

**Dr. I. SARAVANAN**, M.E (Manufacturing), MBA, Ph.D (Materials)

Professor, Department of Mechanical Engineering,

Mattest Research Academy, Chennai, Tamil Nadu, India.

Mobile: +91-9841444418

E – mail: is.annauniv@gmail.com

www.mattest.net



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Mattest Research Academy is a Research Institution Providing solutions for the Engineering Materials and its Properties it is focusing with research and development projects which are related to Industrial, Institutional and Research & Academic Institutions. The main objective of the academy is to providing good opportunity for the researches to publish their potential innovation in a reputed journals through an global event and exchange their knowledge through international conferences.

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### **Recent and Current Research Activities**

Tribological behavior of Nitride and Nitro carburization of steel surface for Industrial applications Physical and chemical vapor deposition coating techniques on Metal surfaces

Fabrication of Polymer, Fiber and Metal Matrix Composites for Bio medical applications  
Surface Studies and Material Characterization of energy efficiency in Pump & Pumping systems

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### **Education**

<b>Doctor of Philosophy</b>	-	<b>2016</b>
Materials and Surface Engineering Engineering Design Division Department of Mechanical Engineering Anna University Chennai-25		
<b>Master of Business Administration</b>	-	<b>2006</b>
International Business Annamalai University		

**Master of Engineering** - **2003**  
Manufacturing Engineering  
Annamalai University  
Tamil Nadu, india.

**Bachelor of Engineering** - **2001**  
Mechanical Engineering  
Madras University  
Chennai, Tamil Nadu, India.

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### **Experience**

- Professor in Adhi College of Engineering and Technology from April 2017 to Present
  - Associate Professor in Madha Engineering College from September 2016 to March 2017
  - Teaching Assistance & Visiting Faculty in Anna University from January 2011 to July 2016
  - Assistant Professor in Madha Engineering College from March 2003 to December 2010
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### **Research Fellowship**

Received Anna Centenary Research fellowship (ACRF) issued by Anna university for the duration of 2011-2013

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### ***Projects associated in Master of Engineering***

- Preparation and Properties Evaluation of Nanostructured Nitride coatings ;2013
  - Characterization of Nanostructured TiN coatings on SS 316L by sputtering ;2013
  - Wear Behaviour of CVD TiN coated on Stainless steel ;2014
  - A study on surface properties on Sputtered Nitride coatings; 2014
  - Wear studies of surface modified Austenitic stainless Steel grade 316L ;2015
  - Synthesis and Properties Evaluation of Bio polymer Composites; 2015
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## **R&D Projects**

**TAR/2019/000457**-Development and Tribological Study of Multilayer Nitride Coatings on Surface Modified Co-Cr-Mo Alloy Against Cross Linked Polymer Surface in Wet Sliding Environment For Orthopedic Applications- Under the Scheme of TARE in SERB; Duration 3years ; Project Value 15 Lakhs; Associated with IIT Madras.

**"NANO COMPOSITE DEPOSITION"** technology deployment under the FLCTD Project in Pumps & Pumping System Vertical category. Funded by UNIDO(United Nations Industrial Development Organization); Project Value 35 Lakhs; Associated with Confederation of Indian Industries (CII), India.

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## ***Publications***

### ***International Journal Publications***

1. **I.Saravanan**, "Wear mechanism of UHMWPE polymer composites for bio medical applications", IOP Mater. Res. Express 6 (2019) 105355. <https://doi.org/10.1088/2053-1591/ab3ed9>
2. **I. Saravanan**, A. Elaya Perumal, V. Balasubramanian, "A study of frictional wear behavior of Ti6Al4V and UHMWPE hybrid composite on TiN surface for bio-medical applications", Tribology International, Volume 98, June 2016, Pages 179- 189. <http://doi.10.1016/j.triboint.2016.02.030>
3. **Saravanan, I** & Elaya Perumal, A 2016, "Wear behavior of  $\gamma$ -irradiated Ti6Al4V alloy sliding on TiN deposited steel surface", Tribology International, vol. 93, pp. 451-463. [doi:10.1016/j.triboint.2015.09.040](http://doi.10.1016/j.triboint.2015.09.040)
4. **Saravanan, I**, Elaya Perumal, A, Franklin Issac, R, Vettivel, SC & Devaraju, A 2016, "Optimization of wear parameters and their relative effects on TiN coated surface against Ti6Al4V alloy", Materials & Design, vol. 92, pp. 23-35. [doi:10.1016/j.matdes.2015.11.119](http://doi.10.1016/j.matdes.2015.11.119)
5. **Saravanan, I**, Elaya Perumal, A, Vettivel, SC, Selvakumar, N & Baradeswaran, A 2015,"Optimizing wear behavior of TiN coated SS 316L against Ti alloy using Response Surface Methodology", Materials & Design, vol. 67, pp. 469-482. [DOI:10.1016/j.matdes.2014.10.051](http://doi.10.1016/j.matdes.2014.10.051)

6. **Saravanan. I**, Elaya Perumal, A & Franklin Issac, R 2016, "Wear Study of Cross Linked UHMWPE Hybrid Composite-TiN Interface", Surfaces and Interfaces. <https://doi.org/10.1016/j.surfin.2016.07.008>
  7. Elaya Perumal, A & **Saravanan. I** 2015,"Dry Sliding Wear Behavior of Ti6Al4V and TaN against TiN Deposited Steel Surface", Journal of Materials Science and Chemical Engineering, vol. 3, no. 07, pp. 202-207.
  8. Rajendran, P., A. Devaraju, and **I. Saravanan**. "A study on wear behavior of TiN/AlCrN multilayer coatings at high temperature testing conditions." Surface Topography: Metrology and Properties 9, no. 4 (2021): 045013.
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### ***International Conference publications***

1. Supreet Singh, Manpreet Kaur, **I. Saravanan** "Enhanced microstructure and mechanical properties of boiler steel via Friction Stir Processing" 2019, Materials Today: Proceedings <https://doi.org/10.1016/j.matpr.2019.07.724>
2. R. Gopi, **I. Saravanan**, Investigation of shot Peening process on stainless steel and its effects for tribological applications, Materials Today: Proceedings, Available online 14 September 2019
3. Sunil Kumar, **I. Saravanan**, Lokeswar Patnaik Optimization of surface roughness and material removal rate in milling of AISI 1005 carbon steel using Taguchi approach, Materials Today: Proceedings, Available online 10 October 2019
4. Lokeswar Patnaik, **I. Saravanan**, Sunil Kumar Die casting parameters and simulations for crankcase of automobile using MAGMA soft, Materials Today: Proceedings, Available online 12 September 2019
5. S. Rakshath, B. Suresha, R. Sasi Kumar, **I. Saravanan** Dry sliding and abrasive wear behaviour of Al-7075 reinforced with alumina and boron nitride particulates Materials Today: Proceedings, In press, Available online 23 September 2019
6. **Saravanan, I**, Elaya Perumal, A & Devaraju, A 2013, "Some studies on surface and wear properties of titanium nitride coated SS 316L", Second international conference on advances in materials processing and characterization", Anna University, Chennai, pp. 558-564.

7. **Saravanan I**, Elayaperumal A and Baradeswaran A "Bio Tribological properties of TiN deposited SS 316L against Polymer Bio Composites", American Canadian Conference for Academic Disciplines, May 22, 2014, Ryerson University, Toronto <http://sched.co/1nyG2JZ>.
8. Ramesh, B., S. Satish Kumar, **I. Saravanan**, Ammar H. Elsheikh, R. Selvam, and T. Karthikeyan. "An experimental investigation on machinability of aluminium metal matrix composite Al6061 reinforced with SiC through wire electrical discharge machining (WEDM)." In AIP Conference Proceedings, vol. 2417, no. 1, p. 020004. AIP Publishing LLC, 2021.
9. Ramesh, B., S. Satish Kumar, **I. Saravanan**, Ammar H. Elsheikh, N. Sathishkumar, and SA Muhammed Abraar. "Experimental investigation of drilling parameters for polymer matrix composite." In AIP Conference Proceedings, vol. 2417, no. 1, p. 040002. AIP Publishing LLC, 2021.
10. Ramesh, B., S. Satish Kumar, **I. Saravanan**, Ammar H. Elsheikh, and T. Karthikeyan. "Experimental investigation of polymer matrix composite characterization using jute & carbon fiber in helmet application." In AIP Conference Proceedings, vol. 2417, no. 1, p. 020005. AIP Publishing LLC, 2021.
11. Ramesh, B., S. Satish Kumar, **I. Saravanan**, Ammar H. Elsheikh, A. Ruskin Bruce, and T. Karthikeyan. "Investigations of friction stir welding for AA 6082 with various parameters." In AIP Conference Proceedings, vol. 2417, no. 1, p. 040003. AIP Publishing LLC, 2021.

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***Patent Applied***

**Title:** Irradiation on Rare Earth metals reinforced Magnesium Alloys Application number: 201841047301-

Reference number: E- 2/3836/2018/CHEDate of Application: 14 December 2018

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### ***Research Highlights***

#### **Convener**

- International Conference on Advanced Materials Behaviour and Characterization (ICAMBC\_2020): 18-23 July 2020,
- International Conference on Advanced Materials Behaviour and Characterization (ICAMBC\_2021): 24-26 April 2021.

#### **Guest Editor**

- Materials Today Proceedings; Elsevier Publications - ICAMBC\_2020
- IOP- Materials Science and Engineering; IOP Publications – ICAMBC\_2020, ICAMBC\_2021
- AIP Conference Proceedings ; AIP Publishing – ICAMBC\_2021

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### ***Invited Talk***

- Delivered talk titled “Internet of Things on advanced technology in Manufacturing” in AICTE sponsored FDP, New Delhi, Organized by Panimalar Engineering College, Chennai, Tamil Nadu on 11-23 November 2019
- Delivered talk titled “Recent advancements in bio materials and bio mechanics” sponsored by Ministry of Science and technology, New Delhi, organized by Sathyabama University, Chennai, Tamil Nadu on March 2018
- Delivered talk titled “Environmental Friendly Material processing for Surface Engineering” Sponsored by AICTE, New Delhi, Organized by Panimalar Engineering College, Chennai, Tamil Nadu on 12-13th October 2017

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### ***Participated Research Programme***

- Attended DST-SERB sponsored work shop “Industrial Tribology” on 23-27 September 2019 conducted by SRMIST, Chennai
- Participated in one day workshop on “Thermal Spraying and Cladding” on 2014 organized by IIM Chennai chapter and the Department of Metallurgical and Materials Engineering IIT Madras
- Participated in two days workshop on “Fail-Safe Design, Early Detection & Avoiding Future recurrence” on 28th and 29th October 2013 by Department of Mechanical Engineering, Anna University Chennai and Society for Failure Analysis – Chennai Centre

- Participated in “R7D Project Proposals-Awareness, Needs and Benefits” on 28th June 2013 organized by CTDT, Anna University Chennai
- Participated in course on “Thermal Spray Coating & Technologies for Industrial Applications” organized on 19th May 2013 at IIT Madras Chennai
- Presented a paper on A Study on Surface Properties of Nanostructured Nitride Coatings in the second International Conference on Advances in Material Processing and Characterization (AMPC) on 6th -8th February 2013
- Participated in the one day workshop on “Advances in CNC Machining Skill Development Techniques on 2nd November Department of Mechanical Engineering, Anna University Chennai
- Participated in one day workshop on “Role on NDT & Metallography in Failure analysis” on 11th August 2012 by Department of Mechanical Engineering, Anna University Chennai and Society for Failure Analysis –Chennai Centre
- Attended a seminar Electron Microscopy In Nanotechnology and Biomedical Research on 23 - 24 July 2012 organized by Madras Veterinary College, Chennai
- Participated in the Training programme on FESEM & AFM Characterization techniques on 29-30 June 2012 organized by sathyabama University Chennai
- Attended in workshop “Recent Trends in Product Design & Development” on 18th May 2012, by the Department of Mechanical Engineering, Anna University Chennai.
- Participated in UGC sponsored National workshop “Surface Engineering (SURE“12)” on 23rd and 24th March 2012 organized by Department of Manufacturing Engineering, Annamalai University, Chidambaram
- Presented and participated in “International Conference on advance materials” (ICAM-2011) held on 19 and 20 th of august 2011 jointly organized by BTL Institute of Technology, Bangalore and University of Delaware ,USA at BTLIT Campus, Bangalore
- Participated in the workshop on “Nanocoatings and Applications-Nanocoat 2011” on 30th May 2011 organised by Department of Manufacturing Engineering, CEG, Anna University, Chennai
- Attended in “International Workshop on Wideband Gap Semiconductor Nanostructures” on 10-11th January, 2011 conducted by Crystal Growth Centre and International Affairs, Anna University Chennai

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### ***Technology Tools***

MS office, Origin – graphical tool, CAD, ANOVA, ANSYS, RSM, Taguchi Optimization Tools

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### ***Personal & Contact Information***

Name : I.Saravanan

Sex : Male

Category: OBC

Address : Balaji Towers, 37, II main Road, Ram Nagar, Madipakkam, Chennai-91.

Mobile : +91-9841444418

E – Mail : is.annauniv@gmail.com

Web Link: <https://scholar.google.co.in/citations?user=Wwa2lZIAAAAJ&hl=en>

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### ***Short Profile***

Dr.I.Saravanan received B.E. degree in Mechanical Engineering from Madras University (India) in the year of 2000. He received his M.E. degree in Manufacturing Engineering from Annamalai University (India) in year 2003. He had been awarded Ph.D. in Mechanical Engineering from Anna University, CEG in Full Time (India) on 2016. Since 2003-10, he had been served as Assistant Professor in Madaha Engineering College. Currently he is working as Professor in Adhi College of Engineering, affiliated to Anna University. He served as visiting faculty in Anna University during research studies. His R&D activities include the Tribological Behaviour of bio materials, polymer composite materials and irradiation. He is a member of Indian Welding Society. He has authored and co-authored for the research articles most concentrating on friction and wear on polymer metals and ceramic surfaces and composite materials. He has conducted an international conference [ICMECh'19] as a convener and acted as editor for reputed Elsevier publications. Three scholars are doing research under his guidance. He has applied for patent in the area of irradiation on metals. He had submitted research projects to the funding agency collaborated with foreign Universities. Presently a project had been approved from DST-SERB in the scheme of TARE effective from on 18th of October 2019 which is associated with IIT Madras and the project cost of 15 Lakhs and another project approved from UNIDO under FLCTD associated with Confederation of Indian Industry (CII) and the project cost of 35 lakhs.

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### ***References***

1. Dr.V.Balasubramanian, Prof and Head, Manufacturing Engineering, AnnamalaiUniversity, Chidambaram visvabalu@yahoo.com ,9443412249
  2. Dr.A.Elayaperumal, Prof and Head,Engg Design Division, Dept Of Mech Engg, Anna University, CEG, Chennai : profelaya@gmail.com,7299007201
  3. Dr.M.Kamaraj, Professor, Mechanical Testing Lab & High Temperature Lab MSB,IITMadras, kamaraj@iitm.ac.in,9445964269
  4. Dr.Suresha Bheemappa, Research Head, Professor, Department of Mech ,Engg,National Institute of Engineering,Mysuru, suresha.b2005@gmail.com,9448554240
  5. Dr.Pradip Lingfa, professor, , Dept of Mech Engg, North Eastern Regional Institute of Science &Technology, Nirjuli, Itanagar, pradip.lingfa@gmail.com 9774516964
  6. Dr.V.Anandhakrishnan, Associate professor, Manufacturing Engg Department, NIT, Tiruchirapalli, krishna@nitt.edu 9894206640
  7. Dr.John Philip, Professor, HBNI, Metallurgy and Materials group, IGCAR, Kalpakkam,Chennai Philip@igcar.gov.in
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