ti-6Al-4V.

Laser surface texturing of Ti-6Al-4V has been carried out by ArF excimer laser at a wavelength of 193 nm with a pulse length of 5 ns in Air. Laser surface texturing leads to form a uniform, defect free and periodic textured patterns with dimples and linear grooves with gap. Microstructure of textured zones shows the refinement of grain along with presence of α, β rutile, anatase and few Ti_2O_3 phase. There is a significant improvement in nano-hardness, and young's modulus in the textured surface, however improvement is higher in dimple textured surface. There is an improvement in wear resistance of Laser textured surface. A significant improvement in wettability after laser surface texturing. The total surface energy is decreased due to linear (29.6 mN/m) texturing and increased due to dimple (67.6 mN/m) texturing as compared to as-received Ti–6Al–4V (37 mN/m). The effect of polar component is more in influencing the surface energy of textured surface. There is a significant improvement in bioactivity in terms of calcium phosphate deposition rate in Hank's solution. XTT result shows, comparable cell viability of laser textured sample as that of as received Ti–6Al–4V. Cell attachment study shows a reduced cell density in textured surface with a maximum reduction in dimple textured surface. Cells aligned themselves along the direction of texturing in linear textured surface. It was the pioneering attempt and report when it was observed that morphology plays an important role in determining the surface wettability and bio-compatibility [45,47]. In addition, the effect of laser wavelength on texture morphologies and the properties of the textured surface was established [9].

2. Development of Titanium Aluminide and its Composite by Direct Laser Cladding

Direct laser cladding aims at development of product by one step processing by melting materials in the form of powder or wire and depositing it on the surface of substrate in a layer by layer fashion to develop the whole component [7,22]. Direct laser cladding has successfully been applied to develop titanium aluminide and its composites. Technologies for the improving the fracture toughness and ductility of the titanium aluminide has been proposed which will soon be applied for patent**.**

3. Development of graded thermal barrier coating

Functionally graded TBC has a flexibility in depositing different numbers of interlayers by varying the composition of the composite powders for combining the benefits of graded coating architecture with the individual material property. Functionally graded TBC has demonstrated properties such as microhardness, elastic modulus, microstructure, density, thermal conductivity, coefficient of thermal expansion and diffusivity, change gradually over the thickness which is appropriate for improving the thermal and mechanical properties of the coatings. YSZ based graded thermal barrier coating was developed on INCONEL 718 substrate and a detailed investigation of microstructural characterization, evaluation of thermal, nano-mechanical and high temperature oxidation resistance properties and compared with YSZ coated substrate without any gradation. It has been observed that a gradual variation in composition along the coating thickness eliminates the formation of sharp interface between coating layers which has also a beneficial effect in reducing the residual thermal stress in the coating [30, 36, 37, 38, 59, 62, 72]. Oxidation behavior (both isothermal and cyclic) of compositionally graded thermal barrier coating (TBC) consisting of 100% CoNiCrAlY as bond coat developed by high velocity oxyfuel (HVOF) spraying on Inconel 718 substrate followed by several layers of CoNiCrAlY and YSZ in the weight ratios of 70:30, 50:50, 30:70, and 0:100 by plasma spraying. The kinetics of growth of the thermally grown oxide (TGO) layer developed due to oxidation of compositionally graded TBC was compared to the same grown during oxidation of conventional duplex TBC. The mechanism of oxidation was established. The residual stress developed on the surface before and after oxidation was studied in details.

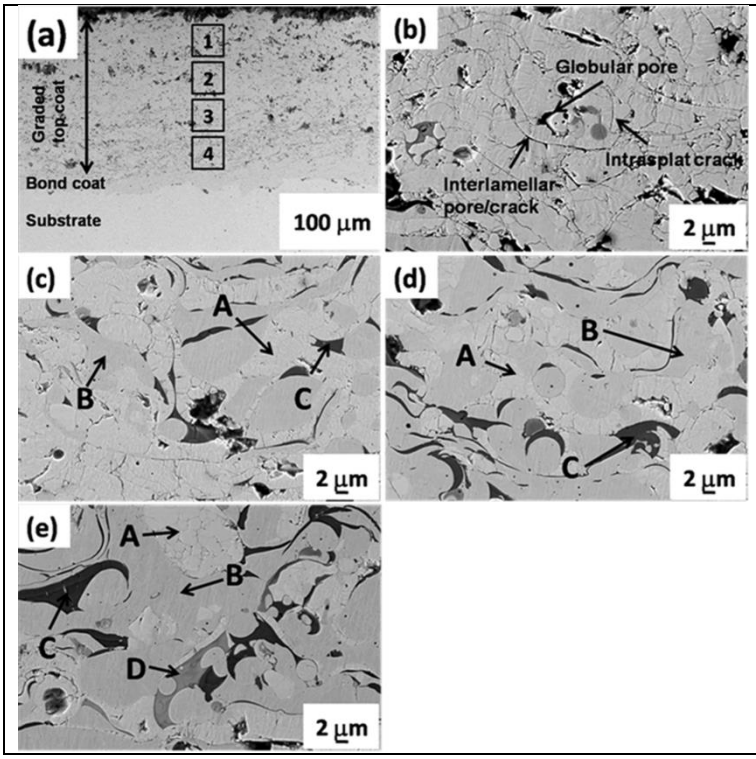


Figure 2 Scanning electron micrographs of cross-section of (a) as-sprayed CoNiCrAlY/YSZ compositional graded thermal barrier coating, and the magnified view of (b) region 1, (c) region 2, (d) region 3 and (e) region 4. Different phases in the microstructure are labeled as A, B, C and D [59].

4. Electron beam assisted materials processing

Electron beam welding set-up was established in collaboration with Prof. G. L. Dutta, Prof. I. Manna and Prof. G. G. Roy in the year 2010. Substantial efforts were undertaken to study the effect of electron beam welding on joining of nickel based alloys (Inconel718 and Hastelloy C276), Aluminium, stainless steel to aluminium, titanium to titanium, and niobium. Electron beam was also applied for the surface melting of Inconel718, and steel. Notable outcome of the studies in this field include:

Electron beam melting and welding of INCONEL 718

In this study, the effect of electron beam processing (surface melting and welding) of Inconel 718 on its microstructure, mechanical properties and electro chemical properties. Electron beam melting leads to formation of defect free microstructure with the depth of melting varying from 240 μm to 720 μm and decreases with increase in scan speed. The microstructure of the melt zone is having dendritic morphology and consists of gamma (γ) and gamma prime (γ′) phases. Electron beam melting introduces residual compressive stress (-180 MPa to -1000.21 MPa) which varied with process parameters. Due to electron beam melting, there is increase in surface hardness from 278 VHN for as received Inconel 718 to 300 to 950 VHN for electron beam melted Inconel 718. Maximum microhardness is observed at a depth below 100 to 200 □m from the surface. Microhardness was also found to vary with heat input parameters. The optimum process parameters of electron beam melting corresponding to development of defect free microstructure with presence of compressive residual stress below yield strength. Due to electron beam melting, there is a significant decrease in corrosion rate with a maximum decrease observed for the samples melted with a scan speed of 1000 mm/min. The pitting corrosion resistance

remained unaffected because of electron beam melting. Electron beam melting caused a marginal decrease in wear kinetics and wear coefficient [8,12].

Electron beam welding was successfully applied to weld Inconel 718 of thickness 3 mm. the microstructure was dendritic with the presence of gamma (γ) and gamma prime (γ′) and gamma double prime (γ′′) phases. There is improvement in microhardness due to electron beam welding (471.6 VHN to 520.5 VHN) as compared to as received Inconel 718. A detailed studies of the mechanical properties shows that there is reduction in strength and percentage elongation due to electron beam welding as compared to base metal. Though the corrosion rate in 3.56 wt.% NaCl solution was reduced due to laser surface melting, however, pitting corrosion resistance was improved due to laser surface melting [31].

Understanding the effect of electron beam welding parameters on welding of Hastelloy C276 [1,16,18]

In this investigation, the effect of electron beam parameters on the micro-structure, micro-hardness, and corrosion resistance of the weld zone of electron beam welded Hastelloy C-276 sheet has been carried out. Microscopic study showed formation of a defect free microstructure with cellular dendritic morphology and free from segregation. A detailed phase analysis shows no significant variation of phases with process parameters, but a marginal variation in texture coefficient of the individual plane was observed. The micro-hardness of the weld zone was found to be same as that of the base metal. Corrosion resistance of the weld zone was found to be improved which is attributed to microstructural refinement and homogenization due to electron beam surface melting.

5. Laser Welding of Materials

Laser Welding of Inconel 718

Laser Surface melting offers a defect free melt zone with depth varying from 388 μm to 453 μm. In the microstructure, there is presence of gamma double prime (γ′′) phase in addition to gamma (γ) and gamma prime (γ′) phases. The microhardness of the melted zone was found to vary from 425 VHN to 475 VHN. A detailed electron back scattered diffraction (EBSD) analysis was conducted to understand the grain size and its distribution, grain boundary rotation angle, and texture. Laser surface melting with the parameters (750 mm/min) shows a minimum wear kinetics under steady state wear. Wear coefficient was also found to vary with laser parameters and a minimum wear coefficient was observed when laser melted using scan speed 500 mm/min and power of 400 watt. Wear rate was found to be reduced due to laser surface melting and decreased with increase in scan speed.

. Laser beam welding leads to marginally decrease in hardness for all the parameters except a few. There is a significant decrease in nano hardness and young modulus but increase in toughness due to laser welding. A detailed crystallographic texture was studied by EBSD analysis to know the crystallographic orientation.

Laser Welding of Hastelloy C276 [13,14,20,21,23,24]

Bead-on-plate welding of 2.7 mm thick Hastelloy C-276 sheets was carried out by Ytterbium optical fiber laser to study the effect of input parameters on the melt zone cross-sectional

geometry. There was no significant difference in micro-hardness of the weld zone as compared to the base metal. Scanning Electron Microscopy showed formation of grains of different structures as well as orientation at the melt zone followed by negligible changes in the grain size at heat affected zone as compared to the base metal. Energy-dispersive X-ray spectroscopic analysis of melt zone showed negligible changes in elemental concentration between sub-grain structure and intra- sub-grain spacing. X-ray Diffraction analysis of melt zone showed reduction in peak intensity of austenitic γ-phase for melt zone when compared with the base metal. Finally based on the analysis of variance study and full penetration criteria, a proposal for selection of parameters for laser beam welding experiment has been made. The detailed study of the intergranular corrosion behavior of the welded sample was carried out.

6. Plasma spray deposition of bio-active coating on Ti6Al4V and effect of post heat treatment on properties [26,28,29]

Plasma spraying has been used to deposit a monolithic TiO_2 and hydroxylapatite based composite (HA+50%TiO_2 and HA+10% ZrO_2) coatings on Ti-6Al-4V. Followed by coating post heat treatement have been applied at 550^oC for TiO_2, at 650^oC for HA +50% TiO_2 and at 750 ^oC for HA+10% ZrO_2. Plasma spray coated surface shows the presence of porosity and un-melted particles on the surface, the area fraction of which decreases after heat treatment. X-ray diffraction analysis shows the phase transformation from anatase (in precursor powder) to rutile (in as-sprayed coating and the same after heat treatment) in the TiO_2 coated surface. HA based composite coating shows decomposition of HA and formation of $CaTiO_3$ phase in the composite HA + 50 wt% TiO_2 coating and presence of $CaZrO_3$ phase in the HA+10 wt.% ZrO_2 coating. There is an improvement in hardness after post heat treatment as compared to as sprayed coating,4.6 GPa to 4.8 GPa in TiO_2 coating, 2.15 GPa to 2.2GPa in HA+50wt% TiO_2 and 1.1GPa to 2.3 GPa in HA + 10wt% ZrO_2.A significant improvement in wear resistance and corrosion resistance of heat treated sample as compared to as sprayed sample. Bioactivity in terms of calcium phosphate deposition is better in as sprayed coating.

7. Bio-active Coatings by Plasma Electrolytic Oxidation [46]

Plasma electrolytic oxidation (PEO) was proven to be an effective route to develop thick (150 μm) and porous (35 %) oxide film on the surface of Ti-6Al-4V consisting of anatase, rutile, calcium phosphate and SiO_2 phases. There is a significant improvement in hardness, wear resistance and corrosion resistance. PEO treated surface shows a significant improvement in wettability in terms of decrease in contact angle from 60 ± 1.5 to 45 ± 1 deg.

8. Femto-second laser processing of materials [39]

In the present study, laser shock peening has been attempted on 0.4% C steel using a femtosecond laser under varied process parameters. Laser processing leads to formation of martensite along with ferroto-pearlitic phase in the microstructure. Due to laser processing, there is introduction of residual stress on the surface which varies from high tensile (520.6 MPa) to compressive (-330 MPa) as compared to 152 MPa of as received substrate. There is a significant increase in hardness to 350-500 VHN as compared to 250 VHN for as-received substrate. A detailed study of fretting wear behavior against hardened steel ball shows that there is a significant reduction in wear depth due to laser processing, which is attributed to increase in hardness of the surface. There is also decrease in coefficient of friction against hardened steel

ball, which is due to increased hardness and partial smoothening of the surface due to laser processing. Laser processing under optimum process parameter improves the corrosion resistance in terms of decrease in corrosion rate as compared to as-received substrate.

9. Laser Surface Melting and Gas Nitriding of Ti-6Al-4V for bio-implant application [103,113,117,121,123,134].

The present study aims at enhancing the biocompatibility of Ti-6Al-4V by laser surface nitriding. Laser surface nitriding has been carried out by melting of sand blasted Ti-6Al-4V substrate using a high power continuous wave DIODE laser with nitrogen as shrouding environment (at a pressure of 5 l/min). Following laser treatment, a detailed characterization of the surface has been conducted. Microhardness and biocompatibility have been evaluated. Laser surface nitriding led to formation of dendrites of TiN on the surface. The microhardness is improved to 900-950 VHN (in laser surface nitriding) as compared to 260 VHN of as-received substrate. Biocompatibility behavior showed a better cell viability in laser surface nitrided Ti-6Al-4V sample as compared to as-received one.

10. Development of Coating for hot Wear, and hot corrosion resistance application by hybrid HVOF spraying and laser melting [48,60,78,80]

In this study, coatings were developed for hot corrosion resistance of AISI 304 stainless steel (C 0.08%, Cr 18%, Fe 66%, Mn 2%, Ni 8%, P 0.04%, S 0.03%, Si 1%) by hybrid thermal spray deposition ad laser surface melting techniques. Thermal spray deposition of nickel based hard faced alloy (68.4Ni-17Cr-3.9B-4.9Si-5.8Fe) has been carried out on sandblasted AISI 304 stainless steel by flame spraying and HVOF spraying techniques. A detailed microstructural investigation of flame sprayed layer shows the formation of γ-Ni and refined Ni_3B precipitates. HVOF deposition led to development of Ni_3B and Cr_2B dispersion in partially amorphous γ-Ni matrix. Finally, the hot corrosion behaviour of thermal spray deposited AISI 304 stainless steel with NiCrBSi has been undertaken in a 70%Na_2SO_4+30%NaCl molten salt media in the temperature ranges between 700 $^{\circ}$C to 900 $^{\circ}$C by cyclic test with total number of 18 cycles of heating and subsequent air cooling. Comparative studies between flame spraying and HVOF spraying show that HVOF spray deposition of NiCrBSi provides lower defect content, denser and better adherent coating than that of coating deposited by flame spraying. The appropriate reaction and mechanism of degradation of AISI 304 stainless steel and NiCrBSi coating in presence of salt mixture of Na_2SO_4 and NaCl are established for the salt mixture of 70 wt% and 30 wt% composition, respectively.

Research Contribution from 2000 to 2011

1. Laser Surface Engineering of Mg Alloys for Wear and Corrosion Resistance Application [71, 96, 114, 132, 147, 149, 150, 151, 153,155].

Mg and its alloys have a potential scope of application in automotive industry. However, a relatively poor resistance to wear and corrosion are serious impediments against wider application of Mg and its alloys. A detailed investigation on improving the wear and corrosion resistance of magnesium alloy, MEZ (Zn 0.5%, Mn 0.1%, Zr 0.1%, rare earth elements 2 %, Mg rest) and AZ91 (Mg-9Al-0.9Zn) by laser surface engineering were undertaken to improve wear and pitting corrosion resistance properties. Laser surface remelting with a continuous wave CO_2 laser was found to improve the microhardness of the laser surface melted layer to 85-100 VHN as

compared to 35 VHN of the as-received MEZ. For the first time it was established that laser surface melting significantly improves the pitting corrosion resistance of MEZ (corrosion rate reduces to 0.133 mpy for laser surface melted MEZ from 6.12 mpy of the as-received substrate in 3.56 wt.% NaCl solution) attributed to the combined influence of grain refinement, dissolution of intermetallic phases and retention of alloying elements (rare earth elements) in extended solid solution. Laser surface alloying with Al+Mn was found to improve the microhardness of the alloyed zone to as high as 250-350 VHN (as compared to 35 VHN of the substrate region) due to grain refinement and formation of intermetallics between Mg and Al ($Mg_{17}Al_{12}$)/Al and Mn ($AlMn_6$). The corrosion rate in a 3.56 wt.% NaCl solution has significantly reduced to 4-6 times by laser surface alloying. A detailed study on the mechanism of corrosion showed that the enhanced corrosion resistance was attributed to the presence of Al_2O_3 and Mn_3O_4 oxide layer on the surface. Another major achievement in the present system is an improved wear resistance of MEZ by dispersion of SiC, Cr_2C_3 and Al+Al_2O_3 on the surface by laser surface melting and simultaneous deposition of carbide/oxide particles.

2. Prediction of Residual Stress in Laser Surface Engineering and Process Optimization to Minimize Residual Stress Distribution [148]

Studies on the effect of laser surface melting and laser surface hardening on the residual stress developed in the laser treated region were undertaken and correlated with process parameters.

3. Process Optimization for Laser Assisted Bending of AISI 304 Stainless Steel [146]

Process windows for laser assisted bending of AISI 304 stainless steel of two different thicknesses (0.9 mm and 1.6 mm) were proposed. Effect of laser parameters on the microstructures, phases and mechanical properties of the bent zone and heat affected zone was evaluated. Laser bending led to refinement of microstructures and improvement in microhardness of the bent zone.

4. Development of Compositionally Graded SiC Dispersed Composite Layer on Commercial Pure Aluminium [126,138,144].

The present study concerns development of a hard SiC dispersed composite layer on Al substrate to improve its wear resistance property. A thin layer of SiC (dispersed in alcohol) is pre-deposited (thickness of 100 μm) on Al substrate and laser irradiated using a high power continuous wave (CW) CO_2 laser. The microstructure of the composite layer consists of dispersion of partially melted SiC particles in grain refined Al matrix. Part of the SiC particles was dissociated into silicon and carbon leading to formation of Al_4C_3 phase and free Si redistributed in Al-matrix. Volume fraction of SiC is maximum at the surface and decreases with depth. The microhardness of the surface is improved by 2 to 3 times as compared to that of the as-received Al. A significant improvement in wear resistance in composite surfaced Al was observed as compared to the as-received Al. Pitting corrosion property (in a 3.56 wt.% NaCl solution) was marginally deteriorated.

5. Studies on the Mechanism of Wear of in-situ TiB/TiB_2 Dispersed Al-matrix Composite [136].

Attempts were made to develop a hard in-situ TiB_2-dispersed Al-matrix composite layer on Al substrate with an objective to improve the wear resistance property. Laser composite surfacing

was carried out by melting the surface of sand blasted commercially pure Al substrate using a continuous wave CO_2 laser and simultaneous deposition of a mixture of K_2TiF_6 and KBF_6 (in the weight ratio of 2:1) using Ar as shrouding environment. Powder feed rate was maintained constant to 4 g/min. The microstructure of the composite layer consisted of uniformly dispersed TiB_2 particles in Al matrix. The microhardness of the surface was improved (to a maximum of 2 times) as compared to that of as-received Al substrate. There was a significant improvement in wear resistance in composite surfaced Al as compared to as-received one.

6. CompositionallyGraded SiC Dispersed Composite Surfacing on Mild steel by Two Steps Cladding [115]

.

In the present study, an attempt has been made to develop a compositionally graded SiC dispersed phase on the surface of mild steel substrate by laser surface cladding technique. Compositionally graded layer was formed by two steps cladding with a bottom layer having 95 % Fe + 5 % SiC and a top layer of 85 % Fe + 15 % SiC, respectively using a continuous wave CO_2 laser, and simultaneous feeding of a mixture of Fe and SiC (in the said ratio) with Ar as shrouding atmosphere. The microstructure of the composite layer consisted of dispersion of SiC particles in iron matrix. In the upper layer, SiC was not dissociated, however, at the bottom layer there was a partial dissociation of the SiC particles. Volume fraction of particles was found to be maximum at the surface and decreased with depth. The microhardness of the surface was improved by 5 to 6 times as compared to that of the as-received mild steel substrate and decreased gradually with depth. A significant improvement in wear resistance in clad surface was observed. Finally, the corrosion resistance of laser clad surface showed an improvement as compared to the as-received substrate.

7. Composite Surfacing of AISI 304 stainless steel by in-situ TiB/TiB_2 dispersion. [125].

The present study concerns development of a hard in-situ boride-dispersed composite layer on the surface of AISI 304 stainless steel substrate to improve the wear resistance property. Laser processing was carried out by melting the surface of sand blasted AISI 304 stainless steel substrate using a continuous wave CO_2 laser and simultaneous deposition of a mixture of K_2TiF_6 and KBF_6 (in the weight ratio of 2:1) using Ar as shrouding environment. Powder feed rate was maintained constant at 4 g/min. The microstructure of composite layer consisted of dispersion of titanium boride particles in AISI 304 stainless steel matrix. Volume fraction of particles is found to be uniform throughout the composite layer, though varied with laser parameters. The microhardness of the surface was improved 250 to 350 VHN as compared to 220 VHN of the AISI 304 stainless steel substrate with a significant improvement in wear resistance property. The mechanism of wear was found to be a combination of adhesive and abrasive in as-received stainless steel. However, it was predominantly abrasive for laser composite surfaced stainless steel.

8. Direct laser cladding of AISI 316L stainless steel for bio-implant application [105, 107, 145].

In the present study, laser assisted fabrication of AISI 316L stainless steel has been attempted using a high power (1.5 kW) continuous wave diode laser. The main process variables for the present study were applied power density, scan speed and powder feed rate. A detailed microstructural study of the surface and cross-section of the fabricated layer were carried out using optical and scanning electron microscopy to understand the influence of laser parameters

on microstructure of the surface and interface between the successive layers. The microstructure of the top layer was equiaxed, the near substrate region was fine dendritic, however, at the interface between two successive layers, it was coarsened. The morphology and degree of fineness of the microstructure was found to vary with laser parameters. The range of grain size (maximum grain size–minimum grain size) was taken as a measure of homogeneity. It was found that with increasing the scan speed, the range of grain size was minimized. Micro-porosities were present in the microstructure that reduced with increasing scan speed and found to be minimum at a medium powder feed rate. The optimum processing conditions have been established by correlating the characteristics of the fabricated layer with process parameters. The mechanical property (microhardness) of the fabricated product has been evaluated using a microhardness testing machine and correlated with the process parameters. The electrochemical property, mainly pitting corrosion resistance of the fabricated layer corresponding to maximum microhardness (in a 3.56% NaCl solution) has been evaluated using standard potentiodynamic polarization testing. The microhardness of the laser assisted fabricated layers was found to vary from170 to 278 VHN, increased with decrease in applied power density and increase in scan speed andwas higher than that of conventionally processed 316L (155 VHN). The superior microhardness value is attributed to grain refinement associated with laser melting and rapid solidification. The critical potential to pit formation (EPP1) was measured to be 550 mV saturated calomel electrode (SCE) and superior to the conventionally processed 316L stainless steel (445 mV (SCE)).

9. Direct laser cladding of compositionally graded Ti-6Al-4V and Co layers for femoral joint [90,106].

In the present study, attempts have been made to fabricate a Co layer on the surface of Ti–6Al–4V substrate by laser assisted fabrication technique with an objective to develop compositionally graded hip and femoral prostheses. Laser processing was carried out by melting of Co powder (of 25 μm particle size) with a continuous wave CO_2 laser and depositing it on Ti–6Al–4V substrate in a layer by layer fashion using Ar as shrouding environment to avoid oxidation. The process variables were applied power density, scan speed and number of layers. During the development of 1st layer, laser power and scan speeds were varied to develop a compositionally graded interface, following which the successive layers were formed. A detailed microstructural study of the fabricated layers was carried out to understand the influence of laser parameters on microstructure. X-ray diffraction study and energy dispersive spectroscopic analysis were undertaken to see if non-equilibrium cooling associated with the process has caused formation of any new phase or segregation of elements in the microstructure. Following characterization, the mechanical property (wear resistance) and electrochemical property of the fabricated components have been evaluated.

Research Contribution up to 2000

1. Enhancing Pitting Corrosion Resistance of AISI 304 Stainless Steel [163,168]

AISI 304 stainless steel, despite its otherwise good aqueous corrosion resistance, is prone to severe pitting corrosion in the presence of hallide ions. Usually, 3-4 wt.% Mo is added to the bulk overcome this limitation (AISI 316/316L). Instead of bulk alloying, it has been demonstrated that the pitting corrosion resistance of AISI 304-stainless steel could be significantly enhanced to a level better than that of AISI 316 stainless steel by laser surface alloying with Mo. Most importantly, an optimum processing zone for laser surface alloying has been established following a detailed correlation between the laser parameters and properties of the alloyed zone.

2. Enhancing Wear Resistance of Copper [162, 169].

Copper is a well-known conductor of heat and electricity. However, a poor hardness of copper often leads to wear and short-circuiting. Bulk alloying with Zn, Sn, etc. may improve the mechanical properties but deteriorates electrical conductivity. Laser surface alloying has been successfully attempted to enhance the hardness and wear resistance of copper without affecting its electrical conductivity. The extension of solid solubility achieved by laser surface alloyed far exceeded that obtained by the other rapid quenching methods. A process optimization map has been developed following a detailed correlation of the mechanical properties with laser parameters, and in turn, with the microstructure and composition of the alloyed zone.

3. Enhancing Oxidation and Wear Resistance of Titanium [52,157,158,159,162,164].

Ti and its alloys possess high specific strength, high melting temperature and good corrosion properties. However, the high temperature oxidation resistance of Ti is poor especially, beyond 450 ^{0}C which restricts the application of Ti based compressor blades up to 550^{o}C. Dr. Dutta Majumdar has been able to enhance the high temperature oxidation resistance of Ti by LSA with Si, Al and Si+Al up to 800^{o}C. Following LSA, she has successfully characterized the metastable microstructure and composition of the alloyed zone and correlated them with the oxidation and wear properties. It has been demonstrated that high volume fraction of Ti_5Si_3 phase was mainly responsible for improving oxidation (by providing a barrier to counter ionic mass transport) and wear (by reducing the friction coefficient) resistance of Ti. The improvements achieved have been superior to the earlier efforts based on surface alloying with Al alone. In fact, Dr. Dutta Majumdar has proved for the first time that silicides could be more useful in enhancing oxidation and wear properties of Ti than that by aluminides (as commonly believed). She has proposed a detailed model that explains the mechanism of oxidation protection and wear reduction of Ti by LSA with Si and/or Si+Al.

4. Mathematical Modeling of Laser Surface Engineering [156]

The knowledge of temperature is essential to predict the composition and microstructure, and hence, the properties developed by LSA. However, experimental determination of the temperature profile within the very short interaction time of laser irradiation during LSA is practically impossible. Dr. Dutta Majumdar has developed a mathematical model (both one and two dimensional) using explicit finite difference technique that is capable of predicting the temperature profile, heating/cooling rate, solidification velocity and the morphology of the microstructure of the alloyed zone. This effort, though based on simplified assumptions, constitutes the first numerical approach to model LSA (melting/solidification of bi-metallic layers) reported in the literature.

Laboratories Developed

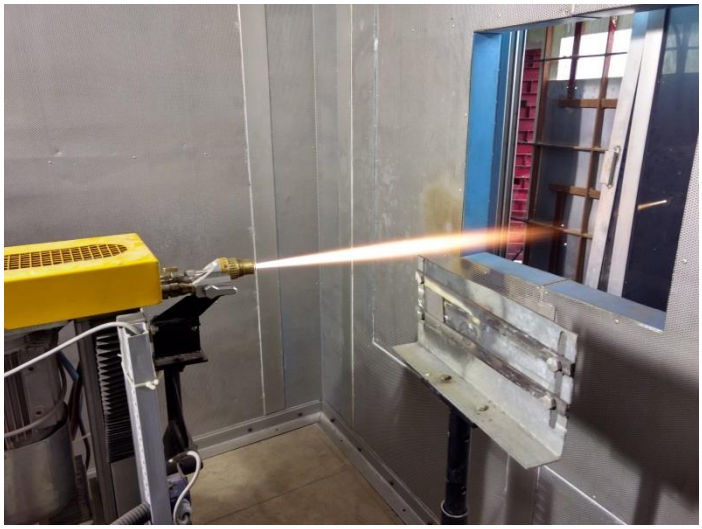
1. Development of Electron Beam Welding Facility

The State of the art electron beam welding (12 kW, 80 kV, indigenously developed by BARC, Bombay) facility was developed under the Board of Research in Nuclear Science sponsored project (acted as Co-PI, PI: Prof. G. L. Dutta, Prof. I. Manna and Prof. G. G. Roy) in collaboration with BARC Bombay. The equipment is installed in the Steel Technology Centre, IIT Kharagpur.

2. Development of Thermal Spraying Facility

Thermal spray deposition is the versatile technique, which may be applied for the deposition of metallic, ceramic and also polymeric materials. However, a proper choice of spray torch is essential. With the aim to develop thermal spray deposition laboratory, a high velocity oxyfuel set up (for the development of metallic coating) and plasma spraying unit (for the development of metallic and ceramic coating) have been developed and installed. Funding from Naval Research Board and Department of Science and Technology are thankfully acknowledged. These facilities are installed in the Thermal Spraying Laboratory next to Steel Technology Center.

	**Sand Blasting Unit developed under the project sponsored by Department of Science and Technology, N. Delhi and installed in the thermal spraying laboratory**



High velocity oxyfuel coating unit (Model No.: Hypojet – 2700, Made: MEC, Jodhpur) developed under the project (as a PI) sponsored by Naval Research Board and installed in the thermal spraying laboratory.

Plasma Spray Deposition unit (Model No.: SG 100 Miller thermal Inc., USA) developed under the project sponsored by Department of Science and Technology, N. Delhi (as a PI) and installed in the thermal spraying laboratory.

<u>Wear Testing Unit</u>

A number of wear testing units have been developed and installed in the Tribology Laboratory of the Department of Metallurgical

Ball-on Disc and Fretting Wear testing units (developed by Ducom) have been developed under the project sponsored by CSIR (as a PI) and installed in the wear testing laboratory of the Department.

Laser Materials Processing Facility

Laser materials processing (6 kW, GaAs Laser) facility has been developed under the project (as a Co-PI, PI: Prof. I. Manna) sponsored by Department of Science and Technology, N. Delhi and installed in the Steel Technology Center.

AUTHOR EVALUATION REPORT (Source: Google Scholar)

Citations	4409
h-index	36
i10-index	90

List of Publications of Prof. J. Dutta Majumdar

Research Publications

Dissertations

1. Some Studies on Laser Surface Alloying of Copper with Chromium and AISI 304 Stainless Steel with Molybdenum
Doctoral (Ph.D.) Thesis (1999), I.I.T., Kharagpur
Supervisors: Prof. I. Manna (I. I. T. Kharagpur) and Prof. B. L. Mordike (T. U. Clauasthal, Germany)

2. **Laser Surface Alloying of Titanium with Silicon, Aluminium and Silicon + Aluminium to Enhance Oxidation and Wear Resistance**
Dr.-Ing. Dissertation, TU Clausthal, Germany, Yr.: 2000, ISBN No.: 3-89720-385-5
Supervisors: Prof. B. L. Mordike (T. U. Clauasthal, Germany) and Prof. I. Manna (I. I. T. Kharagpur)

In Refereed Journals

1. KS Bal, **JD Majumdar**, AR Choudhury, Investigation into the intergranular corrosion behaviour of electron beam welded Hastelloy C-276 sheet using laser displacement sensor, Measurement 144 (2019), 345-365. **Cited by: 1**

2. MK Debnath, **JD Majumdar**, S Mukherjee, I Manna, Effect of Prior Cold Deformation and Nitriding Conditions on Microstructure and Mechanical Properties of Plasma Nitrided IF Steel, Metallurgical and Materials Transactions A 50 (9) (2019), 4319-4330.

3. F.M. Mwema, E.T. Akinlabi, O.P. Oladijo, S. Krishna, **Jyotsna Dutta Majumdar**, Microstructure and mechanical properties of sputtered Aluminum thin films, Procedia Manufacturing, Volume 35, (2019), Pages 929-934,

4. OM Ikumapayi, ET Akinlabi, **JD Majumdar**, S Akinlabi, Characterization of high strength aluminium–based surface matrix composite reinforced with low-cost PKSA fabricated by friction stir processing, Materials Research Express, Volume 6, (2019).

5. Omolayo M. Ikumapayi, Esther T. Akinlabi, Surjya K. Pal, **Jyotsna D. Majumdar**, A survey on reinforcements used in friction stir processing of aluminium metal matrix and hybrid composites, Procedia Manufacturing, Volume 35, (2019), Pages 935-940

6. A CHAKRABORTY, I MANNA, D SEN, S PITYANA, T DUTTA, .**and J. Dutta Majumdar**, Laser Surface Alloying (LSA) of AISI 304 Stainless Steel with 20WC+ 40Co+ 40NiCr for Improving Wear Resistance. Lasers in Engineering ,Volume 43 (2019), p101-119.

7. **Jyotsna Dutta Majumdar**, Silja Katharina Rittinghaus, Konrad Wissenbach, Daniel Höche, Carsten Blawert, Andreas Weisheit, Microstructural Evolution and Microhardness

of Direct Laser Clad TiC Dispersed Titanium Aluminide (Ti45Al5Nb0.5Si) Alloy, Procedia Manufacturing, Volume 35, (2019), Pages 840-846.

8. Sumit K. Sharma, K. Biswas, **J. Dutta Majumdar**, Wear behaviour of Electron beam surface melted Inconel 718, Procedia Manufacturing, Volume 35, (2019), Pages 866-873.

9. R Kumari, W Pfleging, H Besser, **JD Majumdar**, Microstructure and corrosion behavior of laser induced periodic patterned titanium based alloy, Optics & Laser Technology, 116 (2019), 196-213.

10. Amarish Kumar Shukla, **J. Dutta Majumdar**, Studies on Microstructure and Mechanical properties of Aluminium Foam prepared by Spray Forming Route, Procedia Manufacturing, Volume 35, (2019), Pages 861-865.

11. MK Debnath, **JD Majumdar**, A Kumar, S Seth, S Mukherjee, I Manna, Studies on Ti, Zn and Ti+ Zn Bilayer Coatings on Interstitial Free Steel for Enhancement of Wear and Corrosion Resistance, Journal of Materials Engineering and Performance, 28 (7), (2019), 4434-4442.

12. S Basak, SK Sharma, KK Sahu, S Gollapudi, **JD Majumdar**, Surface modification of structural material for nuclear applications by electron beam melting: enhancement of microstructural and corrosion properties of Inconel 617, SN Applied Sciences 1 (7) ,(2019), 708.

13. KS Bal, A Sadhu, **J Dutta Majumdar**, A Roy Choudhury, Study of melting efficiency, micro-segregation, and corrosion resistance of Ytterbium fiber laser welded Hastelloy C-276 sheet in pulsed wave mode, Advances in Materials and Processing Technologies, (2019), 1-14.

14. KS Bal, **JD Majumdar**, AR Choudhury, Study of intergranular corrosion mechanism of fiber laser welded 3-mm-thick Hastelloy C-276 sheet, Corrosion Science,157, (2019), Pages 406-419.

15. RP Mahto, S Anishetty, A Sarkar, O Mypati, SK Pal, **JD Majumdar**, Interfacial microstructural and corrosion characterizations of friction stir welded AA6061-T6 and AISI304 materials, Metals and Materials International 25 (3),(2019),752-767. **Cited by: 4**

16. KS Bal, **JD Majumdar**, AR Choudhury, Effect of electron beam accelerating voltage on the melt zone area, secondary-dendrite arm spacing and fusion line microstructure of bead-on-plate welded Hastelloy C-276 sheet, Optik 183,(2019), 355-366. **Cited by: 2**

17. F. M. Mwema, E. T. Akinlabi, O. P. Oladijo and **J. Dutta Majumdar**, "Evolution of microstructure and wear properties of aluminum thin films with sputtering substrate temperature," *2019 IEEE 10th International Conference on Mechanical and Intelligent Manufacturing Technologies (ICMIMT)*, Cape Town, South Africa, (2019), pp. 31-36

18. KS Bal, **JD Majumdar**, AR Choudhury, Optimization of melt zone area for electron beam welded Hastelloy C-276 sheet and study of corrosion resistance of the optimized

melt zone in 3.5 wt% NaCl Aqueous Solution, Arabian Journal for Science and Engineering 44 (2) ,(2019), 1617-1630. **Cited by: 4**

19. MK Debnath, S Anishetty, **JD Majumdar**, I Manna, Effect of Elemental Coating of Sn or Zn by Magnetron Sputtering on Corrosion and Wear Resistance of Interstitial-Free Steel, INAE Letters, (2019), 1-9.

20. KS Bal, **JD Majumdar**, AR Choudhury, Effect of post-weld heat treatment on the tensile strength of laser beam welded Hastelloy C-276 sheets at different heat inputs, Journal of Manufacturing Processes 37, (2019), 578-594. **Cited by: 5**

21. KS Bal, **JD MAJUMDAR**, AROY CHOUDHURY, Elemental micro-segregation characteristic of fiber laser welded Hastelloy C-276 sheet, Transactions of Nonferrous Metals Society of China 28 (11), (2018), 2236-2247. **Cited by: 4**

22. **JD Majumdar**, SK Rittinghaus, K Wissenbach, D Höche, C Blawert, Direct laser cladding of the silicide dispersed titanium aluminide (Ti45Al5Nb0. 5Si) composites, Optics & Laser Technology 106, (2018) 182-190. **Cited by: 1**

23. KS Bal, **JD Majumdar**, AR Choudhury, Minimization of bead geometry by optimization of regression equations for laser-beam bead-on-plate welded Hastelloy C-276 sheet, Journal of the Brazilian Society of Mechanical Sciences and Engineering 40, (2018),451. **Cited by: 5**

24. K.S. Bal, **J. Dutta Majumdar**, AR Choudhury, Study on uni-axial tensile strength properties of Ytterbium fiber laser welded Hastelloy C-276 sheet, Optics & Laser Technology 108,(2018), 392-403.**Cited by: 10.**

25. **J. Dutta Majumdar**, A Kumar, S Pityana, I Manna, Laser surface melting of AISI 316L stainless steel for bio-implant application, Proceedings of the National Academy of Sciences, India Section A: Physical, 88, (2018), 387-403. **Cited by: 2**

26. R. Kumari, **J. Dutta Majumdar**, Wear Behavior of plasma spray deposited and post heat-treated hydroxyapatite (HA)-based composite coating on titanium alloy (Ti-6Al-4V) substrate, Metallurgical and Materials Transactions A 49 (7) (2018), 3122-3132. **Cited by: 2**

27. OM Ikumapayi, ET Akinlabi, **JD Majumdar**, Review on thermal, thermo-mechanical and thermal stress distribution during friction stir welding, Int. J. Mech. Eng. Technol 9 (8) (2018), 534-548. **Cited by: 7**

28. R Kumari, **JD Majumdar**, Heat-Treated TiO_2 Plasma Spray Deposition for Bioactivity Improvement in Ti-6Al-4V Alloy, Journal of Materials Engineering and Performance 26 (12) (2017), 6207-6218. **Cited by: 1**

29. R Kumari, **JD Majumdar**, Studies on corrosion resistance and bio-activity of plasma spray deposited hydroxylapatite (HA) based TiO2 and ZrO2 dispersed composite coatings on titanium alloy (Ti-6Al-4V, Applied Surface Science 420 (2017), 935-943.**Cited by: 20**

30. S Nath, I Manna, AK Jha, SC Sharma, SK Pratihar, **JD Majumdar**, Thermophysical behavior of thermal sprayed yttria stabilized zirconia based composite coatings, Ceramics International 43 (14) (2017), 11204-11217. **Cited by: 7**

31. SK Sharma, P Agarwal, **JD Majumdar**, Studies on electron beam welded inconel 718 similar joints, Procedia Manufacturing 7 (2017), 654-659. **Cited by: 3**

32. A. Chakraborty, S. Pityana, **J. Dutta Majumdar**, Laser surface alloying of AISI 304 stainless steel with WC+ Co+ NiCr for improving wear resistance, Procedia Manufacturing 7 (2017), 8-14. **Cited by: 2**

33. S Basak, KK Sahu, SK Sharma, **JD Majumdar**, Studies on electron beam surface melting of AISI 316 stainless steel and AISI 347 stainless steel, Procedia Manufacturing 7 (2017), 647-653. **Cited by: 2**

34. S Pandey, ANC Venkat, DP Mondal, **JD Majumdar**, AK Jha, H Rao, Effect of Cenosphere Size and Volume Fraction on the Microstructure and Deformation Behavior of Ti-Cenosphere Syntactic Foam Made Through Powder Metallurgy Route, Materials Performance and Characterization 5 (1) (2016), 266-288.

35. M Nuthalapati, SK Karak, **JD Majumdar**, D Chakravarty, A Basu, Corrosion behavior and high temperature oxidation kinetics of nano-TiO2/Y2O3 dispersed zirconium alloys, Journal of Alloys and Compounds 689 (2016), 908-917. **Cited by: 6**

36. S Nath, I Manna, SK Ray, **JD Majumdar**, Development and characterization of yttria stabilized zirconia and Al2O3 thin films by pulsed laser deposition, Lasers in Engineering 35 (1-4) (2016), 101-122.

37. S Nath, I Manna, SK Ray, **JD Majumdar**, Studies on nanotribological and oxidation resistance properties of yttria stabilized zirconia (YSZ), alumina (Al2O3) based thin films developed by pulsed laser deposition, Ceramics International 42 (6) (2016), 7060-7071. **Cited by: 12**

38. Nath, S, Manna, I, Ray, SK & Dutta Majumdar, J 2016, 'Development and characterization of yttria stabilized zirconia and Al2O3 thin films by pulsed laser deposition: Special Issue'Lasers in Engineering, vol 35,(2016). 1-4, pp. 101-122.

39. **JD Majumdar**, EL Gurevich, R Kumari, A Ostendorf, Investigation on femto-second laser irradiation assisted shock peening of medium carbon (0.4% C) steel, Applied Surface Science, 364 (2016), 133-140. **Cited by: 8**

40. Jyotsna Dutta Majumdar, Andreas Weisheit, I Manna, Laser Surface Processing for Tailoring of Properties by Optimization of Microstructure, Advanced Manufacturing Techniques Using Laser Material Processing, (2016) , 121-171.

41. D Narsimhachary, RN Bathe, J Dutta Majumdar, G Padmanabham, A Basu, Microstructure and Mechanical Properties of Double Pass Laser Welds on 6061-T6 Aluminium Alloy, Lasers in Engineering ,Vol. 33 Issue 1-3, (2016), p53-66. 14p.

42. Kumari, Renu; Majumdar, J. Dutta, Microstructural characterization of multilayered coating on titanium based alloy (Ti–6Al–4V) substrate for bio-implant application, Advanced Science Letters, Volume 22, (2016) , pp. 256-260(5). **Cited by: 2**

43. **JD Majumdar**, I Manna, J Lawrence, Lasers in Engineering: Preface, Lasers in Engineering 35, (2016), (1-4),1.

44. D Dutta Majumdar, DP Mondal, A Roy Chowdhury, H Rao, **JD Majumdar**, Studies on Titanium Cenosphere Composite Developed by Powder Metallurgy Route, Advanced Materials Research 1139 (2016), 55-58. **Cited by: 3**

45. Wilhelm Pfleging, Renu Kumari, Heino Besser, Tim Scharnweber and **Jyotsna Dutta Majumdar**, "Laser surface textured titanium alloy (Ti–6Al–4V): Part 1 – Surface characterization," Applied Surface Science, 355 ,(2015),104-111.**Cited by: 36.**

46. R Kumari, C Blawert, **JD Majumdar**, Microstructures and properties of plasma electrolytic oxidized Ti alloy (Ti-6Al-4V) for bio-implant application, Metallurgical And Materials Transactions A 47 (2) (2015), 788-800. **Cited by: 13.**

47. Renu Kumari, Tim Scharnweber, Wilhelm Pfleging, Heino Besser and **Jyotsna Dutta Majumdar**, "Laser surface textured titanium alloy (Ti–6Al–4V) – Part II – Studies on bio-compatibility," Applied Surface Science 357(A), (2015), 750–758.**Cited by: 36.**

48. Sharma Prashant and **Dutta Majumdar J**. Microstructural Characterization and Wear Behavior of Nano-Boride Dispersed Coating on AISI 304 Stainless Steel by Hybrid High Velocity Oxy-Fuel Spraying Laser Surface Melting, METALLURGICAL AND MATERIALS TRANSACTIONS A-PHYSICAL METALLURGY AND MATERIALS SCIENCE Volume: 46A, (2015), 3157-3165. **Cited by:5**

49. Telasang G, **Majumdar JD**,Wasekar, N ,Padmanabham, G, Manna, I. Microstructure and Mechanical Properties of Laser Clad and Post-cladding Tempered AISI H13 Tool Steel, METALLURGICAL AND MATERIALS TRANSACTIONS A-PHYSICAL METALLURGY AND MATERIALS SCIENCE Volume: 46A, (2015), 2309-2321. **Cited by:25**

50. S.L. Pityana, S.T. Camagu', **J. Dutta Majumdar**, Laser surface alloying of Al with Cu and Mo powders, Journal of the Southern African Institute of Mining and Metallurgy, vol 115(3), **(2015)** 193-198, **Cited by 2**.

51. **J Dutta Majumdar**, I Manna, Development of functionally graded coating by thermal spray deposition, Thermal Sprayed Coatings and their Tribological Performances, vol 56 (**2015**) 121-162.

52. J Dutta Majumdar, I Manna, Laser surface engineering of titanium and its alloys for improved wear, corrosion and high temperature oxidation resistance, Laser Surface Engineering,(**2015**), 483-521, **Cited by 11**.

53. DP Mandal, J Dutta Majumdar, RK Bharti, J Dutta Majumdar, Microstructural characterisation and property evaluation of titanium cenosphere syntactic foam developed by powder metallurgy route, Powder metallurgy, 58(4), (**2015**) 289-299, **Cited by 5**.

54. Arijit Sinha, Gobinda Gopal Khan, Bholanath Mondal, Jyotsna Dutta Majumdar, Partha Protim Chattopadhyay, Effect of Aluminum Coating on the Surface Properties of Ti-(~49 at. pct) Ni Alloy, Metallurgical and Materials Transactions B, 46(4), (2015) 1951-1958.

55. Pityana, S. L.; Camagu, S. T.; **Majumdar, J. Dutta** , Laser Surface Alloying of Al with Cu and Mo Powder, JOURNAL OF THE SOUTHERN AFRICAN INSTITUTE OF MINING AND METALLURGY Volume: 115, (2015), Pages: 193-198. **Cited by:2**

56. Telasang, G; **Majumdar, JD**, Padmanabham, G, Manna, I. Wear and corrosion behavior of laser surface engineered AISI H13 hot working tool steel, Surface and Coating Technology, 261, (2015), 68-78.**Cited by: 75.**

57. Kumar, A, Roy, S. K., Pityana, S, **Majumdar, J. D**., Corrosion Behaviour and Bioactivity of a Laser Surface Melted AISI 316L Stainless Steel, Lasers in Engineering, 30, (2015), 31-49. **Cited by:2**

58. Telasang, G; **Majumdar, JD**, ,Padmanabham, G, TAK M., Manna, I. Effect of laser parameters on microstructure and hardness of laser clad and tempered AISI H13 tool steel, Surface and Coating Technology, 258, (2014), 1108-1118.**Cited by: 65.**

59. Nath, Subhasisa; Manna, Indranil; **Majumdar**, **Jyotsna Dutta**, Kinetics and mechanism of isothermal oxidation of compositionally graded yttria stabilized zirconia (YSZ) based thermal barrier coating, CORROSION SCIENCE, 88 (2014),10-22. **Cited by: 36.**

60. Sharma Prashant and Dutta **Majumdar J**. Nano-Borides and Silicide Dispersed Composite Coating on AISI 304 Stainless Steel by Laser-Assisted HVOF Spray Deposition, Journal of Thermal Spray Technology, 21(5) (2014), 800-809. **Cited by:3**

61. Mondal, D., **Dutta Majumder, J**., Jha, N., Badkul A., Das S. and Gupta G, Titanium-Cenosphere Syntactic Foam made through powder metallurgy route, Materials and Design 34 (2014) 82–89.

62. Nath, Subhasisa; Manna, Indranil; **Majumdar, Jyotsna Dutta,** Nanomechanical behavior of yttria stabilized zirconia (YSZ) based thermal bather coating, Ceramic International, 41, (2014), 5247-5256. **Cited by:23**

63. Nuthalapati, M, Karak, SK, **Majumdar, JD**, Basu, A (2014) Phase Evolution and Mechanical Properties of Nano-TiO2 Dispersed Zr-Based Alloys by Mechanical Alloying and Conventional Sintering, METALLURGICAL AND MATERIALS TRANSACTIONS A-PHYSICAL METALLURGY AND MATERIALS SCIENCE, 45A 3748-3754. **Cited by:14.**

64. Mondal, DP, **Majumdar, JD**, Goel, MD, Gupta, G Characteristics and wear behavior of cenosphere dispersed titanium matrix composite developed by powder metallurgy route, 24 (2014),1379-1386. **Cited by:7**

65. Telasang, G, **Majumdar, J. D**, Padmanabham, G, Manna, I, Structure-property correlation in laser surface treated AISI H13 tool steel for improved mechanical propertiesMATERIALS SCIENCE AND ENGINEERING A-STRUCTURAL MATERIALS PROPERTIES MICROSTRUCTURE AND PROCESSING, Volume: 599 (2014), 255-267. **Cited by: 62.**

66. Kumar, A, Roy, SK , Berger, H ; **Majumdar, JD** , Laser Surface Cladding of Ti-6Al-4V on AISI 316L Stainless Steel for Bio-implant Application 28 (2014),11-33. **Cited by:1**

67. Jha, N ,Mondal, DP, Goel, MD, **Majumdar, JD**, Das, S, Modi, OP Titanium cenosphere syntactic foam with coarser cenosphere fabricated by powder metallurgy at lower compaction load, TRANSACTIONS OF NONFERROUS METALS SOCIETY OF CHINA, 24, (2013), 89-99. **Cited by: 24.**

68. Karak, SK, **Majumdar, JD,** Witczak, Z, Lojkowski, W, Manna, I Microstructure and mechanical properties of nano-Y2O3 dispersed ferritic alloys synthesized by mechanical alloying and consolidated by hydrostatic extrusion, MATERIALS SCIENCE AND ENGINEERING A-STRUCTURAL MATERIALS PROPERTIES MICROSTRUCTURE AND PROCESSING, 580 (2013), 231-241. **Cited by: 13.**

69. Karak, SK, **Majumdar, JD**, Manna, I Isothermal and non-isothermal oxidation kinetics of nanooxide dispersed high Cr ferritic steel prepared by mechanical alloying, 56(2013), 310-316.

70. J Dutta Majumdar, Thermal and cold spraying technology in manufacturing, Handbook of Manufacturing Engineering and Technology**,(2013),** 1-37, **Cited by 8**.

71. J Dutta Majumdar, I Manna, Laser treatment to improve the corrosion resistance of magnesium(Mg) alloys, Corrosion Prevention of Magnesium Alloys, **(2013**), 133-162, **Cited by 3.**

72. Nath, S, Manna, I, **Majumdar, JD** Compositionally Graded Thermal Barrier Coating by Hybrid Thermal Spraying Route and its Non-isothermal Oxidation Behavior, JOURNAL OF THERMAL SPRAY TECHNOLOGY 22 (2013), **901 – 917. Cited by: 9.**

73. Karak, SK, **Majumdar, JD**, Witczak, Z, Lojkowski, W, Ciupinski, L, Kurzydlowski, KJ, Manna, I Evaluation of Microstructure and Mechanical Properties of Nano-Y2O3-Dispersed Ferritic Alloy Synthesized by Mechanical Alloying and Consolidated by High-Pressure Sintering METALLURGICAL AND MATERIALS TRANSACTIONS A-PHYSICAL METALLURGY AND MATERIALS SCIENCE, 44A, (2013), 2884-2894**. Cited by: 10.**

74. Jha, N, Mondal, DP, **Majumdar, JD**, Badkul, A, Jha, AK, Khare, AK Highly porous open cell Ti-foam using NaCl as temporary space holder through powder metallurgy route, MATERIALS & DESIGN, 47(2013), 810-819. **Cited by: 111.**

75. **Majumdar JD** Mechanical and electro-chemical properties of laser surface alloyed AISI 304 stainless steel with WC plus Ni plus NiCr**,** Physics Procedia, 41, (2013), 335-345. **Cited by: 6**

76. Kumar, A, Pityana, S, **Majumdar, JD**, Surface Characterization and Wear Behaviour of Laser Surface Melted AISI 316L Stainless Steel, Lasers in Engineering, 24, (2013), 147-166**. Cited by:1**

77. **Dutta Majumdar J** and Manna I. Laser-Surface Alloying of Nimonic 80 with Silicon and Aluminum and its Oxidation Behavior, Metallurgical Transaction A, 43, (2012), 3786-3796. **Cited by:9**

78. Sharma, P, **Majumdar, JD** Microstructural Characterization and Properties Evaluation of Ni-Based Hardfaced Coating on AISI 304 Stainless Steel by High Velocity Oxyfuel Coating Technique, METALLURGICAL AND MATERIALS TRANSACTIONS A-PHYSICAL METALLURGY AND MATERIALS SCIENCE, 44A, (2012), 372-380. **Cited by: 13**

79. Anandan S., Pityana S. and **Dutta Majumdar J**. Structure–property-correlation in laser surface alloyed AISI 304 stainless steel with WC + Ni + NiCr, Maters. Sci. Engg. A, 536, (2012), 159-169.**Cited by: 26.**

80. Sharma Prashant and **Dutta Majumdar J**. Surface Characterization and Mechanical Properties Evaluation of Boride-Dispersed Nickel-Based Coatings Deposited on Copper Through Thermal Spray Routes, Journal of Thermal Spray Technology, 21(5) (2012), 800-809. **Cited by: 11.**

81. Nath S, Pityana S. and **Dutta Majumdar J**. Laser surface alloying of aluminium with WC+Co+NiCr for improved wear resistance, Surf. Coat. Technol., 206 (2012), 3333-3341. **Cited by: 53.**

82. Chatterjee S., **Dutta Majumdar J**., Shariff S. M., Padmanabham G., Roy Choudhury A. Effect of laser post-treatment on Al_2O_3-TiB_2-TiN composite coating with free hBN, Int J Adv Manuf Technol., 61, (2012), 559-567. **Cited by: 9**.

83. Kumar A., Bhola, S. K., **Dutta Majumdar, J**. Microstructural Characterization and Surface Properties of Zinc Phosphated Medium Carbon Low Alloy Steel Surface and Coating Technology, 206, (2012), 3693-3699.**Cited by: 22.**

84. Basu, A, Majumdar, JD, Manna, I Structure and properties of CrxN coating, Surface Engineering 28 (2012), 199-204.**Cited by: 9.**

85. Straumal, BB, Kucheev, YO, Efron, LI, Petelin, AL, Majumdar, JD, Manna, I, Complete and Incomplete Wetting of Ferrite Grain Boundaries by Austenite in the Low-Alloyed Ferritic Steel, Journal of Materials Engineering and performance, 12, (2012), 667-670 **Cited by: 50**.

86. Karak, SK, Majumdar, JD, Lojkowski, W, Michalski, A, Ciupinski, L, Kurzydlowski, KJ, Manna, I ,Microstructure and mechanical properties of nano-Y2O3 dispersed ferritic steel synthesized by mechanical alloying and consolidated by pulse plasma sintering PHILOSOPHICAL MAGAZINE 92 (2012), 516 – 532. **Cited by: 25.**

87. Chatterjee S., **Dutta Majumdar J.**, Singaiah K., Shariff S. M., Padmanabham G., Roy Choudhury A. Performance evaluation of laser surface alloyed hard nano-structured Al_2O_3-TiB_2-TiN composite coatings with in-situ and ex-situ reinforcements, Surface and Coating Technology, Surface and Coating Technology, **205,** (2011), **(3478). Cited by: 12.**

88. **Dutta Majumdar J.** and Manna I. Laser Materials Processing, International Materials Review **56,** (2011), **341-388. Cited by: 145.**

89. **Dutta Majumdar J**, Igor Smurov, Sun S, and Manna I Advances in Metallic Materials Processing, an Editorial Note, Special Issue on "Advances in Metallic Materials Processing", Hidwai Publishers, Volume 2011 (2011). **Cited by:2.**

90. **Dutta Majumdar J** "Direct Laser Cladding of Cobalt on Ti-6Al-4V with a Compositionally Graded Interface" Advances in Materials Science and Engineering, **27,** (2011).

91. **Dutta Majumdar J** In situ metal matrix composite surfacing by laser surface alloying **Advanced Materials Research, Vol.** 227, (2011), Pages 84-91. **Cited by:1.**

92. **Dutta Majumdar J , Laser Gas Alloying of Ti-6Al-4V, Physics Procedia,** Vol. 12, part 1, (2011) 472-477.**Cited by:22**

93. **Dutta Majumdar, J**. Development of In-situ composite surface on mild steel by laser surface alloying with silicon and its remelting. Surface and Coatings Technology, 205 1820-1825. **Cited by:13**

94. **Dutta Majumdar J.** Laser Assisted Composite Surfacing of Metals for Improved Wear Resistance. Physics Procedia, Vol. 5, part 1, (2010)425-430. **Cited by:10.**

95. Gupta D., Mordike, B. L., Shariff, S., Padmanabhan, G., Manna, I. and **Dutta Majumdar, J**. Laser Surface Cladding of EN19 Steel with Stellite 6 for Improved Wear Resistance. Lasers in Engg. 19, (2010) 317-330. **Cited by:12.**

96. **Dutta Majumdar, J.** and Manna, I. Mechanical properties of a laser-surface-alloyed magnesium-based alloy (AZ91) with nickel. Scripta Materialia 62, (2010) 579–581. **Cited by:33**

97. **Dutta Majumdar, J.** and Li, L. Development of Titanium Boride (TiB) Dispersed Titanium (Ti) Matrix Composite by Direct Laser Cladding, Materials Letter, 64, (2010) 1010-1012.

98. Chatterjee, S., Ganesh. P., Palai, R., Wu, J.A., Kaul, R., **Dutta Majumdar, J.** and Roy Choudhury, A. Effect of h-BN addition on the properties of nanostructured Al2O3-TiB2-TiN based

coatings developed by combined SHS and laser surface alloying, Surface and Coating Technology, 204, (2010) 1702-1709.

99. .Chatterjee, S., Shariff, S. M., Padmanabham, G., **Dutta Majumdar, J.** and Roy Choudhury, A. Study on the effect of laser post-treatment on the properties of nanostructured Al_2O_3–TiB_2–TiN based coatings developed by combined SHS and laser ace alloying, Surface and Coating Technology, 205, (2010) 131-138. **Cited by:28**

100. **Dutta Majumdar**, **J.,** Nath, A. K. and Manna, I. Studies on Laser Surface Melting of Tool Steel - Part I: Surface Characterization and its Electrochemical Behavior**,** Surface and Coating Technology 204, (2010)1321–1325. **Cited by:23**

101. **Dutta Majumdar**, **J.,** Nath, A. K. and Manna, I. Studies on Laser Surface Melting of Tool Steel - Part II: Mechanical Properties of the Surface, Surface and Coating Technology, 204, (2010)1326-1329. **Cited by:36**

102. Karak, SK, Vishnu, CS, Witczak, Z, Lojkowski, W, **Majumdar, JD**, Manna, I , Studies on wear behavior of nano-Y2O3 dispersed ferritic steel developed by mechanical alloying and hot isostatic pressing, Wear (2010) 5-11. **Cited by:20**

103. Biswas, A., Li, L., Chatterjee, U. K., Manna, I. and **Dutta Majumdar**, **J.** Diode Laser Assisted Surface Nitriding of Ti-6Al-4V: Properties of the Nitrided Surface, Metallurgical and Materials Transactions A, Physical Metallurgy and Materials Science, 40, (2009) 3031-3037. **Cited by:24.**

104. **Dutta Majumdar, J**. and Manna, I. 'Corrosion Protection by Laser Surface Modification', Corrosion Reviews, vol. 57, (2009), p. 417-461.

105. **Dutta Majumdar, J.** and Li, L. Studies on Direct Laser Cladding of SiC Dispersed AISI 316L Stainless Steel, Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 40A, (2009) 3001-3008. **Cited by:24.**

106. Dutta Majumdar, **J.,** Manna, I., Kumar, A., Bhargava, P., and Nath, A. K. Direct Laser Cladding of Co on Ti-6Al-4V with a Compositionally Graded Interface, Journal of Materials Processing Tech, 209, (2009) 2237-2243. **Cited by:70**

107. **Dutta Majumdar**, **J.,** Kumar, A. and Li, L. 'Direct Laser Cladding of SiC Dispersed AISI 316L Stainless Steel', Tribology International, 42, (2009) 750-753. **Cited by: 87**.

108. Biswas, A., Manna, I., Chatterjee, U. K., Bhattacharyya, U. and **Dutta Majumdar**, **J.** Evaluation of Electrochemical Properties of Thermally Oxidized Ti-6Al-4V for Bioimplant application, Surface Engineering, 25, (2009) 141-145.

109. A Biswas, J Dutta Majumdar, Surface characterization and mechanical property evaluation of thermally oxidized of Ti-6Al-4V, Materials Characterization, 60(6) (2009), 513-518, **Cited by 63**.

110. **Dutta Majumdar**, **J.** Development of wear resistant composite surface on mild steel by laser surface alloying with silicon and reactive melting, Materials Letters, 62, (2008) 4257-4259. **Cited by: 21.**

111. Biswas, A., Srikant, P. V. S., Manna, I., Chatterjee, U. K. and **Dutta Majumdar**, **J.** Chemical oxidation of Ti–6Al–4V for improved wear and corrosion resistance, Surface Engineering, 24, (2008) 442-446. **Cited by:11**

112. **Dutta Majumdar**, **J.** and Manna, I. Laser and Plasma Assisted Surface Engineering of Steel, Steel Search, (2008)2. **Cited by:1**

113. Biswas, A., Li, L., Chatterjee, U.K., Manna, I., Pabi, S.K. and **Dutta Majumdar**, **J.** Mechanical and electrochemical properties of laser surface nitrided Ti–6Al–4V, Scripta Materiallia, 59, (2008) 239–242. **Cited by: 37.**

114. **Dutta Majumdar**, **J.,** Bhattacharyya, U., Biswas, A. and Manna, I. Studies on thermal oxidation of Mg-alloy (AZ91) for improving corrosion and wear resistance, Surf. Coat. Tech., 202, (2008) 3638-3642. **Cited by: 48.**

115. Dutta Majumdar, **J.,** Ramesh Chandra, B., Nath, A.K. and Manna, I. Studies on Compositionally Graded Silicon Carbide Dispersed Composite Surface on Mild Steel Developed by Laser Surface Cladding, J. Maters. Proc. Technol., 203, (2008) 505-512. **Cited by: 49**

116. Basu, A**., Dutta Majumdar**, **J.**, Alphonsa, J., Mukherjee, S. and Manna, I.Corrosion resistance improvement of high carbon low alloy steel by plasma nitriding, Materials Letters, 62, (2008) 3117-3120. **Cited by: 77.**

117. Biswas, A., Mordike, B. L., Manna, I. and **Dutta Majumdar**, **J.** Studies on laser surface melting of Al-11% Si alloy**,** Lasers in Engineering **18,** (2008) 95-105. **Cited by:10.**

118. Basu, A., Samant, A. N., Harikumar, S., **Dutta Majumdar**, **J.,** Manna, I. and Dahotre, N. B. Laser surface coating of Fe-Cr-Mo-Y-B-C bulk metallic glass composition on AISI 4140 steel, Surface and Coatings Technology **202,** (2008) 2623-2631. **Cited by: 126**

119. Chatterjee, S., Shariff, S.M., **Dutta Majumdar**, **J.** and Roy Choudhury, A. Development of nano-structured Al_2O_3-TiB_2-TiN coatings by combined SHS and laser surface alloying, Int J Adv Manuf Technol, 38, (2008) 938-943. **Cited by:28.**

120. Basu, A., **Dutta Majumdar**, **J.**, Alphonsa, J., Mukherjee, S. and Manna**,** I. Plasma nitriding of a low alloy high carbon steel, Transactions of the Indian Institute of Metals **60,** (2007) 471-479. **Cited by:1**

121. Biswas, A., Li, L., Mordike, B. L., Maity, T. K., Chatterjee, U. K., Manna, I. and **Dutta Majumdar**, **J.** Studies on Laser Surface Treatment of Ti-6Al-4V for Bioimplant Application. Lasers in Engineering, 17, (2007) 59-73. **Cited by:42.**

122. Biswas, A., Bhattacharyya, U., Manna, I. and **Dutta Majumdar**, **J.** Surface Oxidation of Ti-4Al-4V for Bio-implant Application. Surface Review and Letters, 14, (2007) 597-600.

123. Biswas, A., Chatterjee, U. K., Li, L., Manna, I. and **Dutta Majumdar**, **J.** Laser Assisted Surface Modification of Ti-6Al-4V For Bio-Implant Application. Surface Review and Letters, 14 (2007) 531-534. **Cited by:4.**

124. **Dutta Majumdar**, **J.** Prospects and Future Application of Diode Laser in Surface Engineering, Surface Engineering (Guest Editorial note). Surface Engineering. 23, (2007) 73-75. **Cited by:6.**

125. **Dutta Majumdar**, **J.,** Ramesh Chandra, B. and Manna, I. Laser Composite Surfacing of AISI 304 Stainless Steel with Titanium Boride for Improved Wear Resistance. Tribology International 40, (2007) 146-152. **Cited by:28.**

126. **Dutta Majumdar**, **J.**, Ramesh Chandra, B. and Manna, I. Friction and Wear Behavior of Laser Composite Surfaced Al with SiC. Wear 262 (2007) 641-648. **Cited by:47.**

127. **Dutta Majumdar**, **J.**, Ramesh Chandra, B., Nath, A.K. and Manna, I. Laser Composite Surfacing of Copper with Titanium Boride for Improved Tribological Application. Surface Engineering 23, (2007) 1-3. **Cited by:1.**

128. Basu, A., Chakraborty, J., Shariff, S. M., Padmanabham, G., Joshi, S. V., Sundararajan, G., **Dutta Majumdar**, **J.** and Manna, I. Laser Surface Hardening of Austempered (bainitic) Ball Bearing Steel. Scripta Materiallia 56, (2007) 887-890. **Cited by: 64.**

129. Basu, A., **Dutta Majumdar**, **J.**, Ghosh Chowdhury, S., Ajikumar, P. K., Shankar, P., Tyagi, A. K., Raj, B. and Manna, I. Microstructural and Texture Studies of Gas-nitrided Cr-coated low-alloy high-carbon steel. Surface & Coatings Technology, 201, (2007) 6985-6992. **Cited by:17.**

130. **Dutta Majumdar**, **J.** Underwater Welding- Present Status and Future Scope, Journal of Naval Architecture and marine Engineering, 3, (2006) 39-48. **Cited by:17.**

131. **Dutta Majumdar**, **J.**, Ramesh Chandra, B., Biswas, D.,. Mordike, B.L. and Manna, I. In-situ Dispersion of Titanium Boride on Copper by Laser Composite Surfacing for Improved Wear Resistance. Lasers in Engineering 16, (2006) 333-348. **Cited by:4.**

132. **Dutta Majumdar**, **J.**, Mordike, B.L., Ramesh Chandra, B. and Manna, I. Laser Composite Surfacing of Magnesium Alloy with Chromium Carbide. Lasers in Engineering 16, (2006) 349-359. **Cited by:3.**

133. **Dutta Majumdar**, **J.**, Ramesh Chandra, B., Nath, A.K. and Manna I. Laser composite surfacing of stainless steel with SiC. Physica Status Solidi –a 203, (2006) 2260–2265. **Cited by:11**

134. Biswas, A., Chatterjee, U. K., Manna, I., Li, L. and **Dutta Majumdar**, **J.** Laser Surface Engineering of Ti-6Al-4V for Bio-implant Application, Trends in Biomaterials and Artificial Organs 20, (2006) 68-72.

135. **Dutta Majumdar**, **J.**, Ganesan, S. M., Nath, A. K. and Manna, I. Laser Assisted Fabrication of Co on Ti-6Al-4V for Bio-implant Application. Physica Status Solidi –a 20, (2006) 1–5. **Cited by:6.**

136. **Dutta Majumdar**, **J.**, Ramesh Chandra, B., Nath, A. K. and Manna I. In-situ Dispersion of Titanium Boride on Aluminium by Laser Composite Surfacing for Improved Wear Resistance. Surf. Coat. Tech. 201, (2006) 1236-1242.

137. Manna, I., **Dutta Majumdar**, **J.**, Ramesh Chandra, B., Nayak, S., Dahotre, N.B. Laser Surface Cladding of Fe-B-C, Fe-B-Si and Fe-BC-Si-Al-C on Plain Carbon. Steel. Surf. Coat. Tech. 201, (2006) 434–440. **Cited by:111.**

138. **Dutta Majumdar**, **J.**, Ramesh Chandra, B., Nath, A. K. and Manna, I. Compositionally Graded Silicon Carbide Dispersed Metal Matrix Composite on Aluminium by Laser Surface Engineering. Materials Science and Engineering A 433 (2006)241-250. **Cited by: 34.**

139. **Dutta Majumdar, J.** and Manna, I. Laser and Plasma assisted Surface Engineering of Materials. Plasma Processing Update 50th issue, (2006) 47-53. **Cited by:1.**

140. **Dutta Majumdar, J.** and Manna, I. Laser Assisted Surface Modification of Titanium and its Alloys, Metals Materials and Processes, Vol. 18, No. 3-4, **(2006)** pp. 361-386. **Cited by:1.**

141. **Dutta Majumdar, J.,** Pinkerton, A., Liu, Z., Manna, I. and Li, L. Microstructural Characterization and Process Optimization of Laser Assisted Fabrication of 316L Stainless Steel. Applied Surface Science 247, (2005) 320–327. **Cited by:90.**

142. **Dutta Majumdar, J.,** Pinkerton, A., Liu, Z., Manna, I. and Li, L. Mechanical and Electrochemical Properties of Multiple Layer Diode Laser Cladding of 316L Stainless Steel. Applied Surface Science 247, (2005) 373–377. **Cited by:72.**

143. **Dutta Majumdar, J.,** Manna, I. and Li, L Laser Assisted Fabrication of 316L Stainless Steel. INSDAG'S STEEL IN CONSTRUCTION 6, (2005) 47-58.

144. **Dutta Majumdar, J.**, Ramesh Chandra, B., Nath, A.K. and Manna, I. Studies on laser composite surfacing of aluminium with silicon carbide and Alumina. JOM 56,(2004), 101.

145. **Dutta Majumdar, J.,** Manna, I. and Li, L. Structure-property-process parameters correlation in rapid prototyped 316L by direct laser deposition. JOM 56, (2004),107.

146. **Dutta Majumdar, J.,** Nath, A.K. and Manna, I. Studies on Laser Bending of Stainless Steel. Mater. Sci. Engg. A, 385, (2004), 113-122. **Cited by:61.**

147. **Dutta Majumdar, J.,** Mishra, P., Das, D., Mordike, B.L. and Manna, I. Studies of Defects in Laser Surface Treated Magnesium and Its Alloy. Lasers in Engineering 14, (2004), 193-211. **Cited by:8.**

148. **Dutta Majumdar, J.,** Nath, A.K., Ravi Kumar, B. and Manna, I. Studies on Residual Stress Developed In Laser Surface Irradiated 0.6% Carbon Steel. Lasers in Engineering 14, (2004), 133-151. **Cited by:2.**

149. **Dutta Majumdar, J.,** Ramesh Chandra, B., Galun, R., Mordike, B.L. and Manna, I. Laser Surface Engineering of a Magnesium Alloy with Al + Al_2O_3. Surf. Coat. Tech. 179, (2004), 297-305. **Cited by:127.**

150. Dutta Majumdar, J., Galun, R., Mordike, B.L. and Manna, I. Effect of Laser Surface Melting on Corrosion and Wear Resistance of a Commercial Mg Alloy. Mater. Sci. Engg. 361,(2003) 119-129. **Cited by:318.**

151. **Dutta Majumdar, J.**, Ramesh Chandra, B., Galun, R., Mordike, B.L. and Manna, I. Laser Composite Surfacing of a Magnesium Alloy with Silicon Carbide. Composite Science and Technology 63, (2003) 771-778. **Cited by:87.**

152. Dutta Majumdar, J., and Manna, I. Laser Material Processing. Sadhana 28, **(2003)** 495-562. **Cited by:354.**

153. Manna, I., Galun, R., Mordike, B.L. and **Dutta Majumdar, J**. Structure-Property Correlation in Laser Surface Alloyed Mg with Ni. Transaction of the Indian Institute of Metals 56, **(2003)** A22.

154. Majumdar, J Dutta and Manna, I *Laser Surface Engineering of Metallic Components.* In: Proceedings of Seminar on Resurgence of Metallic Materials the Current Scenario (2002), 24-25.

155. **Dutta Majumdar, J**., Mordike, B.L., Galun, R. and Manna, I. Improving Wear and Corrosion Resistance of Mg by Laser Surface Alloying with Mn + Al. Lasers in Engineering 12, (2002) 147-170. **Cited by:27**

156. **Dutta Majumdar, J**. and Manna, I. A Theoretical Model for Predicting Microstructure during Laser Surface Alloying. Lasers in Engineering 12, (2002) 171-190.

157. **Dutta Majumdar, J**., Mordike, B.L., Roy, S.K. and Manna, I. High Temperature Oxidation Behavior of Laser Surface Alloyed Ti with Si and Si+Al. Oxidation of Metals 57, (2002) 473-498. **Cited by: 20.**

158. **Dutta Majumdar, J**. Laser Surface Alloying of Titanium with Silicon, Aluminium and Silicon + Aluminium to Enhance Oxidation and Wear Resistance PhD Dissertation, TU Clausthal, Germany, Yr.: (2000)

159. **Dutta Majumdar, J**., Mordike, B.L. and Manna, I. Friction and Wear Behaviour of Ti Following Laser Surface Alloying with Si, Al and Si+Al. Wear 242, (2000) 18-27. **Cited by:87.**

160. **Dutta Majumdar, J**. and Manna, I. Laser Surface Aloying of Cu with Cr – I. Microstructural Evolution. Mater. Sci. Eng. A 268,(1999) 216-226. **Cited by: 30.**

161. **Dutta Majumdar, J**. and Manna, I. Laser Surface Aloying of Cu with Cr – II Improvement in Mechanical Properties. Mater. Sci. Eng. A 268,(1999) 227-235. **Cited by: 27.**

162. **Dutta Majumdar, J**., Weisheit, A., Mordike, B.L. and Manna I. Laser Surface Alloying of Ti with Si, Al and Si+Al for improved oxidation Resistance. Mater. Sci. Eng. A 266, 123-134.(1999) **Cited by 78.**

163. **Dutta Majumdar, J**. and Manna, I. Laser Surface Alloying of AISI 304 Stainless Steel With Mo for Improved Pitting Corrosion Resistance. Mater. Sci. Eng. A 267, (1999) 50-59. **Cited by:56.**

164. **Dutta Majumdar, J**., He, X., Weisheit, A., Mordike B.L. and Manna I. Laser Surface Alloying of Ti with Si and Al for an Improved Oxidation Resistance. Lasers in Engineering 7, (1998) 89-102.

165. Manna, I., **Dutta Majumdar, J**., Chatterjee, U.K. and Nath, A.K. Laser Surface Engineering of Copper with Chromium for Enhanced Wear Resistance. Scripta Mater. 35, (1996) 405-410. **Cited by :8**

166. Manna, I. and **Dutta Majumdar, J**. A One-Dimensional Heat Transfer Model for Laser Surface Alloying. Z. Metallkde. 86, (1995) 362-364. **Cited by:6.**

167. Zhukov, A.A., **Dutta Majumdar, J**. and Manna, I. Surface Treatment By Laser-melting Induced Self Propagating High Temperature Synthesis. J. Mater. Sci. Lett. 14, (1995)828-829. **Cited by:4.**

168. Manna, I., **Dutta Majumdar, J**., Rambabu, D., Bharti, A. and Joshi, S.V. Improvement in Pitting Corrosion Resistance of AISI 304 Austenitic Stainless Steel by Laser Surface Alloying with Molybdenum. Steel India 18, (1995) 1-6.

169. Manna, I., **Dutta Majumdar, J**. and Nath, A K. Improving Wear Resistance of Pure Copper by Laser Surface Alloying with Chromium. Laser News (Indian Laser Association) 5,(1994) 4-5.

170. Manna, I. and **Dutta Majumdar, J**. Enhanced Kinetics of Diffusion Coating of Aluminium on Copper by Boundary Diffusion. J. Mater. Sci. Lett. 12,(1993) 920-922. **Cited by: 19**

Book Chapter

172. Dutta Majumdar, J. and Manna, I. (2010): 'Laser Assisted Surface Modification of Engineering Metals and Alloys'(as an invited article), Surface Engineering (eds. D. Srinivasa Rao and S. V. Joshi), Centre for Science and Technology of the Non-Aligned & other Developing Countries (NAM S&T Centre), 2010, Daya Publishing House, N. Delhi.

173. Dutta Majumdar, J. (2011): "Use of laser in environmental pollution detection and abatement" in Environmental Security: Human and Animal Health, (ed.: Dr. S. R. Garg), ibdc Publishers, Lucknow, ISBN No. 978-81-8189-171-6, chapter 36.

174. Dutta Majumdar J. and Manna I. (2012): "Laser Assisted Fabrication- Present Status and Future Scope" in Laser Assisted Fabrication of Materials, (ed.: J. Dutta Majumdar and I. Manna), Springer Verlag, Hiedelberg, 2012 (in press), chapter 1.

175 Dutta Majumdar J. and Manna I. (2012): "Laser treatment to improve the corrosion resistance of Magnesium (Mg) Alloys" in Corrosion Prevention of Magnesium Alloys (ed. Guang-Ling Song), Woodhead Publishing House, chapter 6, (in press).

176. Dutta Majumdar J (2014) Thermal and Cold Spraying Technology in Manufacturing, Handbook of Manufacturing Engineering and Technology, Andrew Nee (Ed.), ISBN: 978-1-4471-4976-7, Springer Verlag, London.

177. Dutta Majumdar J and Manna I (2014), Laser Surface Engineering in Manufacturing, Handbook of Manufacturing Engineering and Technology, Andrew Nee (Ed.), ISBN: 978-1-4471-4976-7, Springer Verlag, London.

178. Dutta Majumdar J and Manna I (2015), Development of Functionally Graded Coating by Thermal Spray Deposition, in Thermal Sprayed Coating and their Tribological Performance, M. Roy and J. Paulo Davim (Eds.), Engineering Science Reference, Hershey. ISBN: 978-1-4666-7490-5.

179. Dutta Majumdar J. and Manna I (2015) Laser Surface Engineering of Titanium and its Alloys, in Laser Surface Engineering processes and Applications, *Edited by:J. R. Lawrence, C. Dowding, D. Waugh and J. B. Griffiths* (eds.), Woodhead Publishing, Cambridge, ISBN: 978-1-78242-074-3, Chapter – 21, pp.: 483-521.

180 Laser Surface Processing for Tailoring of Properties by Optimization of Microstructure *by* J. Dutta Majumdar, A. Weisheit and I. Manna *in* Advanced Manufacturing Techniques Using Laser Material Processing, Editor: E. Akinlabi et. al. (Published by: IGI Global, 2016).

Book Edited

181. **Dutta Majumdar J**. and Manna I. (2012): Laser Assisted Fabrication of Materials, Springer Verlag, Hiedelberg, 2013, ISBN: 3642283594, 9783642283598.

In Conference Proceedings

Publication in Conference Proceedings

1. P. Sharma, I. Manna, S. C. Sharma and A. K. Jha, **J. Dutta Majumdar** (2016) **"Development of La_2O_3 - YSZ Composite Thermal Barrier Coating by Plasma Spray Deposition". Proceedings of the CORCON-2016, organized by the National Association of Corrosion Engineers, held in N. Delhi, during 19th to 21st September, 2016.**

2. **J. Dutta Majumdar**, R. Kumari, H. Besser, T. Scharnweber and W. Pfleging. Studies on Laser Surface Texturing of Titanium Alloy', Proceedings in the Lasers in Manifacturing (LIM), 2015 held in International Congress Center Munich, Germany during 25th to 29th June, 2015.

3. International Conference of Sustainable Materials Science and Technology, held in Saint Danis, Paris during 15th to 17th July, 2015 and delivered the following oral talks:
Studies on Electron Beam Welding of Cr-Mn Stainless Steel
Studies on Characteristics of Titanium Cenosphere Composites Developed by Powder Metallurgy Route.

4. **Dutta Majumdar, J.** (2010): Laser Composite Surfacing for Improved Wear Resistance. Proceedings of International Conference on Laser Engineered Net Shape Engineering-2010, held in Erlangen, Germany during Sept. 22nd to 24th, 2010.

5 **Dutta Majumdar, J.**, Mukherjee, S. And Manna, I. (2010): Surface Engineering of Magnesium Alloy for Bio-implant Application. Proceedings of International Conference on Surface Modification Technologies – 2010 held in Dresden, Germany during September 7-9, 2010.

6. **Dutta Majumdar, J**. (2009): Laser Assisted Fabrication of Materials. Proceedings of the Conference on Lasers in Manufacturing under 19th World Photonics Congress - 2009 held in Munich, Germany, July 15-18, 2009.

7. **Dutta Majumdar, J**., Mordike, B.L. and Manna, I. (2009): Laser Surface Engineering of Magnesium Alloys for Improving Wear Resistance. Proceedings of the conference on

Lasers in Manufacturing under 19th World Photonics Congress - 2009 held in Munich, Germany, July, 2009 15-18.

8. **Dutta Majumdar, J**. (2008): Laser Surface Engineering of Ti-6Al-4V for Orthopedic Application. Proceedings of the Workshop on Application of Lasers in Materials Processing' held in Kolkata, January, 2008, 17-18.

9. **Dutta Majumdar, J**. and Manna, I. (2008): Laser Assisted Surface Modification of Steel. Proceedings of the International Seminar on Coated Steel held at Jamshedpur, February, 2008, 14-16.

10. **Dutta Majumdar, J.,** Mordike, B.L. and Manna, I. (2006): Laser Surface Engineering of Magnesium Alloys for Automotive Applications. Proceedings of the conference on "Advanced Materials Science and Technology" held in Cairo, Egypt, November 2006, 13-16.

11. **Dutta Majumdar, J**. (2006): Laser Assisted Forming of Austenitic Stainless Steel. Proceedings of the conference on "Advanced Materials Science and Technology" held in Cairo, Egypt, November 2006, 13-16.

12. **Dutta Majumdar, J**. and Manna, I. (2006): Laser Surface Cladding of Compositionally Graded SiC dispersed Coating on Mild Steel for Tribological Application. Proceedings of the conference on "International Symposium on Tribocorrosion" held in Hyderabad, India, December 2006, 4-5.

13. Basu, A., **Dutta Majumdar, J.**, Dahotre, N.B. and Manna, I. (2006): Laser surface cladding of Fe-Cr-Mo-Y-B-C bulk metallic glass on plain Carbon Steel. Proceedings of the conference on "International Symposium on Tribocorrosion" held in Hyderabad, India, December 2006, 4-5.

14. **Dutta Majumdar, J.**, Ramesh Chandra, B. and Manna, I. (2006): Friction and Wear Behavior of Laser Composite Surfaced Al with SiC. Proceedings of the "National Conference on Failure Analysis – 2006" held in Hyderabad, India, December 2006, 20-21.

15. **Dutta Majumdar, J.,** Ramesh Chandra, B., Nath, A.K. and Manna, I. (2006): Laser Composite Surfacing of Copper with TiB2 for Tribological Application. Presented at the International Conference on Advanced Materials and Materials Processing (ICAMMP-06), held at Indian Institute of Technology, Kharagpur, Cygnus, Kolkata, India, February 2006, 3-5.

16. **Dutta Majumdar, J.,** Ramesh Chandra, B., Nath, A.K. and Manna, I. (2005): Laser Assisted Composite Surfacing of Aluminium with Silicon Carbide For Improved Wear Resistance. Surface Engineering in Materials Science (Eds. Agarwal, A., Dahotre, Narendra B., Seal, S., Moore, John J. and Blue, C.) Annual TMS meeting, TMS, Warrendale, PA, February 2005, 14-17.

17. **Dutta Majumdar, J.**., Manna, I. and Li, L. (2005): Direct Laser Deposition Of 316l Stainless Steel MPMD Sixth Global Innovations Proceedings. Trends in Materials and

Manufacturing Technologies for Transportation Industries and Powder Metallurgy Research and Development in the Transportation Industry. Proceedings of Symposium Sponsored by the Materials Processing & Manufacturing Division of TMS held at the 2005 TMS Annual Meeting, 2005, 41-44.

18. **Dutta Majumdar, J.**., Ramesh Chandra, B., Nath, A.K. and Manna, I. (2004): Laser Composite Surfacing of Aluminium. 'In the proceedings of International Symposium on Advanced Materials and Processing (ISAMAP2K4)', (ed.: Banthia, A. K) held at Indian Institute of Technology, Kharagpur, India, December 2004, 540-547.

18. Dutta Majumdar, J.. and Manna, I. (2005): 'Laser Assisted Surface Modidfication of Engineering Metals and Alloys', INTERNATIONAL TRAINING COURSE – CUM – BUSINESS OPPORTUNITIES WORKSHOP ON SURFACE ENGINEERING, HYDERABAD, INDIA, 19-26 July, 2005: Publication of Proceedings Engineering.

20. **Dutta Majumdar, J**., Ganeshan, S.M., Manna. I. and Li, L. (2004): Direct Laser Deposition of 316L Stainless Steel. 'In the proceedings of International Symposium on Advanced Materials and Processing (ISAMAP2K4)', (ed.: Banthia, A. K) held at Indian Institute of Technology, Kharagpur, India, December 2004, 548-553.

21. **Dutta Majumdar, J**., Ramesh Chandra, B., Nath, A.K. and Manna, I. (2004): Laser Surface Melting and Composite Surfacing of Aluminium with Silicon Carbide. In the 'Proceedings of the International Convention on Surface Engineering (INCOSURF – 04)' (Eds.: Sharma, A. K. and Venugopalan, S.) held in Bangalore, India, August 2004, 319-324.

22. Rao, K.R.M., Basu, A., Chattoraj, I., Mallik, A.K., Mukherjee, S., Roy, S.K., **Dutta Majumdar, J** and Manna, I. (2004): Plasma Immersion Ion Implantation of AISI 52100 Ball Bearing Steel for the Enhancement of Hardness and Corrosion Resistance. 'Proceedings of the International Convention on Surface Engineering (INCOSURF – 04)' (Eds.: Sharma, A. K. and Venugopalan, S.) held in Bangalore, India, August 2004, 421-426.

23. **Dutta Majumdar, J**., Nath, A.K. and Manna, I. (2004): Laser Surface Hardening of 0.6% Carbon Steel - Process Optimization. At the Workshop on Applications of Laser in Mechanical Industry (Eds.: Choudhury, S. P. and Chaudhuri, B.) held in Jadavpur University, Calcutta, India, February 2004.

24. **Dutta Majumdar, J** Galun, R., Mordike, B.L. and Manna, I. (2003); Studies on laser surface alloying of a Mg alloy with nickel. In the proceedings of International Conference on Advances in Surface Treatment: Research and Applications (ASTRA-03) (Eds.:. Sudarshan, T. S., Sundararajan, G., Totten, G. E. and Joshi, S. V) held in Hyderabad, India, Nobember 2003, 186-190.

25. **Dutta Majumdar, J** and Manna, I. (2003): Laser surface alloying of Nimonic with Si+Al to enhance oxidation resistance. In the proceedings of International Conference on Advances in Surface Treatment: Research and Applications (ASTRA-03) (Eds.:. Sudarshan, T. S., Sundararajan, G., Totten, G. E. and Joshi, S. V) held in Hyderabad, India, Nobember 2003, 207-212.

26. **Dutta Majumdar, J**., Mordike, B.L.and Manna, I. (2004): Laser Assisted Compositionally Graded Coating on a Mg Alloy. National Conference on Corrosion Engineering (Ed.: A. Kulkarni), held in Bombay, India, December 2004.

27. **Dutta Majumdar, J**., and Manna I. (2003): Thermal Spray Deposition. Advances in Welding Technology, (Ed.: G. L. Datta), Proceedings of the "Conference on Advances in Welding Technology (WELD TECH-2003)" held in I. I. T., Kharagpur, India, March 2003, 111-131.

28. **Dutta Majumdar, J**., and I. Manna (2002): Laser Surface Engineering. In the Proceedings of "International Conference on Metals and Materials for Automobile Industry (ICMMAI-2002)" (ed.: Gupta, S. K.) held in National Metallurgical Laboratory, Jamshedpur, India, September 2002.

29. **Dutta Majumdar, J**., Galun, R., Mordike, B.L. and Manna, I. (2002): Improving Wear and Corrosion Resistance of a Magnesium Alloy by Laser Surface Engineering for Automotive Application. In the Proceedings of "International Conference on Metals and Materials for Automobile Industry (ICMMAI-2002)" (ed.: Gupta, S. K) held in Pragati Maidan, New Delhi, India, September 2002.

30 **Dutta Majumdar, J**., Ramesh Chandra, B., Galun, R., Mordike, B.L. and Manna, I. (2002): Laser Composite Surfacing of a Magnesium Alloy to Improve Wear Resistance. In the Proceedings of "International Conference on Advanced Materials and Materials Processing (ICAMMP-2002)" (eds.: Chakraborti, N. and Chatterjee, U. K.) held in Indian Institute of Technology, Kharagpur, India, February 2002, 826-830.

31. Galun, R., Maiwald, T., Mordike, B.L., Manna, I. and **Dutta Majumdar, J** (2002): Laser Surface Treatment of Magnesium Alloys for Improved Wear and Corrosion Resistance. In the Proceedings of "International Conference on Advanced Materials and Materials Processing (ICAMMP-2002)" eds.: Chakraborti, N. and Chatterjee, U. K.) held in Indian Institute of Technology, Kharagpur, India, February 2002, 831-835.

32. **Dutta Majumdar, J**., Roy, S.K., Mordike, B.L. and Manna, I. (2001): Laser surface remelting of Mg alloy to improve pitting corrosion resistance. In: International asia pacific conference on corrosion (NACE – 2001) – Conference Proceedings (Ed. Khanna, A. S.), held in Bangalore, India, November 2001.

33. **Dutta Majumdar, J** Mordike, B.L. and Manna, I. (2000): Laser Surface Alloying - an Advanced Surface modification Technology. In the Proceedings of "Shaping the Future - Global Dialogue III (Science and Technology-Thinking the Future)" held in Hannover, Germany, July 2000.

34. Manna, I., Kondala Rao, K., **Dutta Majumdar, J** Roy S.K. and Watkins K.G. (2000): Laser Surface Alloying of 2.25Cr-1Mo Ferritic Steel to Enhance Oxidation Resistance (invited paper). in: Surface Engineering in Materials Science I (conf. proc.) Eds.: Seal, S., Dahotre, N. B., Moore, J. J. and Mishra, B. TMS, Waarandale, PA 15086-7528, USA, held in Nashville, Tennessee, USA, March 2000, 367 – 376.

35. **Dutta Majumdar, J** Mordike, B.L. and Manna, I. (1997): Laser Surface Alloying of Ti with Si, Al and Si+Al for improved oxidation resistance. Proceedings of the Workshop on Application of Lasers in Mechanical Industry held in Calcutta, India, December 1997.

36. Manna, I. and **Dutta Majumdar, J**. (1997): Laser Surface Alloying of AISI 304-SS with Mo for improved pitting corrosion resistance, in: Proceedings of the 51st Annual Technical Meeting of the Indian Institute of Metals held in Jamshedpur, India, November 1997.

37. **Dutta Majumdar, J**., Chatterjee, U.K., Nath, A.K. and Manna, I. (1996): Improvement in Wear and Erosion Resistance of Copper by Laser Surface Alloying. Proceedings of the Discussion Meeting on Surface Science and Engineering (SURE 96), held at the I.G.C.A.R., Kalpakkam, India, January 1996.

38. Manna, I., **Dutta Majumdar, J** and Das, P.K. (1995): Two Dimensional Heat Transfer Model of Laser Surface Alloying. Proceedings of the International Conference on Advances in Physical Metallurgy (ICPM–1994), Editors: Banerjee, S. and Ramanujan, R.V., Gordon & Breach Publishers, New York, 1995, held in B.A.R.C., Bombay , India, March 1994.

39. **Dutta Majumdar, J**., Mordike, B.L., Roy, S.K. and Manna, I. (2001): Enhanced Oxidation Resistance of Ti by Laser Surface Alloying with Si, Al and Si+Al . Accepted for publication in: Proceedings of the International Conference on Advances in Surface Science and Engineering (INSURE–2001), held in Madras, India, February 2001.

Papers Presented in Conferences (Abstract printed)

1. **J. Dutta Majumdar and Carsten Blawert, "Plasma Electrolytic Oxidation of Magnesium**" presented in the International Conference on Frontiers in Materials Processing Applications, Research and Technology, held in Ahmedabad during December 15th to 18th, 2019.

2. **J. Dutta Majumdar**, S. Nath, S. C. Sharma, I. Manna, "Development and Performance Evaluation of Compositionally Graded Yttria Stabilized Zirconia based Thermal Barrier Coating", delivered (**keynote talk**) in the 26th International Conference and Expo on Corrosion held in CIDCO Exhibition Center, Vashi, Navi Mumbai during 23rd to 26th September, 2019.

3. **M. Kumar, J. Dutta Majumdar and I. Manna, Laser Assisted 3-D manufacturing of Materials (Invited Talk), presented in the** International Symposium on Metastable, Amorphous and Nanostructured Materials (ISMANAM), in Indian Institute of Technology Madras, during 8-10th July, 2019.
4. **Jyotsna Dutta Majumdar, Micro-Nano-structured Surface by Ultra-fast Laser Processing , presented (oral) in the 2019** Spring Meeting of the European Materials Research Society (E-MRS) held from May 27 to 31, **2019**, in Nice, France
5. **JyotsnaDutta Majumdar**, Silja Katharina Rittinghaus, Konrad Wissenbach, Daniel Höche, Carsten Blawert, and Andreas Weisheit, Microstructural Evolution and Microhardness of Direct Laser Clad TiC Dispersed Titanium Aluminide (Ti45Al5Nb0.5Si) Alloy, 2nd International Conference in Sustainability in Materials and

Manufacturing Processes (SMPM)-held in SUN CITY RESORT, **SOUTH AFRICA**, during 8th to 10th March, 2019.

6. **J. Dutta Majumdar** "**Development of Hydroxyapatite (HA) based Composite Coating on Titanium Alloy (Ti-6Al-4V) Substrate by Plasma Spray Deposition and Post Spray Heat Treatment**" **delivered (**Invited talk**)** in the International Conference on PROCESSING & MANUFACTURING OF ADVANCED MATERIALS Processing, Fabrication, Properties, Applications, held in Paris, France during July 8th to 13th, 2018 (Invited Talk).
7. **Jyotsna Dutta Majumdar**, Electron Beam Assisted Surface Engineering of Metals and Alloys, delivered (**Invited talk**) in the 13 THIRTEENTH INTERNATIONAL CONFERENCE ON ELECTRON BEAM TECHNOLOGIES during 18– 22 June 2018 Varna,
8. **Jyotsna Dutta Majumdar, Laser Composite Surfacing for Improved Wear Resistance,** delivered (**Lead talk**) **in the** International Conference on Sustainable Materials Processing and Manufacturing, **SMPM 2017**, during 23-25 January 2017, in Kruger National Park, South Africa (keynote talk)..
9. Jyotsna Dutta Majumdar, Women in Science and technology, the Status and Challenges Ahead, delivered (**Invited talk**) in the Annual Women's Meet, on 4th March, 2017 organized by Venus International Foundation.
10. Jyotsna Dutta Majumdar, **Stainless Steel Based Implants-Present Status and Scope of Improvement,** delivered (**Invited talk**) **on 15th March, 2017 in the International Conference on Biomaterials, held in IIESR Shibpur.**
11. Jyotsna Dutta Majumdar,' Subhasisa Nath, A.K. Jha, S.C. Sharma, Indranil Manna, **Nano-mechanical Property and Wear Behavior of Yttria Stabilized Zirconia Based Thermal Barrier Coatings Developed by Plasma Spraying,** delivered (**Invited talk**) **in the Conference on Advanced Materials, during 14th to 17th March, in VSSC Trivandrum.**
12. **J. Dutta Majumdar, Ultra-fast Laser Assisted Surface Processing of Metallic Materials,** delivered (**Invited talk**) **in the conference on "Advances in Functional and Structural Materials" held in AMPRI, Bhopal during 13th to 17th January, 2017.**
13. J. Dutta Majumdar, **Studies on Laser Shock Peened Medium carbon (0.4% C) Steel using Femto-second Laser, presented in the** Spring Meeting of the European Materials Research Society (E-MRS) held from May 22 to 26, **2017**, in Strausbourg, France.
14. **J. Dutta Majumdar, Tailoring the Performance of Metallic Bio-implant by Surface Engineering, presented in the East Asia & Pacific Area Conference & Expo from 17th September to 20th September 2017 in Mumbai (Invited Talk).**
15. **J. Dutta Majumdar "Wear Behavior of Hydroxyapatite based Composite Coating on Ti-6Al-4V for Bio-implant Application"**, delivered as an invited talk in the 70th Annual Technical Meeting (**ATM**) of the Indian Institute of Metals organized in Indian Institute of Technology Kanpur during November 11th to 13th, 2016.
16. **J. Dutta Majumdar** "**Surface Designing of Titanium for Bio-implant Application**", delivered as the keynote talk in the 4th International Conference on Advances in Materials and Materials Processing organized at Indian Institute of Technology Kharagpur during 5th to 7th November, 2016.
17. P. Sharma, I. Manna, S. C. Sharma and A. K. Jha, **J. Dutta Majumdar** (2016) **"Development of La_2O_3 - YSZ Composite Thermal Barrier Coating by Plasma Spray Deposition. Proceedings of the CORCON-2016, organized by the National Association of Corrosion Engineers, held in N. Delhi, during 19th to 21st September, 2016.**

18. **J. Dutta Majumdar**, R. Kumari, H. Besser, T. Scharnweber and W. Pfleging. Studies on Laser Surface Texturing of Titanium Alloy', Proceedings in the Lasers in Manifacturing (LIM), 2015 held in International Congress Center Munich, Germany during 25th to 29th June, 2015.
19. J. Dutta Majumdar, Studies on Electron Beam Welding of Cr-Mn Stainless Steel, delivered (**Invited talk**) in the International Conference of Sustainable Materials Science and Technology, held in Saint Danis, Paris during 15th to 17th July, 2015.
20. J. Dutta Majumdar, "**Laser Surface Engineering of Titanium and its Alloys for Bio-implant Application**" delivered (**Invited talk**) *at* Kolkata (3rd International Conference on Laser and Plasma Application in Materials Science, January, 2015.
21. J Dutta Majumdar J (2012), Near Net Shaping of Component by Direct Laser Cladding, presented in the **3rd Asian Symposium on Materials and Processing held in I. I. T. Madras during 30-31st August, 2012.**
22. Gururaj T, Dutta Majumdar J, Manish Tak, G. Padmanabham, Manna. I (2012), Effect of Heat Treatment On Microstructure And Properties Of Laser Cladded H13 Tool Steel Layer On H13 Tool Steel presented in the **3rd Asian Symposium on Materials and Processing held in I. I. T. Madras during 30-31st August, 2012.**
23. Dutta Majumdar J and Sharma P (2012), Nano-Boride Dispersed Coating on AISI 304 Stainless Steel by HVOF Spraying and Laser Melting, presented in the 26th International Conference on Surface Modification Technology held in Ecully, Lyon, France during June 20th to 22nd, 2012 (Invited Tak).
24. **Dutta Majumdar J. (2012),** Surface Physics and Surface Engineering of Ti-6Al-4V for Orthopedic Application, delivered (**Invited talk**) at the International Conference on "Women in Science and Technology- Local and Global Perspective" held in Dhaka, Bangladesh during February 2-4, 2012.
25. Sharma P. and **Dutta Majumdar J**. (2011), Studies on Thermal Sprayed NiCrBSi Coating on AISI 304 Stainless Steel presented at the International Conference in Advanced Materials and Materials Processing held at Indian Institute of Technology Kharagpur during December 9-11, 2011
26. Nath Subhasisa, Pityana S and **Dutta Majumdar J. (2011),** Improved Wear Resistance of Commercially Pure Aluminium by Laser Surface Alloying with 70WC-15Co-15NiCr. presented at the International Conference in Advanced Materials and Materials Processing held at Indian Institute of Technology Kharagpur during December 9-11, 2011/
27. Selvan A, Pityana S. and **Dutta Majumdar J.** (2011), Laser Surface Alloying of AISI 304 Stainless Steel with 50WC+30Ni+20NiCr for improving Wear and Corrosion Resistance, presented at the International Conference in Advanced Materials and Materials Processing held at Indian Institute of Technology Kharagpur during December 9-11, 2011.
28. Chakrabarty Amitesh, Smal C, **Dutta Majumdar, J**. (2011) Laser Surface Alloying of AISI304 Stainless Steel with 20WC+40Co+40NiCr for Improved Wear and Corrosion Resistance, presented at the International Conference in Advanced Materials and Materials Processing held at Indian Institute of Technology Kharagpur during December 9-11, 2011.
29. Kumar A, Pityana S. and **Dutta Majumdar J.** (2011), Surface Characterization and Wear Behavior of Laser Surface Melted AISI316L Stainless Steel, presented at the International Conference in Advanced Materials and Materials Processing held at Indian Institute of Technology Kharagpur during December 9-11, 2011.
30. Karak S. K., **Dutta Majumdar J**. and Manna I. (2011), Effect of Cr content on isothermal oxidation behavior of nano – Y_2O_3 dispersed ferritic alloys prepared by

mechanical alloying and hot isostatic pressing, presented at the International Conference in Advanced Materials and Materials Processing held at Indian Institute of Technology Kharagpur during December 9-11, 2011.

31. **Dutta Majumdar J** (2011), **Structure-Property-Correlation in Laser Surface Alloyed AISI 304 Stainless Steel with WC+Ni+NiCr, presented at the** , Presented at the at the 66 th Annual Technical Meeting of the Indian Institute of Metals, held in Hyderabad, India, November 2011.
32. Kumar A., Berger H. and **Dutta Majumdar J. (2011), Surface Characterization and Wear Behavior of Laser Surface cladding of Ti-6Al-4V on AISI316L Stainless Steel presented at the** , Presented at the at the 66 th Annual Technical Meeting of the Indian Institute of Metals, held in Hyderabad, India, November 2011.
33. **Sharma P. and Dutta Majumdar J. (2011) Surface Characterization and Mechanical Property Evaluation of Nickel Based Alloy Coating on Copper by Thermal Spray Deposition Routes**, Presented at the at the 66 th Annual Technical Meeting of the Indian Institute of Metals, held in Hyderabad, India, November 2011.
34. **Nath S, Manna I., and Dutta Majumdar J. (2011) High temperature Oxidation Resistance of Functionally Graded Thermal Barrier Coating**, Presented at the at the 66 th Annual Technical Meeting of the Indian Institute of Metals, held in Hyderabad, India, November 2011.
35. **Karak, S. K., Dutta Majumdar, J. and Manna, I., Manna, Isothermal oxidation kinetics of nano – Y_2O_3 dispersed high Cr ferritic alloy prepared by mechanical alloying and hot isostatic pressing,** Presented at the at the 66 th Annual Technical Meeting of the Indian Institute of Metals, held in Hyderabad, India, November 2011.
36. **Debnath, M. K., Dutta Majumdar, J., Mukherjee, S. and Manna, I. (2011) Effect of Prior Cold Deformation on Plasma Nitriding of IF Steel** Presented at the at the 66 th Annual Technical Meeting of the Indian Institute of Metals, held in Hyderabad, India, November 2011.
37. Dutta Majumdar J, Nath A. K. and Manna I. (2011): "Direct Laser Cladding of Cobalt on Ti-6Al-4V for Bio-implant Application" at the ***international conference on* "Biomaterials and Implants: Prospects and Possibilities in the New Millennium" held in Central Glass and Ceramic Research Institute, Kolkata** during July 21-23, 2011 CGCRI.
38. **Dutta majumdar J.** (2010): "Laser Assisted Composite Surfacing of Materials" delivered (**Invited talk**) at the International Conference on "Laser and Plasma Applications in Materials Science- 2010" held in Algiers, Algeria during November 27th to 30th, 2010.
39. **Dutta Majumdar J**. (2010): "Laser Composite Surfacing for Improved Wear Resistance" delivered (**Invited talk**) at the International Conference on "Laser Assisted Net Shape Engineering- 2010" held in Erlangen, Germany during Sept. 22nd to 24th, 2010.
40. **Dutta Majumdar J**. (2010): "Laser – A Clean Source of Energy for Materials Processing" at the 4th International Convention and General Assembly of Third World Academy of Women in Science held in Beijing, China during June 28th to July 1st , 2010.
41. **Dutta Majumdar J.** (2010): Surface Engineering for Improving Corrosion Resistance of Marine Structures, at the International Workshop on Application of Coating in Marine Components' held in Pune during February 5-6, 2010.
42. **Dutta Majumdar J.** (2010): Laser Composite Surfacing for Improved Tribological Performance of Component, at the Workshop on Application of Lasers in Mechanical Industry (WALMI-2010) held in Jadavpur, Kolkata during January 8-9, 2010.

43. Dutta Majumdar, J. and Manna I. (2010): Pulsed laser Deposition of Ti and TiO2 on Ti-6Al-4V for Bio-implant Application, at the Materials Science Section of the Indian Science Congress (ISC-2010) held in Trivundrum, India, during January 3-7, 2010.

42 **Dutta Majumdar, J. (2009)**: Laser Surface Engineering of Ti-6Al-4V for Bio-implant Application, at the International Conference on Surface Modification Technology (SMT-23) held in Mamallapuram, Chennai, India, Nov. 2-5, 2009

43. Sharma, P. and **Dutta Majumdar, J**. (2009): Thermal Spray Deposition of NiCrBSi Coating for Wear and erosion Resistance Application. Presented at the at the 64th Annual Technical Meeting of the Indian Institute of Metals, held in Kolkata, India, November 2009.

44. Murmu, C. and **Dutta Majumdar, J**. (2009): Laser Surface Cladding of Ti on AISI 316L Stainless Steel for Bio-implant Application. Presented at the at the 64th Annual Technical Meeting of the Indian Institute of Metals, held in Kolkata, India, November 2009.

45. Debnath, M., Chikkam, A., Dahotre, N. B., **Dutta Majumdar, J.** and Manna, I. (2009): Laser surface coating of Fe-Cr-Mo-Y-B-C bulk metallic glass composition on AISI 4140 steel, Presented at the at the 64th Annual Technical Meeting of the Indian Institute of Metals, held in Kolkata, India, November 2009.

46. **Dutta Majumdar, J.** (2009): Laser Assisted Fabrication of Materials. Presented at the International Conference on Lasers in Manufacturing under 19th World Photonics Congress - 2009 held in Munich, Germany, July 15-18, 2009.

47. **Dutta Majumdar, J.**, Mordike, B.L. and Manna, I. (2009): Laser Surface Engineering of Magnesium Alloys for Improving Wear Resistance. Presented at the International Conference on Lasers in Manufacturing under 19th World Photonics Congress - 2009 held in Munich, Germany, July 15-18, 2009.

48. **Dutta Majumdar, J.** (2009): Development of TiN coating on AISI 316L Stainless Steel by Cathodic Arc Evaporation. Presented at the Advances in Steel Metallurgy (ASM-2009), held in Puri, India, March 21-22, 2009.

49. **Dutta Majumdar, J.** (2009): Surface Nitriding of Ti-6Al-4V for Bioimplant Application. presented at the National Conference on Recent Advances in Surface Engineering (NAL50: RASE 09), held in Bangalore, India, February 26-27, 2009.

50. **Dutta Majumdar, J.** (2009): Laser assisted Shaping of Materials. Presented at the Structure Property Correlation, 2009 (SPC-2009) held in Chandipur, India, December 13-15, 2008.

51. **Dutta Majumdar, J.,** Manna, I. and Li, L. (2008): 'Direct Laser Cladding - an Advanced Manufacturing Technology' presented at the 'National Conference on Advanced Materials and Characterization' held in Vellore Institute of Technology, India, July 23-25, 2008.

52. **Dutta Majumdar, J.** (2008): Laser Surface Engineering of Ti-6Al-4V for Orthopedic Application. Presented (invited article) at the Workshop on Application of Lasers in Materials Processing' held in Kolkata, India, January 17-18, 2008.

53. Dutta Majumdar, J. (2008): 'Laser Assisted Surface Modification of Ti-6Al-4V for Bio-implant Application' delivered at the 3rd US-African advanced Institute "Environmental and Biological Applications of Lasers, *EBAL 2008*" held in Cairo, Egypt, 19-28 January 2008.

54. Dutta Majumdar, J. (2008): Laser Materials Processing Activities in India delivered at the Workshop on 'Areas of Common Interest between EU and Developing Countries in the field of Laser Technology' held in Cairo, Egypt.

55. Dutta Majumdar, J., Mordike, B.L. and Manna, I. (2007): Laser Surface Engineering of Magnesium Alloys for Automotive Applications. Presented as a keynote lecture in the

conference on "Advanced Materials Science and Technology" held in Cairo, Egypt, November 2006.

56. **Dutta Majumdar, J.** (2007): Laser Assisted Forming of Austenitic Stainless Steel. Presented as a keynote lecture in the conference on "Advanced Materials Science and Technology" held in Cairo, Egypt, Novmeber 2006.

57. **Dutta Majumdar, J.** and Manna, I. (2006): Laser Surface Cladding of Compositionally Graded SiC dispersed Coating on Mild Steel for Tribological Application. Presented as an invited lecture in the conference on "International Symposium on Tribocorrosion" held in Hyderabad, India, December 4-5, 2006

58. Basu, A., **Dutta Majumdar, J.**, Dahotre, N.B. and Manna, I. (2006): Laser surface cladding of Fe-Cr-Mo-Y-B-C bulk metallic glass on plain Carbon Steel. Proceedings of the conference on "International Symposium on Tribocorrosion" held in Hyderabad, India, December 2006.

59. **Dutta Majumdar, J.**, Ramesh Chandra, B. and Manna, I. (2006): Friction and Wear Behavior of Laser Composite Surfaced Al with SiC. Proceedings of the "National Conference on Failure Analysis – 2006" held in Hyderabad, India, December 2006.

60. **Dutta Majumdar, J.**, Ramesh Chandra, B. and Manna, I. (2005): Laser Composite Surfacing of AISI 304 Stainless Steel with Titanium Boride for Improved Wear Resistance Presented at the 60th Annual Technical Meeting of the Indian Institute of Metals, held in Jamshedpur, India, November 2005.

61. Biswas, A., Bhattacharjee, U., Chatterjee, U.K., Manna, I. and **Dutta Majumdar, J.** (2005): Surface Oxidation of Ti-4Al-4V for Bio-implant Application. Presented at the 60th Annual Technical Meeting of the Indian Institute of Metals, held in Jamshedpur, India, November 2006.

62. **Dutta Majumdar, J.,** Ramesh Chandra, B., Nath, A.K. and Manna, I. (2006): Laser Composite Surfacing of Copper with TiB2 for Tribological Application. Presented at the International Conference on Advanced Materials and Materials Processing (ICAMMP-06), held at Indian Institute of Technology, Kharagpur, India, February 2006.

63. **Dutta Majumdar, J.,** Ramesh Chandra, B., Nath, A.K. and Manna, I. (2006): Studies on Laser Surface Annealing of Copper . Presented at the International Conference on Advanced Materials and Materials Processing (ICAMMP-06), held at Indian Institute of Technology, Kharagpur, India, February 2006.

64. **Dutta Majumdar, J.,** Ramesh Chandra, B. and Manna, I. (2005): Laser Assisted Composite Surfacing for Tribological Application. Presented at the International Conference on Advanced materials and Materials Design held in Panaji, Goa, India, December 2005.

65. Ramesh Chandra, B., **Dutta Majumdar, J.** and Manna, I. (2005): Laser Composite Surfacing of AISI 304 Stainless Steel. Presented at the International Conference on Advanced materials and Materials Design held in Panaji, Goa, India, December 2005.

66. Biswas, A., Chatterjee, U.K. and **Dutta Majumdar, J.** (2005): Studies on Laser Surface Nitriding of Ti-6Al-4V for Bioimplant Application. Presented at the International Conference on Advanced materials and Materials Design held in Panaji, Goa, India, December 2005.

67. **Dutta Majumdar, J.** (2005): Studies on Kinetics and Mechanism of Corrosion of Laser Assisted Fabricated AISI 316L Stainless Steel. Presented at the International Conference on national Association of Corrosion Engineers (NACE-06) held in Madras, India, November 2005.

68. **Dutta Majumdar, J.**, Ramesh Chandra, B., Nath, A.K. and Manna, I. (2005): Laser composite surfacing of stainless steel with SiC and TiB2 Presented at the 59th Annual

Technical Meeting of the Indian Institute of Metals, held in Madras, India, November 2005.

69. Biswas, A., Chatterjee, U.K., Manna, I., Maity, T.K. and **Dutta Majumdar, J.** (2005): Studies on Laser Surface Nitriding of Ti-6Al-4V for Bioimplant Application. Presented at the 59th Annual Technical Meeting of the Indian Institute of Metals, held in Madras, India, November 2005.

70. Basu, A., **Dutta Majumdar, J.**, Mukherjee, S. and Manna, I. (2005): Studies on Plasma Nitriding of 52100 Steel. Presented at the 59th Annual Technical Meeting of the Indian Institute of Metals, held in Madras, India, November 2005.

71. **Dutta Majumdar, J.**, Ramesh Chandra, B., Nath, A.K. and Manna, I. (2005): Laser composite surfacing of stainless steel with SiC. Presented at the EMRS fall meeting held in Warsaw, Poland, September 2005.

72. **Dutta Majumdar, J.**, Ganesan, S.M., Manna, I. and Nath, A.K. (2005): Laser Assisted fabrication of Co on Ti for bioimplant application. Presented at the EMRS fall meeting held in Warsaw, Poland, September 2005.

73. J. Dutta Majumdar, Ramesh Chandra, B., Nath, A.K. and Manna, I. (2004): Laser Composite Surfacing of Aluminium. In the proceedings of International Symposium on Advanced Materials and Processing (ISAMAP2K4) (ed.: Banthia, A. K.) held at Indian Institute of Technology, Kharagpur, India, December.

74. Dutta Majumdar, J., Ganeshan, S.M., Manna, I. and Li, L. (2004): Direct Laser Deposition of 316L Stainless Steel. In the proceedings of International Symposium on Advanced Materials and Processing (ISAMAP2K4) (ed.: Banthia, A. K.) held at Indian Institute of Technology, Kharagpur, India, December 2004.

75. **Dutta Majumdar, J.**, Ramesh Chandra, B., Nath, A.K., Kaul, R. and Manna, I. (2004): Studies on Wear and Erosion Properties in Laser Composite Surfaced Aluminium with Silicon Carbide and Alumina. Presented at the 58th Annual Technical Meeting of the Indian Institute of Metals, held in Trivandrum, India, November 2004.

76. **Dutta Majumdar, J.**, Ganeshan, S.M., Manna, I. and Li, L. (2004): Studies on Laser Assisted Fabrication of AISI 316L Stainless Steel . Presented at the 58th Annual Technical Meeting of the Indian Institute of Metals, held in Trivandrum, India, November 2004.

77. J. Dutta Majumdar, Ramesh Chandra, B., Nath, A.K. and Manna, I. (2004): Laser Surface Melting and Composite Surfacing of Aluminium with Silicon Carbide. In the International Convention on Surface Engineering (INCOSURF – 04) held in Bangalore, India, August 2004.

78. Rao, K.R., Basu, A., Chattoraj, I., Mallik, A., Mukherjee, S., Roy, S.K., **Dutta Majumdar, J.**, and Manna, I. (2004): Plasma Immersion Ion Implantation of AISI 52100 Ball Bearing Steel for the Enhancement of Hardness and Corrosion Resistance. At the International Convention on Surface Engineering (INCOSURF – 04) held in Bangalore, India, August 2004.

79. **Dutta Majumdar, J.**, Pinkerton, A., Liu, Z., Manna I. and Li L. (2004): Microstructure Characterisation and Process Optimization of Laser Assisted Rapid Fabrication of 316L Stainless Steel. At the Spring meeting of European materials Research Society, held in Straussbourge, France, May 2004.

80. **Dutta Majumdar, J.**, Pinkerton, A., Liu, Z., Manna, I. and Li, L. (2004): Mechanical and Electrochemical Properties of Multiple-Layer Diode Laser Cladding of 316L Stainless Steel. At the Spring meeting of European materials Research Society, held in Straussbourge, France, May 2004.

81. **Dutta Majumdar, J.**, Nath A.K. and Manna, I. (2004): Studies on Laser Bending of AISI 304 Stainless Steel. At the Spring meeting of European materials Research Society, held in Straussbourge, France, May 2004.
82. **Dutta Majumdar, J.**, Nath, A.K. and Manna, I. (2004): Laser Surface Hardening of 0.6% Carbon Steel - Process Optimization. At the Workshop on Applications of Laser in Mechanical Industry (Eds.: Choudhury, S. P. and Chaudhuri, B.) held in Jadavpur University, Calcutta, India, February 2004.
83. **Dutta Majumdar, J.**, (2003): Laser Surface Engineering of Magnesium. At the National Laser Symposium held at the Indian Institute of Technology, Kharagpur, India, December 2003.
84. **Dutta Majumdar, J.**, Galun, R., Mordike, B.L. and Manna, I. (2003): Studies on laser surface alloying of a Mg alloy with nickel. In the proceedings of International Conference on Advances in Surface Treatment: Research and Applications (ASTRA-04) held in Hyderabad, India, Nobember 2003.
85. **Dutta Majumdar, J.**, and Manna, I. (2003): Laser surface alloying of Nimonic with Si+Al to enhance oxidation resistance. In the proceedings of International Conference on Advances in Surface Treatment: Research and Applications (ASTRA-03) held in Hyderabad, India, Nobember 2003.
86. **Dutta Majumdar, J.**, Mordike, B.L. and Manna, I. (2004): Laser Assisted Compositionally Graded Coating on a Mg Alloy. National Conference on Corrosion Engineering, held in Bombay, India, December 2004.
87. **Dutta Majumdar, J.**, Nath A.K. and Manna, I. (2003): Studies on Laser Surface Melting of Steel. Presented at the 57th Annual Technical Meeting of the Indian Institute of Metals, held in Kolkata, India, November 2003.
88. Manna, I., Galun, R., Mordike, B.L. and **Dutta Majumdar, J.**, (2003): Laser Surface Engineering of Magnesium. Presented at the 57th Annual Technical Meeting of the Indian Institute of Metals, held in Kolkata, India, November 2003.
89. **Dutta Majumdar, J.**, and Manna, I. (2003): Thermal Spray Deposition. In the Proceedings of "Conference on Advances in Welding Technology (WELD TECH-2003)" (ed.: Dutta, G.L.) held in I. I. T., Kharagpur, India, March 2003.
90. **Dutta Majumdar, J.**, Ravi Kumar, B., Nath, A.K. and Manna, I. (2002): Residual stress Developed in Laser Surface Hardened 0.6% C Steel. Presented at the 56th Annual Technical Meeting of the Indian Institute of Metals, held in Vadodara, India, November 2002.
91. **Dutta Majumdar, J.**, Galun, R., Mordike, B.L. and Manna, I. (2002): Improving Wear and Corrosion Resistance of a Magnesium Alloy by Laser Surface Engineering for Automotive Application. Presented at the International Conference on Metals and Materials for Automobile Industry (ICMMAI-2002), held in Pragati Maidan, New Delhi, India, September 2002.
92. **Dutta Majumdar, J.**, Galun, R., Mordike, B.L. and Manna, I. (2002): Laser composite surfacing of a magnesium alloy to improve wear resistance. Presented at the International Conference on Advanced materials and Materials Processing (ICAMMP-2002), held in I.I.T., Kharagpur, India, February 2002.
93. **Dutta Majumdar, J.**, Galun, R., Mordike, B.L. and Manna, I. (2002): Laser Surface Cladding of Magnesium for Improved Wear and Corrosion Resistance. Presented at the International Conference on Advanced materials and Materials Processing (ICAMMP-2002), held in I.I.T., Kharagpur, India, February 2002.
94. **Dutta Majumdar, J.**, Mordike, B.L., Roy, S.K. and Manna, I. (2000): Laser Surface Alloying of Mg Alloy to Improve Corrosion Resistance. Presented at the 55th Annual

Technical Meeting of the Indian Institute of Metals held in Bhubaneswar, India, November 2000.

95. **Dutta Majumdar, J.**, Mordike, B.L. and Manna, I. (2000): Aging Behavior of Laser Surface Alloyed Titanium with Silicon. Presented at the 55th Annual Technical Meeting of the Indian Institute of Metals held in Bhubaneswar, India, November 2000.

96. **Dutta Majumdar, J.**, Mordike, B.L., Roy, S.K. and Manna, I. (2001): Enhanced Oxidation Resistance of Ti by Laser Surface Alloying with Si, Al and Si+Al, Presented in the "International Conference on Advances in Surface Science and Engineering (INSURE–2001)", held in Madras, India, February 2001.

97. **Dutta Majumdar, J.**, Mordike B.L. and Manna, I. (2000): Laser Surface Alloying - an Advanced Surface modification Technology. Presented in the "Shaping the Future - Global Dialogue III (Science and Technology-Thinking the Future)" forum held in Hannover, Germany, July 2000.

98. Manna, I. Rao, K., Dayal, R.K., **Dutta Majumdar, J.**, and Roy, S.K. (2000): Laser Surface Alloying of Ferritic Steel to Enhance Oxidation Resistance. Presented at the 87th Indian Science Congress, held in Pune, India, January 2000.

99. Manna, I., **Dutta Majumdar, J.** and Mordike, B.L. (2000): Friction and Wear Behavior of Ti following Laser Surface Alloying with Si, Al and Si+Al. Presented at the 87th Indian Science Congress, held in Pune, India, January 2000.

100. **Dutta Majumdar, J.** (2000): Application of Laser Surface Engineering to Improve Surface Dependent Engineering Properties (Young Scientist Presentation). Presented at the 87th Indian Science Congress, held in Pune, India, January 2000.

101. **Dutta Majumdar, J.** (1996): Laser Surface Alloying (Young Metallurgist Presentation). Presented at the 54th Annual Technical Meeting of the Indian Institute of Metals held in Vilai, India, November 1999.

102. **Dutta Majumdar, J.** (1999): Doctoral thesis entitled ″Some Studies of Laser Surface Alloying of 304-Stainless Steel with Molybdenum and Copper with Chromium″. Presented at the National Laser Symposium held in Hyderabad, India, December 1999.

103. Manna, I. and **Dutta Majumdar, J.** (1998): Metastable Microstructure Developed by Laser Surface Alloying of Copper with Chromium. Presented at the 53rd Annual Technical Meeting of the Indian Institute of Metals held in Kanpur, India, November 1998.

104. **Dutta Majumdar, J.,** Weisheit, A., Mordike, B.L. and Manna, I. (1998): Improvement in Isothermal Oxidation Resistance of Ti by Laser Surface Alloying with Si and Si+Al. Presented at the 52nd Annual Technical Meeting of the Indian Institute of Metals held in Bangalore, India, November 1998.

105. **Dutta Majumdar, J.**, Mordike, B.L. and Manna, I. (1998): Laser Surface Alloying of Ti with Si, Al and Si+Al for improved oxidation resistance. Presented at the annual meeting of Indian Science Congress Association held in Hyderabad, India, January 1998.

106. **Dutta Majumdar, J.**, Mordike, B.L. and Manna, I. (1997):Laser Surface Alloying of Ti with Si, Al and Si+Al for improved oxidation resistance. Presented at the Workshop on Application of Lasers in Mechanical Industry held in Calcutta, India, December, 1997.

107. **Dutta Majumdar, J.,** Weisheit, A., Mordike, B.L. and Manna, I. (1997): Laser Surface Alloying of Ti with Si, Al and Si+Al for improved oxidation resistance. Presented at the 51st Annual Technical Meeting of the Indian Institute of Metals held in Jamshedpur, India, November1997.

108. **Dutta Majumdar, J.**, U.K. Chatterjee, U.K., Nath, A.K. and Manna, I. (1996): Improvement in Wear and Erosion Resistance of Copper by Laser Surface Alloying.

Presented at the Discussion Meeting on Surface Science and Engineering (SURE 96), held at the I.G.C.A.R., Kalpakkam, India, January 1996.

109. **Dutta Majumdar, J.**, U.K. Chatterjee, U.K., Nath, A.K. and Manna, I. (1995): Laser Surface Alloying Copper with Chromium. Presented at the 49th Annual Technical Meeting of the Indian Institute of Metals held in Calcutta, India, November 1995.

110. Manna, I., **Dutta Majumdar, J.**, Chatterjee, U.K. and Nath, A.K. (1995): Laser Surface Alloying of Cr in Pure Cu. Presented at the National Laser Symposium of the Indian Laser Association held at I.R.D.E., DehraDun, India, February 1995.

111. **Dutta Majumdar, J.**, Chatterjee U.K. and Manna, I. (1995): Improving Wear Resistance of Pure Copper and Pitting Corrosion Resistance of Stainless Steel by Laser Surface Engineering. Presented at the 6th Annual General Meeting of the Materials Research Society of India held at the I.I.T., Kharagpur, India, February 1995.

112. Manna, I., Sinha, V., **Dutta Majumdar, J.**, Kale, G.B. and Goswami, G.L. (1994): Improving Wear Resistance of Steel by Laser Surface Alloying. Presented at the 48th Annual Technical Meeting of the Indian Institute of Metals held at Visakhapatnam, India, November1994.

113. **Dutta Majumdar, J.**, and Manna, I. (1994): Mathematical Modelling of Laser Surface Alloying. Presented at the 48th Annual Technical Meeting of the Indian Institute of Metals held at Visakhapatnam, India, November1994.

114. **Dutta Majumdar, J.**, Manna, I., Joshi S.V. and Bharti, A. (1993): Laser Surface Alloying of Mo on 304 Stainless Steel. Presented at the 47th Annual technical Meeting of the Indian Institute of Metals held in Hyderabad, India, November1993.

115. **Dutta Majumdar, J.**, Manna, I., Chatterjee U.K. and Nath, A.K. (1993): Laser Surface Alloying of Cu with Cr. Presented at the National Seminar on Interfacial & Surface Phenomena in Metallurgy held in Varanasi (B.H.U.), India, September-October 1993.

116. **Dutta Majumdar, J.**, and Manna, I. (1992): Boundary Diffusion Aided Surface Treatment of Cu (Al) and Al (Cu) Systems. Presented at the 46th Annual Technical Meeting of the Indian Institute of Metals, held in Udaipur, India, November 1992.

Invited Lectures Delivered

1. ″**Laser Composite Surfacing**“ delivered as an invited talk at MNIT Hamidpur on 27th August, 2018.
2. ″**Ultra-fast Laser Assisted Surface Processing of Metallic Materials**“ Delivered in the conference on Advances in Functional and Smart Materials (AFSM), held in AMPRI, Bhopal on 13th January, 201
3. **“Laser Composite Surfacing of Metals”** delivered as an invited talk at ARCI, Hyderabad on 16th November, 2016.
4. **“Wear Behavior of Hydroxyapatite based Composite Coating on Ti-6Al-4V for Bio-implant Application”**, delivered as an invited talk in the 70th Annual Technical Meeting (**ATM**) of the Indian Institute of Metals organized in Indian Institute of Technology Kanpur during November 11th to 13th, 2016.
5. “**Surface Designing of Titanium for Bio-implant Application**”, delivered as the keynote talk in the 4th International Conference on Advances in Materials and Materials Processing organized at Indian Institute of Technology Kharagpur during 5th to 7th November, 2016.
6. **Ultra-fast Laser Assisted Surface Processing of Metallic Materials by** Jyotsna Dutta Majumdar delivered in BARC as an Invited talk on 30th June, 2016.
7. “**Laser Assisted Macro and Nano Designing of Ti-6Al-4V Surface for Bio-implant Application**” by Jyotsna Dutta Majumdar, delivered in IIT Bombay as an Invited Talk on 29th June, 2016.

8. **"Surface Engineering of Metals using Nanosecond (ns) and Femtosecond (fs) Laser"** delivered as an invited talk on 9th May, 2016 organized by IIT Guwahati.
9. **"Laser Assisted Ablation, Surface Texturing and Deposition of Materials",** delivered as an invited talk on 8th April, 2016 organized by IIM Kalpakkam Chapter.
10. "**Laser Assisted Topographical Modification of Ti-6Al-4V Surface and its Effect on Properties**" *at* Karlsruhe Institute of Technology, Germany, February, 2016.
11. **"Studies on Nitrided and Nitrogen-Ion Implanted Ti-6Al-4V Thin Film Developed by Sputter Deposition on AISI 316L Stainless Steel Substrate",** delivered as an Invited talk in the National Workshop on Tribology organized by Tribological Society of India, Bhopal during 21-22nd January, 2016.
12. "**Advances in surface treatment for carburizing (for gear application)**" *at* KALYANI CENTRE FOR TECHNOLOGY & INNOVATION-BFL, KESHAVNAGAR, PUNE-411036, March, 2016.
13. "**Nano-Textured Surface on Titanium for Bio-implant Application**" *at* Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung, Geesthacht, Deutschland/Germany, 7th November, 2015.
14. "**Nano and Femto second Laser Assisted Materials Processing**" *at* Fraunhofer-Institut für Werkstoff- und Strahltechnik IWS, September, 2015.
15. "**Laser Assisted Macro and Nano Designing of Ti-6Al-4V Surface for Bio-implant Application**" *at* Radboud university medical center P.O.Box 9101, 6500 HB Nijmegen (309), The Netherlands, August, 2015.
16. "**Laser Surface Engineering of Titanium and its Alloys for Bio-implant Application**" *at* Kolkata (3rd International Conference on Laser and Plasma Application in Materials Science, January, 2015.
17. Dutta Majumdar J. (2012): "Microstructural design of copper based shape memory alloy" delivered in University of Munster (host: Professor Gerhard Wilde, Director, Institute of Applied Physics) on 26th July.
18. Dutta Majumdar J. (2012): "Thermal Barrier Coating" delivered in DLR, Koln (host: Dr. U. Schultz, Head, High Temperature Coating Division) delivered 13th June.
19. Dutta Majumdar J. (2012): "Microstructural Designing and Process Optimization in Laser Surface Engineering" delivered in the Institute of Laser Technique (ILT), Aachen (Host: Dr. Andreas Weisheit, Scientist, Materials Processing Group) on 14th June.
20. Dutta Majumdar J. (2012): "Multi-scale Microstructural Control in Laser Surface Engineering" in Ruhr University, Bochum (Host: Prof. Andreas Ostendorf, Director, Mechanical Engineering Department) on 27th June.
21. **Dutta Majumdar J** (2011): **Surface Engineering to Improve Cavitation Corrosion Resistance**" an invited lecture delivered at the Bengal Engineering and Science University, Howrah on 1st-2nd March, 2011.
22. **Dutta Majumdar J** (2011): Materials for Thermal Barrier Coating and its Applications" an invited lecture delivered at the TATA Steel on 16th September, 2011.
21. **Dutta Majumdar J** (2011): Laser Surface Engineering of Magnesium and its Alloys for Improved Wear and Corrosion Resistance, an invited lecture delivered at the National Aerospace Laboratory, Bangalore on 6th August, 2011.
22. **Dutta Majumdar J** (2011): Laser Composite Surfacing for Improved Wear Resistance, an invited lecture delivered at the National Institute of Technology Rourkela, on 2nd September, 2011.
23. **Dutta Majumdar J** (2011): Coatings in Batteries and Super-capacitors" at the EICON Workshop and School on "Nanomaterials Issues in Electrochemical Energy Conversion:

Fuel Cells, Batteries and Supercapacitors" held in Espoo, Finland during 13th to 17th June, 2011.

24. **Dutta Majumdar J**. (2011): Laser Surface Modification of Ti-6Al-4V for Bio-implant Application delivered at the Metallix, held in Jadavpur University during January 9-10, 2011.

25. **Dutta Majumdar J**. (2011): Fabrication of Components by Direct Laser Cladding, an invited lecture delivered at the Materials Science Section of the Indian Science Congress held in Madras during January 3-7, 2011.

26. Dutta Majumdar J. (2010): Laser Assisted Micro and Nano-structuring of Ti-6Al-4V for bio-implant Application, an invited lecture delivered at the 50th National Laser Sumposium held in Indore during December 3-5, 2010.

27. **Dutta Majumdar J.** (2010): Surface Designing of Ti-based Alloys for Bio-implant Application" an invited lecture delivered at the Interface on Biological Research, Karlsruhe Institute of Technology, Karlsruhe, Germany on 28th September, 2010.

28. **Dutta Majumdar J.** (2010): Surface Oxidizing and Nitriding of Ti-6Al-4V for Bio-implant Application" an invited lecture delivered at the Institute of Nano-Technology, Chinese Academy of Science, Beijing, China on 1st July, 2010.

29. **Dutta Majumdar J.** (2010): 'Surface Engineering of Ti-6Al-4V for Bio-implant Application' an invited lecture delivered at the National Metallurgical Laboratory, SERC, CSIR, Taramani, Madras on March 12, 2010.

30. **Dutta Majumdar J**. (2010): Surface Engineering for Improving Corrosion Resistance of Marine Structures, at the International Workshop on Application of Coating in Marine Components' held in Pune during February 5-6, 2010.

31. **Dutta Majumdar J.** (2010): Laser Composite Surfacing for Improved Tribological Performance of Component, at the Workshop on Application of Lasers in Mechanical Industry (WALMI-2010) held in Jadavpur, Kolkata during January 8-9, 2010.

32. **Dutta Majumdar, J**. and Manna I. (2010): Pulsed laser Deposition of Ti and TiO2 on Ti-6Al-4V for Bio-implant Application, at the Materials Science Section of the Indian Science Congress (ISC-2010) held in Trivundrum, India, during January 3-7, 2010.

33. **Dutta Majumdar, J. (2009)**: Laser Surface Engineering of Ti-6Al-4V for Bio-implant Application, at the International Conference on Surface Modification Technology (SMT-23) held in Mamallapuram, Chennai, India, Nov. 2-5, 2009

34. **Dutta Majumdar, J. (2009)**: Laser Assisted Cutting, delivered at the National Laser Centre, C. S. I. R., Pretoria, South Africa, May 27, 2009.

35. **Dutta Majumdar, J. (2009)**: Laser Assisted Welding, delivered at the National Laser Centre, C. S. I. R., Pretoria, South Africa, June 3, 2009.

36. **Dutta Majumdar, J. (2009)**: Laser Surface Engineering, delivered at the National Laser Centre, C. S. I. R., Pretoria, South Africa, July 1, 2009.

37. **Dutta Majumdar, J. (2009)**: Selected Studies on Physical Vapor Deposition, delivered at the African laser Centre, C. S. I. R., Pretoria, South Africa, July 3, 2009.

38. **Dutta Majumdar, J. (2009)**: Laser Surface Engineering of Ti-6Al-4V, delivered at the National Laser Centre, C. S. I. R., Pretoria, South Africa, July 15, 2009.

39. **Dutta Majumdar, J. (2009):** Development of TiN coating on AISI 316L Stainless Steel by Cathodic Arc Evaporation at the Workshop on 'Advances in Steel Metallurgy' organized by DAAD-Eastern Region, Puri, India, March 21-22, 2009.

40. **Dutta Majumdar, J. (2009)**: Surface Nitriding of Ti-6Al-4V for Bio-implant Application at the National Seminar on Advanced Surface Engineering held in National Aeronautical Laboratory, Bangalore, India, February 25-26, 2009.

41 **Dutta Majumdar, J. (2008)**: Laser Assisted Shaping of Materials at the Workshop on 'structure Property Correlation' organized by DAAD-Eastern Region, Chandipur, India, December 13-14, 2008.

42 **Dutta Majumdar, J. (2009)**: Laser Surface Engineering of Ti-6Al-4V for Orthopedic Application. Proceedings of the Workshop on Application of Lasers in Materials Processing' held in Kolkata, India, January 17-18, 2008.

43 **Dutta Majumdar, J. (2008)**: 'Laser Assisted Surface Modification of Ti-6Al-4V for Bio-implant Application' delivered at the 3rd US-African advanced Institute "Environmental and Biological Applications of Lasers, *EBAL 2008*" held in Cairo, Egypt, January 19-28, 2008.

44 **Dutta Majumdar, J. (2008)**: Laser Materials Processing Activities in India delivered at the Workshop on 'Areas of Common Interest between EU and Developing Countries in the field of Laser Technology' held in Cairo, Egypt, January 30th, 2008.

45 **Dutta Majumdar, J. (2007):** 'Surface Engineering of Copper and its Alloys for Wear Resistance Application' delivered on 15th July at the University of Chile, Santiago.

46. **Dutta Majumdar, J. (2007):** 'Studies on Copper Based Shape Memory Alloy for Seismic Application' delivered on 8th August at the Dept. of Materials Science, University of Chile, Santiago.

47. **Dutta Majumdar, J.**, Mordike, B. L. and Manna, I. (2006): Laser Surface Engineering of Magnesium Alloys for Automotive Applications. Proceedings of the conference on "Advanced Materials Science and Technology" held in Cairo, Egypt, November 2006, 13-16.

48. **Dutta Majumdar, J. (2006)**: Laser Assisted Forming of Austenitic Stainless Steel. Proceedings of the conference on "Advanced Materials Science and Technology" held in Cairo, Egypt, November 2006, 13-16.

49. D**utta Majumdar, J. (2006)**: Surface Treatment of Steel. Delivered at the Short term course on "Heat Treatment of Steel" organized by the Indian Foundrymen Institute, held in Howrah, India, November 2006.

50. D**utta Majumdar, J.** and Manna, I. (2006): Development of Nano-Surfacing by Laser Surface Engineering. Delivered at the Theme Meeting on Nano structured Coating held in Kolkata, India, March 2006.

51. D**utta Majumdar, J. (2005)**: Surface Engineering. Delivered at the High Pressure Lab, UNIPRESS, 29/37 Swokolowski, Warsaw, Poland, September 2005.

52. D**utta Majumdar, J. (2005)**: Optical Microscopy. Delivered at the short term course organized by Materials Characterization Division, R&D, Tata Iron and Steel Company, Jamshedpur, India, April 005.

53. **Dutta Majumdar, J. (2005)**: Corrosion and Surface Protection. Delivered at the short term course organized by Tata Engineering and Locomotive Company, Jamshedpur, India, May 2005.

54. **Dutta Majumdar, J. (2005)**: Laser Surface Engineering of Magnesium Alloys for Wear and Corrosion Resistance Application. Delivered at the Dept. Of Metal. & Maters. Engg., I. I. T., Madras, organized by the Indian Institute of Metals, Chennai chapter, India, June 2005.

55. **Dutta Majumdar, J. (2005)**: Laser Surface Engineering of Ti for Aerospace Application. Delivered at the Dept. Of Metal. & Maters. Engg., I. I. T., Bombay, organized by the Indian Institute of Metals, Mumbai chapter, India, June 2005.

56. **Dutta Majumdar, J. (2004)**: Laser Surface Alloying of Ti with Si and Al for Improved Wear and Oxidation Resistance. Delivered at the Surface Engineering Group (Host

Professor: Prof. Bell, T.), Dept. of Materials Engineering, University of Birmingham, UK, May 2004.

57. **Dutta Majumdar, J. (2003)**: Laser Surface Modification of Mg and its Alloys. Delivered at the National Laser Symposium held at I. I. T., Kharagpur, India, December 2003.
58. **Dutta Majumdar, J.** and Manna, I. (2003): Thermal Spray Deposition. In the Proceedings of "Conference on Advances in Welding Technology (WELD TECH-2003)" (ed.: Dutta, G.L.) held in I. I. T., Kharagpur, India, March 2003.
59. **Dutta Majumdar, J. (2002)**: Heat Treatment of Steel. Delivered in "Training Course for Foundrymen" held in IIF, Calcutta (Organizer: Indian Institute of Foundrymen, Calcutta Chapter), India, August 2002.
60. **Dutta Majumdar, J. (2000)**: Heat Treatment of Ductile Iron and Austempering. Delivered in Training Course for Foundrymen at IIF, Calcutta (Organizer: Indian Institute of Foundrymen, Calcutta Chapter), India, October 2000.
61 **Dutta Majumdar, J. (2000)**: Heat Treatment of Nonferrous Metals. Delivered in "Training Course for Foundrymen" held in IIF, Calcutta (Organizer: Indian Institute of Foundrymen, Calcutta Chapter), India, August 2000.
62.. **Dutta Majumdar, J. (2000)**: Laser Welding of Materials. Delivered in the "ISTE Summer School on - Advances in welding Technology" held in B. E. College, Shibpur (Organizer: Dept. of Metallurgy, B. E. College), India, June 2000.