Geetha Manivasagam

About Faculty:

Prof. Geetha Manivasagam currently serves as the director of the Center for Biomaterials, Cellular and Molecular Theranostics (CBCMT). She is a senior professor mentoring students and faculties from various interdisciplinary departments. She is also a part of various institutional committees like the Organization for Women in Science for Developing World (OWSD), Institutional Academic Program Advisory Committee (IAPAC), and Materials Program Curriculum Development Committee (MPCDC).

Her bachelor of science in Physics was completed in 1986 from Stella Maris College, Madras, and pursued a masters of science in Crystallography and Biophysics in 1988 from the University of Madras alongside an M.Phil. in 1990. She stepped into the world of research in 1999 at Anna University by working in tandem with prestigious organizations Defence Metallurgical Research Laboratory (DMRL) and Indira Gandhi Centre for Atomic Research (IGCAR), earning her a doctorate in the year 2002. Her research career was strengthened under the Post-Doctoral training under the supervision of Prof. Henry J Rack at the Department of Materials Science and Engineering, Clemson University, South Carolina, USA.

Over the years, she had excellent exposure in academia and research, building a strong research network that spans all over the globe. She collaborates with eminent professors from 10+ countries and various prestigious organizations within the country like DRDO, DST, ISRO, etc. With more than 140+ publications and 10+ book chapters, Dr. Geetha is tirelessly working on developing reliable implants for human applications. A notable contribution to be quoted here is her review paper titled “Ti based biomaterials, the ultimate choice for orthopedic implants,” which got published in Progress in materials science [IF:32] and has more than 4500 citations to date.

Dr. Geetha currently focuses on developing novel & reliable nanosurface treatments to improve the mechanical and biocompatible properties of existing alloys, which can be used for orthopedic and aerospace applications. She is also actively working with experts from other interdisciplinary fields on additive manufacturing of gyroid implants and bio 3D printing of human organs, thus opening a channel for VITians to take part in cutting edge biomedical research. Her vast experience and insight about amalgamating biology with material science led to the birth of ‘Center for Biomaterials, Cellular, and Molecular Theranostics ‘in 2016.

Research Areas:

- Surface engineering of orthopedic alloys
- Tribological studies of implant materials
- Smart biomaterials
- Additive Manufacturing

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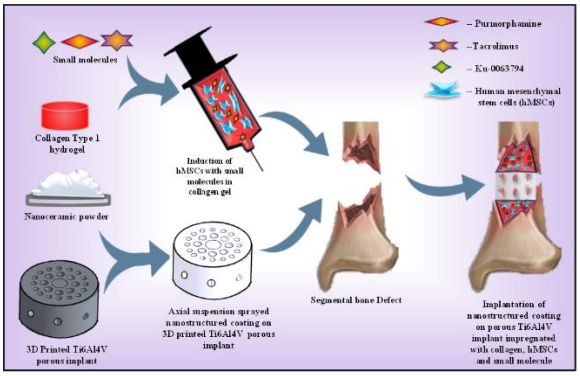
Research Interest

Biocorrosion and fretting wear are major reasons for implant failure or replacement, while immunological triggers lead to biological failure. We focus on translational research, amalgamating material science, cell biology, biochemistry, and nanotechnology to improve the existing alloys used for biological applications. Improving biocompatibility while mimicking the natural bone has been a major challenge in the medical world ever since the advent of bone grafts and implants. At our Biocorrosion and Biotribilogy lab, we test and modify the titanium alloys and other implant candidates to improve their performance inside the human body.

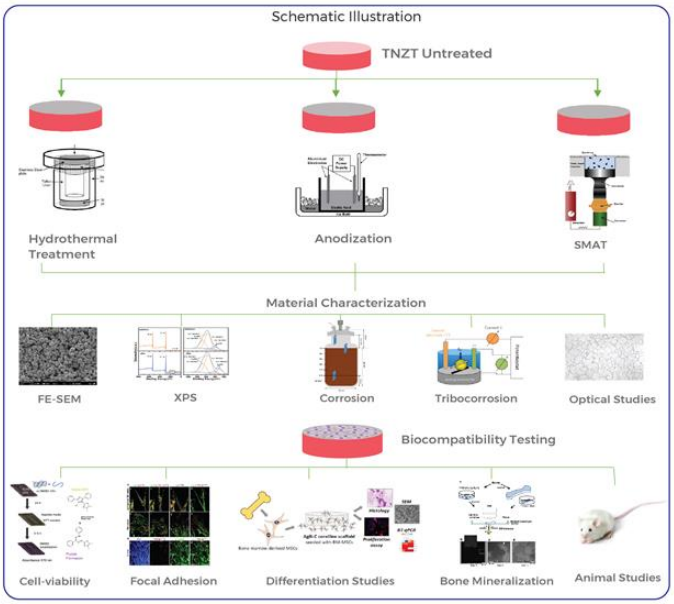
Nanosurface modification has been identified as one of the best treatments to suppress the immune response and graft rejection of bioimplants. Hydrothermal treatment, anodization, electrophoretic deposition, biofunctionalization of surface, etc., are some of the nanosurface modification strategies we follow. The mechanical properties of the alloys are also modified using heat treatment and laser peening techniques, thus helping us fine-tune the material properties. We also house a panel of modeling and designing experts, enabling us to translate theory into practice.

Another focus of our lab is on additive manufacturing of titanium alloys using triply periodic minimal surface geometries in an attempt to mimic the bone architecture and mechanical properties. The novel architecture is tested for biocompatibility and genotoxicity in our lab and assessed for the in-vivo performance using animal models. Smart biopolymers for enhanced cell-material interaction are the latest line of study that is currently under investigation at our lab. These polymers can interact with the surrounding and equip a function based on the stimuli response.

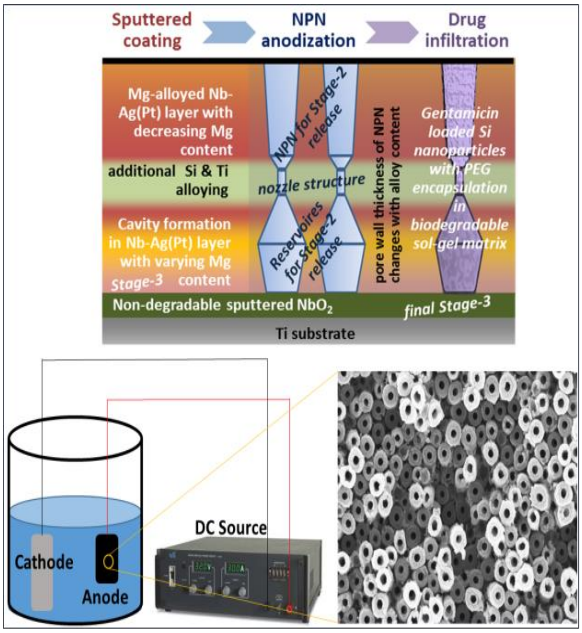
Research Highlights



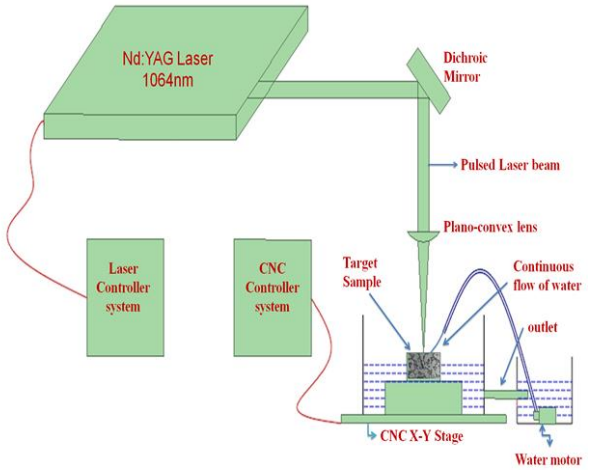
Liquid feed stack plasma-sprayed nanostructured layers on 3D printed porous Ti6Al4V implants impregnated with stem cells in collagen hydrogel for accelerated osteointegration.



Surface modification *of novel Titanium alloy using anodization, hydrothermal treatment and SMAT to improve the fretting wear resistance, corrosion resistance and biocompatibility for superior osteointegration and increase longevity of the implant*



Optimizing the anodization technique to induce antibacterial property on the alloy surface by varying doping concentration. The nanotubes formed as a result of anodization treatment is used for drug loading application, which can be used for orthopedics and prosthodontic application.



Improving the surface characteristics to improve fatigue strength/ life, corrosion properties and wear behavior using laser peening and shot peening for aerospace and orthopedic application.

Honors & Awards

March 2022: Selected for Fulbright-Nehru Academic and Professional Excellence Fellowship

June 2021: Won TATA Material NEXT 2.0

April 2021: Editorial Board Member at In vitro models, Springer.

March 2021: ACS Omega reviewer in 2020

March 2021: ACS Publication Award

February 2021: Won Mother Teresa Woman University Award 2021.

December 2020: Organized Faculty Development Program (FDP) – Building Academic Entrepreneurship and Start-Ups: Basic Scientist's, Clinician's and Entrepreneur's Perspectives.

2018 – till date: Life member, Indian Science Congress Association (ISCA)

2020: Woman Achiever Award for Sponsored Research Excellence 2019-2020, presented by VIT during International Women's Day celebration

2019: Guest Editor: International Journal for Nanomedicine, Biotechnology and Tissue engineering, Materials Today, Regenerative medicine for the special edition on the conference BioMET 2018 .

2018: Life Member ICTE, India

2015: Guest Editor, International Journal for Nanomedicine, IF: 4.5 Special issue of the National conference on Challenges in Biomaterials research conducted in India

2016: Ranked as No. 1 Scientist in the field of Materials Science amongst Indian scientists working in the field of Materials Science, by Ministry for Human Resource Development (MHRD), Government of India for having highest number of citations for the period 2009-2014

2012: Life Member – MRSI, India

2010: Fellow – Tamil Nadu Academy of Sciences, Life time

2010: Best Researcher award from VIT

2003: Life Member – Society of Biomaterials and Artificial organs, India.

2003-till date: Editorial board member- Tribology for Industries, World journal for methodology reviewer (high impact factor journal)

2005: Guest Editor for special issue on Titanium alloys, Minerals and Materials, India2015

Grants

Ongoing

Funding Agency/ Program	**Project title**	**Role**	**Start date**	**End date**	**Budget**
CSIR	Enhancement Biocompatibility and Wear resistance of orthopedic beta titanium alloy Ti-35Nb-7Zr-5Ta by nanosurface modification (***No.22(0803)/19/EMR-II***)	PI	2020	2023	18 lakhs
DST Indo- Sweden	Liquid feedstock plasma sprayed nanostructured layers on 3D printed porous Ti6Al4V implants impregnated with stem cells in collagen hydrogel for accelerated osseointegration**. (DST/INT/SWD/VR/P-15/2019)**	PI	2019	2022	32.15 lakhs
ISRO	Effect of shot peening and laser shock peening on Fatigue behavior of Ti-15V-3Al-35n-3Cr (***ISRO/RES/3/787 /18-19***)	PI	2018	2021	18.66 lakhs
TATA - VIT	Design, development, and surface engineering of additively manufactured low modulus coaxial porous Ti-6Al-4V GYVO (Gyroid and Voronoi) structures for orthopedic applications.	PI	2022	2024	34.5 lakhs
BRICS	Functionalization of new titanium alloys after ECAP processing and surface treatment	Co PI	2019	2020	76 lakhs
SERB	Ligand Targeted PROTAC Conjugates: Chemically Induced Degradation of Disease-causing Kinases by a Proteolysis Targeting Chimera's (PROTACs) coupled with tumor targeting Ligands ***(CRG/2020/001213)***	Co PI	2020	2023	36 lakhs

Completed

Name of Agency	Title of project (Sanction number)	Total Amount (Lakhs)	Period of support
DST	Development of new novel titanium alloy with improved tribological properties for biomedical applications	18.5	2005-2008
IGCAR	Development of Ti based corrosion resistant alloys for Nuclear applications	10	2005-2008
CSIR	Development of nanoceramic coatings on Cp-Titanium and titanium alloys by Electrophoretic deposition	15.35	2007-2009
DRDO	High cycle fatigues studies on beta titanium alloys	15.09	2010-2014
DST-SERB	Development of patient specific implants using rapid manufacturing technique (***SR/S3/ME/0010/2012***)	14.62	2012-2015
DST-UKIERI	Development of CNT reinforced Hap composite coatings using plasma spraying and their tribological studies	19.24	2012-2014
VIT University	Development of graphene reinforced polymer coatings on Ti alloys	12	2014-2016
BRNS	Plasma treatment on metallic materials with and without coatings for biomedical applications (***34/14/01/2016-BRNS***)	36	2016-2019
AR&DB	Laser Shock Peening (LSP) of Aero Engine Materials (***ARDB/GTMAP/01/2031839/M/I***)	69.08	2017-2020 (Ongoing)
DST-DAAD	Engineering Superhemophobic nanostructured surfaces on super elastic Ni-free Ti based alloys for stent applications (***INT/FRG/DAAD/P-20/2018***)	8.88	2018-2020
INDO-AUSTRIA	Controlled Drug Delivery to prevent bacterial adhesion and enhance osteoconduction of Ti alloys used in spinal applications by tailoring the surface with nanopores ***(INT/AUSTRIA/BMWF/P-21/2018)***	5.4	2018-2020
AI-RTF/ RTF DCS	Development of anti-corrosive biodegradable coatings on Mg alloys for orthopedic implants. Funded for a Dr. Poovarsi Balan, Monash University, Malaysia to work with CBCMT***. (RTF/2018/000011)***		2019 -2020

Publications

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13. Tan, JKE, Balan, P, Birbilis, N, & Manivasagam, G (2021). Corrosion-resistant Mg (OH) 2/Mg-Fe layered double hydroxide (LDH) composite films on magnesium alloy WE43. *Journal of the Taiwan Institute of Chemical Engineers*, *104169*
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15. Sathish, S, Balaji, N, Manivasagam, G, & Aruna, STR (2021). Properties of Plasma Sprayed Al2O3-13TiO2 and ZrO2 Blended Coatings on Biomedical Alloy. *Transactions of the Indian Ceramic Society*, *80*(3), 216-223
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28. Kaczmarek, B, Mazur, O, Miłek, O, Michalska-Sionkowska, M, Das, A, & ... 2020, 'Design, characterization and in vitro evaluation of thin films enriched by tannic acid complexed by Fe (III) ions', *Progress in Biomaterials*, vol. 9, no. 4, pp. 249-257

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161. Chellappa, M, Anjaneyulu, U, Manivasagam, G, & Vijayalakshmi, U, 'Synthesis and Fabrication of Silica Composite Coatings on Implant by Electrophoretic Deposition Method'

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Patents

"PROCESS OF MANUFACTURING A TI-BASED IMPLANT WITH IMPROVED SURFACE PROPERTIES" with the above subject application number (201941005757)

Activities

Invited Talk/Guest Lectures

1. Delivered a talk on Join Engineering biomedical webinar series, VIT-Binghamton University, USA, on “Biomedical implants for orthopedic Applications” on January 18th, 2021.

2. Delivered a talk on Three Days Virtual International Conference on CURRENT TRENDS AND FUTURE CHALLENGES IN EDUCATION, October 7th ~9th, 2020.

4. Delivered a talk on Nanobiotechnology: Nanomedicine, Drug delivery and Biomaterials, University of Madras, 31st August to 12th Sept 2020, on Micro surface Nanoengineering

5. Delivered a talk on IBTN -USA, An overview of smart micro-nano surfaces for longevity of biomedical implants, September 16th 2020.

6. Delivered a talk on 6th International Symposium on Metastable, Amorphous and Nanostructured Materials (ISMANAM-2019), July 08-12, 2019

7. AICTE sponsored two weeks faculty development programme- challenges and opportunities in biomaterials research from 26th November to 9th december,2019- as chief guest and delivered a talk on workshop title.

8. Delivered a talk on BioTERM-2019: International conference on biomaterial-based therapeutic engineering and regenerative medicine, organized by the society for biomaterials and artificial organs India (SBAOI) as a chair member.

9. Key Speaker for the 2019 TechConnect World Innovation, Conference & Expo, June 17-19, 2019, at the Hynes Convention Center, Boston, Massachusetts, U.S.A, Smart micro/nano engineered implant surfaces – A platform for osteogenesis

10. Delivered a talk on ‘Challenges in manufacturing of Orthopedic and Spinal implants’- Integrated Computational Materials Engineering (ICME) organized by IISc Bangalore, 10th August, 2018

11. Delivered a talk on - "New Materials for Healthcare: Idea Generation Workshop" on 6th May, 2018 at The Oberoi, Bangalore

12. Delivered a talk on VIT Cambridge summit UK, 3rd-8th January, 2018

13. Delivered a talk to Graduate students on surface engineering of medical implants, IFW, Dresden Germany, 14-18th December 2017

14. Delivered a lecture on bioceramic coatings, University West, Sweden, 8th-14th November 2017

15. Delivered a talk on International Conference on Laser Deposition, ICOLD-2017, 10-25th November- Surface Engineering the solution for Bio materials

16. Delivered a talk on on Effect of processing routes on mechanical properties of Ti, Mg and HAP composites, 25-27th Oct, 2017, 6th Asian Biomaterials Congress (ABMC6)

17. Served as CHAIR-Technical Session for International Conference on Materials, manufacturing and Modelling, ICMMM 2017 held at VIT University, March 2017.

18. Delivered a talk on Nanostructured coatings for orthopedic applications, 4TH IBTN – US Research symposium, Chicago, IL, USA, Feb 18th 2017

19. Delivered a talk on UNESP-Universidade Estadual Paulista, Faculty of Engineering, Guarantingueta Campus, Brazil, October 2016

20. Delivered a talk on National Level Conference on Emerging biomaterials (NCEB-2016), Dept. of Nanoscience and Technology, Bharathiar University Coimbatore, October 2016

21. Delivered a talk on Challenges in Evaluation of Wear, Corrosion and Tribocorrosion Behavior of Orthopedic Implants in invitro Conditions, 43rd International Conference on Metallurgical Coatings and Thin Films, April 2016

22. Served as CHAIR-Technical Session for Surfaces and Interfaces for Biomaterials, The Materials Research Society, 2016 MRS Spring Meeting, Phoenix March 2016

23. Delivered a talk on Materials for implant applications: Challenges and Solutions, University of Illinois College of Medicine, Chicago, USA, 2016

24. Delivered a talk on Advanced Metals for Biomedical Applications, Corrosion Aspects on Advanced Ti-based Materials and Advanced Materials Research at Laval University, Québec City, Canada, 2016

25. Delivered a talk at 2nd Austrian-Indian Symposium on Materials Science and Tribology, May 2014, Wiener, Austria.

26. Delivered a talk in Theme meeting on Recent Trends in Materials Chemistry organized by School of Advanced Sciences, VIT University and IGCAR Kalpakkam, July 2013

27. Delivered a talk on Tribology of orthopedic implants at 2-day national level workshop on engineering tribology, Dr. NGP Institute of Technology, March 2013

28. Delivered a talk on Two-day workshop on Tissue Engineering and its Applications organized by Department of Biomedical Engineering, PSG College of Technology, Coimbatore, January 2013.

Contribution to National and International Conferences

1. Comparison of Tungsten Inert Gas and Friction Stir Welding of AA 5083- H321 Aluminum Alloy Plates, K.Subbaiah, M. Geetha, N. Sridhar, S.R. Koteswara Rao, Trends in Welding Research, Proceedings of the 9th International Conference, June 2012, Chicago, Illinois, USA, 2013 ASM International
2. ANM 2012 4th International Conference on Advanced Nano Materials "Nanosurface Engineering of biomedical implants, October 2012, IIT Chennai, India
3. Research Scenario in the Field of Surface Engineering of Titanium Dental Implants in 25th ISDR & IADR (India Chapter) International Conference, India, October 2012.
4. "Nanocoatings on Titanium Alloys" in Brown University, USA, April 2012.
5. Geetha M, Kevel Kamani, Asokamani R, micro/nano tribological studies on Ti based alloys for biomedical applications' Joint ICTP-FANAS Conference on Trends in Nanotribology, September 2011
6. Biotribology, course for the Scientists at DRDO labs, DMRL, Hyderabad, 2011
7. Geetha Manivasagam, Asia pacific Interfinish 2010,10th International conference on Applied Surface Engineering,5th International conference on surface and Interface Science and Engineering, 'Advanced Biomaterials Challenges Ahead', offered a course in the workshop, October 2010, Singapore
8. Surface Engineering of biomedical alloys, International conference and workshop on Surface Engineering, Hotel Residency, T. Nagar, TN, India, February 2010
9. Sathish Sathyavageeswaran, Venkatesh M, Geetha Manivasagam, Asokamani Rajamanickam, Nandy T.K, Wear Behavior of the Newly Developed Biomedical Beta Titanium Alloy (Ti-23Nb-0.7Ta-2Zr-1O) , February 2010 ,Washington State Convention Center , Seattle, WA
10. Ajeet Babu PK, Akshay S.N and Geetha M, Corrosion Characteristics of Magnesium alloys, Copper alloys, IF Steels and their application in Automotive International Conference on Environmental and Building Sciences in the 3rd Millennium, December 2009, VIT University, Vellore 632 014, India
11. Enhancement of tribological properties and osseointegration of titanium and its alloys by nanoceramic coatings for biomedical applications, Institute of Rizzoli, Bologna, Italy, October 2009
12. Sathish, S.T.Aruna, K.S.Rajam , N.Balaji, M. Geetha, R. Asokamani, Air Plasma Sprayed coatings based on Al_2O_3-13Wt % TiO_2 bilayer coating on Ti-13Nb-!3Zr alloy for, biomedical applications, Journées Internationales 21èmes Francophones de Tribologie,UTC,Compiegne, France, May 2009
13. ILL, Grenoble, France, Titanium alloy for nuclear and biomedical applications –, May 2009
14. Nanoceramic coatings on Ti alloys, JFT, UTC, Compiegne, France, May 2009
15. Ti based biomaterials- ILL, Grenoble, France, May 2009
16. Biomaterials the future trend. Mathematical Institute of Sciences, Chennai, on 8th April,2009
17. Tribology of orthopedic implants – from macro to nano, One day workshop on nanotribology, PSG college, Coimbatore, India, March 2009

18. Satish. S, Aruna S.T., Rajam SK., N.Balaji, Geetha M, Asokamani R, Nanostructured Al_2O_3 – TiO_2+ plasma sprayed coating on Ti alloy for Biomedical Applications, National Conference on Recent Advances in Surface Engineering, NAL, Bangalore, February 2009
19. Titanium and its alloys as biomaterials, Tamil Nadu Science city – for University students to promote science and technology, April, 2008
20. Heat treatment and corrosion of titanium alloys, Baba Atomic Research Centre., Bombay, April, 2008
21. Characterization of nanoceramic coatings on biomedical alloys, invited lecture in the conference, nanomaterial characterization using SAXS, DMRL, Hyderabad, March 2008
22. Sornambikai.S, Sankaranarayanan T.S. N, Geetha Manivasagam, R. Asokamani. EPD of Bioactive TiO_2 on Stainless Steel for Implant Applications on Ti alloys for Biomedical Applications, AMC 2008, VIT University, Vellore, India
23. Characterization of nanoceramic coatings for biomedical alloys, National conference on characterization of nanomaterials, Defence Metallurgical Research Laboratory, Feb,2008
24. U. Kamachi Mudali, A.Ravi Shankar, V.Anbarasan, Geetha Manivasagam, N.Saibaba, Baldev Raj, High performance materials for severely corrosive nitric acid medium, International conference on Advance Materials (IUMRS-ICAM 2007), 8-13 October 2007, Bangalore, India.. National Conference on Medical Materials (NCMM 2007), Dec 2007, Indian Institute of Technology, Madras, Chennai, India.
25. Characterization of nanoceramic coatings, DMRL, Hyderabad, 2007
26. V.Anbarasan, Geetha Manivasagam, U. Kamachi Mudali, Baldev Raj, New generation Titanium alloys for nitric acid service, International conference on corrosion (CORCON 2007), Sep 2007, Mumbai. [Best Paper Award]
27. Biomaterials and its application, Tamil Nadu Academy of Sciences, summer training program, Summer training program – May- 2002, 2005, 2007
28. Nanotechnology in Medicine, Annamalai University, National workshop on the nanomaterials, March 2007
29. Eshaan, S. Shivi, S.T. Aruna, G. Manivasagam, C. Richard, N. Ranganathan Studies on Tribological and corrosion behavior carbon nanotubes reinforced alumina-titania coating on a Ti13Nb13Zr Substrate, SMT 26
30. Santhosh Rajaraman, Geetha Manivasagam, M Nageswara Rao, Structure-property correlation in beta Ti alloy for aerospace applications, 5th International SET conference organized by VIT University Vellore. [Best Paper Award]
31. P.K. Ajeet Babu, Akshay S.Nilawar, Pankaj Vishvakarma Somjeet Biswas, Satyam Suwas , Geetha Manivasagam , Corrosion Behavior of Ultra Fine Grain Pure Magnesium for Automotive Applications, SAE 7th International Mobility Conference in Delhi from Jan 9th - 11th
32. Thair Latif, U. Kamachi Mudali, M. Geetha, R. Asokamani, the role of heat treatments on the corrosion behavoiur and biocompatibility of Ti-6Al-7Nb alloy in simulated body fluids, International Conference on Corrosion (CORCON), 28 – 30 November 2005, held at Chennai Trade Center.

33. Geetha M, Kamachi Mudali, Pandey NS, Asokamani R and Baldev Raj, Laser surface modification of Ti-XNb-XZr alloys, International Conference on Frontiers in the Design of Materials, (FDM-2005), Chennai, Nov.12-13, 2005, [Best paper presentation award]
34. Structure property correlations in Ti alloys for biomedical applications, Tata Institute of Fundamental Research, Bombay, April, 2002

Poster Presentations

1. Taekyung Lee, Eshaan Mathew, Santhosh Rajaraman, Geetha Manivasagam, Ashok Kumar Singh, Chong Soo Lee, "Tribological and Corrosion Behaviors of Warm- and Hot-Rolled Ti-13Nb-13Zr Alloys in Simulated Body Fluid Conditions" , Proceedings of the National Conference on Challenges in Biomaterial Research, 23-24th December 2013, Organized by Centre for Biomaterials Science and Technology, VIT University, Vellore. **[Best Paper Award]**

2. Santhosh Rajaraman, Geetha Manivasagam, Vikas Kumar, and M Nageswara Rao "Age Hardening Behavior of Beta Titanium Alloy Ti-15V-3Cr-3Al-3Sn", Proceedings of the 67th Annual Technical Meeting of The Indian Institute of Metals (IIM-NMD-ATM), 12-15th November 2013, Varanasi, U.P. Organized by IIM Varanasi Chapter

3. D.B Prashant, Santhosh R, Geetha M, Vikas Kumar, M Nageswara Rao "Effect of Thermomechanical Processing on Mechanical Property of Beta Titanium Alloy Ti-15-3, International conference of heat treatment and surface engineering, 16-18th May 2013

4. D. Durgalakshmi, M. Chandran, G. Manivasagam, M-S. Ramachandra Rao, R. Asokamani, Studies on corrosion and wear behaviour of HFCVD coated Ti alloys, International Conference on BioTribology 18-21 September 2011, Imperial College London, UK

5. S. Satish, M.Vennkatesh, M.Geetha , R.Asokamani, T.K.Nandi, Wear behavior of the nanoceramic coated Ti-13Nb-13Zr alloy, 23rd International conference on Surface Technologies, , SMT 2009,2-5,November,Temple Bay, Mamallapuram,India

6. Mohan L, P.Govindaraj, M.Geetha, R.Asokamani, Nanoceramic coatings on biomedical titanium alloys for enhanced osseointegration using EPD, National Conference on Recent Advances in Surface Engineering, NAL,Bangalore , February 2009 **[Best Poster Award]**

7. Sathish S, Pandey N.D, Caroline J, Geetha M, Asokamani R, Studies on the tribological behavior of the laser hardened biomedical Ti and its alloys, 16emes Journees Francophones de Tribologie, 22–23 May, Poitiers JFT Poitiers, 20th to 23rd May 2007, France.

8. Anbarasan V, Geetha M. Structure-Property correlation in Biomedical Ti alloys. International Conference on Biochromatography and NanoBiotechnology, 11th to 15th February 2007, Vellore Institute of Technology, Vellore

9. Thair Latif, Salem A.L. Salem,6 Sabah S. Al-Habib, M. Geetha, R. Asokamani, In vivo studies on Dental screws made from commercially pure Titanium and Ti-6Al-7Nb alloy, International Conference on Corrosion (CORCON). 28 – 30 November 2005, Chennai Trade Center, Chennai. **[Best poster presentation award]**

10. M. Geetha, S. Sornambikai, R. Arumuga kumar, N.D. Pandey, U. Kamachi Mudali, R. Asokamani, Surface Engineering of Biomedical and Automobile Components, Fifth DAE-BRNS National Laser Symposium, 7 – 10 December, 2005, Vellore Institute of Technology, Vellore

11. Geetha Manivasagam, Kamachi Mudali and ND Pandey, Corrosion behavior of laser surface modified Ti-13Nb-13Zr alloy, 1st Asia Pacific Conference & 6th National Convention on Corrosion, Nov 2001 at Hotel Taj Residency, Bangalore

12. Geetha M, Singh AK, Gogia AK, and Asokamani R, Thermomechanical treatment and Laser Nitriding of Biomaterial Ti-Zr-Nb alloys, -Solid State Physics, (India) December (2002).

Conferences and Workshops Conducted

1. Conference Chair: International Virtual Conference on Biomedical Materials Innovation 2020, Department of Nanosciences and Technology and SBAOI
2. Conference Chair: Indo-UK Virtual Conference 'Current Innovations and the Future of Therapeutic Developments (CIFTD-2020), June 2020
3. Conference Chair: International Conference on Biomaterials, Bioengineering BioTheranostics (BIOMET) 2018, Vellore Institute of Technology
4. Convenor of International Workshop on Biomaterials, Cellular and Molecular Theranostics (IWBCMT) 2017, Vellore Institute of Technology
5. Symposium Co Chair, MRS 2016, Phoenix, USA
6. Conference Chair: National conference on Challenges in Biomaterials research- Dec 2015
7. Conference Chair: National Conference on space technology SINC'10, 2010,April 19-20, VIT
8. Conference Chair: National Conference on space technology SINC'09, Feb 28th and March 1st, VIT
9. Organizing Secretary: International conference on Space programmes for students' chapter (SEDS)- September – 2007,2009,2014

Trainings and Workshops Attended

1. Workshop on Surface Engineering for industrial application, September, 2010, Bombay, India. [Sponsored by the organizers]
2. Joint ICTP/FANS conference on Trends in Nanotribology,19-23rd, October 2009, ICTP, Italy. [Sponsored by the organizers]
3. National meet on Nanoscience and nanotechnology, NSMT, 2007, Hyderabad.

4. Sponsored by the organizers: international Training Course-cum-Business Opportunities Workshop on Surface Engineering, Hyderabad, India, 19-26 July 2005
5. Sponsored by VIT University- International Workshop on Surface Engineering, IIT, Chennai, 26-27th November, 2005

Training and Mentoring

1. Dr.Suganthan Verasswamy-Assistant Professor, School of Biomedical Engineering training in the field of biomaterials
2. Dr.Renold Elsen - Assistant Professor, School of Mechanical Engineering, mentored in the field of additive manufacturing
3. Dr.Leema Rose—Assist Professor, School of Advanced Sciences, mentored in the field of biomedical sensor
4. Dr.Nanthagopal –Assoc. Prof., School of Mechanical Engineering, mentored for international collaborations and publications
5. Dr.Arun Kumar Palanipan, CBCMT - Mentoring in developing a new Bio 3D printing laboratory
6. Dr.Amit Kumar Jaiswal, CBCMT - Mentoring in administration works
7. Dr Loganathan, CBCMT – Mentoring in Administrative works.

Research Group:

Current PHD Scholars

Name	Title of Project	PHD Joining Date	E-mail id
Pearlin Hameed	Small molecule mediated osteogenesis of hMSCs for cell-based implants to heal long bone defects.	2016	pearlinhameed@gmail.com
Praveen Kumar K	Laser shock peening of aero engine materials	2018	prveenkesavan@gmail.com
Jayashree	Biomaterial immuno regulation	2019	jayashreenarayanan02@gmail.com
Anisha Parida	Surface modification of Ti alloys to enhance the biological properties	2020	anishaparida96@gmail.com
Ansheed Raheem	Surface modification and epigentics of orthopedic implants	2021	ansheed@gmail.com

Alumni

Name	Title of Project	PHD Tenure	E-mail id
Satish S	Surface modification of titanium alloys for biomedical application.	2006 -10	mechhh_er@rediffmail.com
Subbaya	Welding and Manufacturing Engg.	2006 -12	subbaiahk@ssn.edu.in
Santosh	Study of the high cycle fatigue (HCF) behavior of beta titanium alloy Ti15-3	2010 -15	linkedin.com/in/santhosh-r-473b7623

K Sivasankar R	Combustion Synthesis characterization and potential application of silicate ceramic materials.	2012-2016	pepsiva9@gmail.com
Suganthan	Biocompatibility and antibacterial activity of plasma sprayed micron -nano composite	2015-19	suganthan.v@vit.ac.in
Revathi	Development of additively manufactured dense and porous Ti-6Al-4V Biomedical implants by laser engineered net shaping and its mechanical, biochemical and biocompatibility analysis.	2015-19	reva.biyz@gmail.com
S. Sudhagara Rajan	Influence of laser peening and shot peening on fatigue behavior of aerospace grade ti-15v-3al-3cr-3sn in different metallurgical condition	2015 -19	sudhagar.rajan@gmail.com
L Vinod Reddy	Regulation of survival, angiogenesis, inflammation and cardiomyocytes differentiation by delta opioid signaling in human mesenchymal stem cells	2016 - 2020	vinodreddy.phd@gmail.com
Vasanth G	Wear-corrosion synergistic effect on as-received and surface modified Ti-6Al-4V alloy for orthopedic implant application	2013-2021	vasant.phy87@gmail.com
Jithin V	Heat Treatment and Development of Nanomorphologies by Hydrothermal Method on Ti-Nb-Zr-Ta and Ti-Nb based Beta Titanium Alloys for Orthopedic Implant Applications	2016-2021	jithinvshnu@gmail.com