# Sri Sai Ram Engineering College
## Department of Humanities and Sciences

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| *Name:*<br>*Dr. S PRABHAKARAN* |  |
| *Designation:* | *Assistant Professor-III* |
| *Qualification:* | *MSc, PGDCSA, PhD, PDF (France).,* |
| *Area of Specialization:* | *Lasers, Materials' Structure-Property Characterizations, Metallography, Surface Modification Treatments, and Thin Films* |
| *Experience:* | *Teaching: UG: years and months*<br>*PG: yrs* |
| | *Industry:*<br>1. **Research Scientist,** *Materials Processing and Technology Unit, Bright-Beams Laser Technology Ltd, Coventry, UK (Nov.2022-August 2023)*<br>2. **Research Support Officer-III (Postdoc),** *Dept. of Metallurgy and Materials Engineering, University of Malta and, School of Mechanical Engineering, Coventry University, UK, Industry Partner: Lufthansa Technik, & Bright-Beams Laser Technology Ltd, UK; (March 2021- November 2022);*<br>3. **Postdoctoral Research Fellow,** *CNRS Paris, France, Marie Skłodowska Curie – Horizon2020 Grant; Structural Integrity of Laser Peened Titanium (Ti-6Al-4V) and Aluminium (Al6061-T3 & Al7075-T6) alloys – Partner Industries: Airbus Industries, Toulouse, France and Rescoll Research Society, Bordeaux, France; November 2019-* |

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| | *February 2021*<br>4. **Teaching Research Assistant**, *Department of Physics, School of Advanced Sciences, VIT University, Vellore, India; Multiscale Investigations of Laser Shock Peening Technologies on ferrous and non-ferrous metal alloys – 5 years (Supervisor: Prof. S. Kalainathan, VIT India, Research Advisors: Dr. Pratik Shukla, Coventry University, UK and Prof. Vijay K. Vasudevan, University of North Texas, USA) July 2014 – May 2019* |
| *No. of Workshop / Conferences / FDP attended* | *Workshop – / Conferences – / FDP -* |
| *Publications :* | *Journals*<br>*National : Nil*<br>*International : 38* |
| | *Conferences*<br>*National : 7*<br>*International : 13* |
| *Research Guidance:* | *Supervised Master student industrial projects (total of 17) in the area of Materials Science and Engineering* |
| *General:* | *Total Citations:* **1002**<br>*H-Index:* **17**<br>*I10 h-index:* **20** *(as of 08th Oct.2023) Source: Google Scholar* |
| *Staff Achievements:* | *DST-SERB grant awarded through young scientist international conference travel scheme (INR 1.8 Lakhs Indian Rupees)*<br><br>*CO-Principal Investigator, Synchrotron beamline facilities for the residual stress measurements and Imaging, Diamond Light Source, UK – [In collaboration with ZAL, Hamburg, Germany; HILASE Prague, Czech Republic; Coventry University; UK, and Airbus Industries] 2019-2021; Completed (7164 British pounds)*<br><br>*Visiting Researcher at CNRS France, University of Bordeaux, Coventry University, University of Southampton, Airbus Industries Toulouse, RWTH* |

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| | *Aachen University, Max-Planck Institute for Iron and Steel Research, RRCAT India, Bharathidasan University and VIT University*<br><br>*Summer Research Fellowship (SRF) at Indian Institute of Astrophysics (IIA) Bangalore and Kodaikanal Observatory, India (2012; 3 months)*<br><br>*Professional members of the International Laser Shock Peening Society, Indian Institute of Metals (IIM) and the American Society for Testing and Materials (ASTM), Synchrotron Beam line I11-Diamond Light Source, Rutherford Appleton Laboratory, UK*<br><br>*Editor in the Int. Journal of Peening Science and Technology (IJPST), Old City Publishing*<br><br>*Guest Editor for Metals, MDPI Publisher*<br><br>*Reviewer for the journals Materialia, Additive Manufacturing, Materials Characterization, Optics and Laser Technology, Surface and Coatings Technology, Experimental Techniques, Lasers in Manufacturing Processes, and Journal of Materials Processing Technology, Applied Physics: A, Applied Physics: B, Optik, MDPI Metals, MDPI Materials etc.,* |

**Educational Qualification:**

| Category | Name of | Specializatio | Year of | Name of the | Name of the | % of | Class |
|---|---|---|---|---|---|---|---|

| | the Degree | n | Passing | College | University | Marks / Grades obtained | obtained |
|---|---|---|---|---|---|---|---|
| *UG* | *BSc* | *Physics* | *2012* | *St. Joseph's College (Autonomous), Tiruchirappalli* | *Bharathidasan University* | *72* | *First* |
| *PG* | *MSc* | *Physics* | *2014* | *St. Joseph's College (Autonomous), Tiruchirappalli* | *Bharathidasan University* | *72* | *First* |
| | *PGDCSA* | *Physics* | *2013* | *St. Joseph's College (Autonomous), Tiruchirappalli* | *Bharathidasan University* | *69* | *First* |
| *Ph.D.* | *Ph.D.* | *Physics* | *2019* | *VIT Vellore* | *VIT University (Deemed to be)* | *Highly Commended* | |

**Academic Experience: NIL**

| Name of the College | Designation | Joining Date | Relieving Date | Experience | | |
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| | | | | Years | Months | Days |
| *Sri Sairam Engineering College* | *Assistant professor* | *23.09.2023* | *Till date* | | - | *14* |
| | | | | | | |
| | | | *Total* | - | - | *14* |

## PUBLICATIONS

**Patents:**

*1. S Kalainathan,* **S Prabhakaran** *"Optimized Method for Manufacturing Automotive Spring Steel with Enhanced Fatigue Properties". Indian patent filed on 23/02/2016 Application Number: 201641006199 Status:* **Patent Granted by Govt. of India***; Patent no.: 386198;*

*2. S Kalainathan, S Prabhakaran "Process for Treating Material Surfaces using Warm Laser Shock Peening without a Coating". Indian patent filed on 23/02/2016 (Application no.: E-101/13164/2016-CHE).* **Status: Published**

*3. S Kalainathan,* **S Prabhakaran** *"Process for severe laser shock peening using low energy Nd: YAG laser". Indian patent filed on 12/09/2016 (Application no.: 201641031003).* **Status: Published**

*4. S Kalainathan,* **S Prabhakaran***, Prashantha Kumar H.G, Anthony Xavior, "Method for surface modification in graphene-aluminium alloy nanocomposites using low energy laser shock peening", Indian Patent Application No. 201741034931 dated 03/10/2017.* **Status: Published**

**Journal Publications:**

**1. S Prabhakaran***, S Kalainathan: Warm laser shock peening without coating induced phase transformations and pinning effect on fatigue life of low-alloy steel. Materials and Design, 107 (2016): 98-107.*

***2.*** **S Prabhakaran***, S Kalainathan: Compound technology of manufacturing and multiple laser peening on microstructure and fatigue life of dual-phase spring steel. Materials Science and Engineering A, 674 (2016): 634-645.*

***3.*** **S Prabhakaran***, Aniket Kulkarni, G. Vasanth, S. Kalainathan, Pratik Shukla, and Vijay K. Vasudevan. "Laser shock peening without coating induced residual stress distribution, wettability characteristics and enhanced pitting corrosion resistance of austenitic stainless steel." Applied Surface Science 428 (2018): 17-30.*

**4. S Prabhakaran,** *S. Kalainathan: Process Optimization of Warm Laser Shock Peening without Coating for Automotive Spring Steel. International Conference on Materials Processing and Applications; laser 2, no. 3: 4.*

**5. S Prabhakaran***, H.G. Prashantha Kumar, S Kalainathan, Kaustav Chakraborty: Laser shock peening on microwave sintered aluminium alloy nanocomposites. 2nd ICAMST, INDIA; 01/2018; Mechanics, Materials Science & Engineering MMSE Journal. Open Access.*

**6. S. Prabhakaran,** *H.G. Prashantha Kumar, Anthony M. Xavior, S. Kalainathan, Dong Lin, Pratik Shukla, Vijay K. Vasudevan: Enhanced surface and mechanical properties of bioinspired nanolaminate graphene-aluminium alloy nanocomposites through laser shock processing for engineering applications. Materials Today: Communications, 16 (2018): 81-89.*

**7. S Prabhakaran***, S. Kalainathan, Pratik Shukla, and Vijay K. Vasudevan: Residual Stress, Phase, Microstructure and Mechanical Property Enhancement of Ultrafine Bainitic Steel through Laser Shock Processing. Optics and Laser Technology, 115 (2019): 447-458.*

**8. S Prabhakaran***, Prashantha Kumar H,G, S. Kalainathan, Pratik Shukla, Vijay K. Vasudevan "Laser shock peening modified surface texturing, microstructure and mechanical properties of graphene dispersion strengthened aluminium nanocomposites", Surfaces and Interfaces, 14 (2019): 127-137.*

**9.** *S. Kalainathan,* **S Prabhakaran***: Recent development and future perspectives of low energy laser shock peening. Optics & Laser Technology, 81 (2016): 137-144.*

**10.** *S.A. Nithin Joseph Reddy,* **S Prabhakaran***, S. Kalainathan, N. Arivazhagan, M. Manikandan: "Laser Shock Peening (LSP) to Improve the Metallurgical and Mechanical Properties of Gas Tungsten Arc Welding (GTAW) Joints in Hastelloy C-276." Lasers in Engineering (Old City Publishing) 42 (2019).*

***11.*** *S.A. Nithin Joseph Reddy,* **S Prabhakaran***, S. Kalainathan, N. Arivazhagan, M. Manikandan: Surface modification technique to enhance metallurgical and mechanical properties of alloy C-276 weldment by laser shock peening without coating, Indian Journal of Metals, Sādhanā 43 (2018): 1-8.*

**12.** *S. Thiruvenkadam,* **S Prabhakaran,** *Sujay Chakravarty, V. Ganesan, Vasant Sathe, M.C. Santhosh Kumar, A. Leo Rajesh: Effect of Zn/Sn molar ratio on the microstructural and optical properties of Cu2Zn1-xSnxS4 thin films prepared by spray pyrolysis technique. Physica B Condensed Matter, 533 (2018): 22-27.*

**13.** *Aniket Kulkarni,* **S Prabhakaran***, Siddarth Chettri, S. Kalainathan: Effect of laser shock peening without coating on surface morphology and mechanical properties of nickel alloy, International Journal of Peening science and technology, Open Access 9 (2017).*

**14.** *Jain, Y., Varin, S.,* **S Prabhakaran,** *& Kalainathan, S. (2017). Effect of Multiple Laser Shock Peening without Coating on Al-2024-O Alloy for Automotive Applications. Mechanics, Materials Science & Engineering MMSE Journal. Open Access, 9 (2017).*

**15.** *Varin, S., Jain, Y.,* **S Prabhakaran,** *& Kalainathan, S. (2017). Influence of Multiple Laser Shock Peening without Coating on Ti-6Al-4V Alloy for Aircraft Applications. Mechanics, Materials Science & Engineering MMSE Journal. Open Access, 9(2017).*

**16.** *Kulkarni, A., Chettri,* **S Prabhakaran***, S., & Kalainathan, S. (2017). Effect of Laser Shock Peening Without Coating on Surface Morphology and Mechanical Properties of Nickel-200. Mechanics, Materials Science & Engineering MMSE Journal. Open Access, 9 (2017).*

**17.** *K. Devendranath Ramkumar, Shiva Goutham Kumar, Radhakrishna, Aditya Chandrasekhar, Sidharth Dev, Winston Sunny Abraham,* **S Prabhakaran***, S. Kalainathan: Influence of laser peening on the tensile strength and impact toughness of dissimilar welds of Inconel 625 and UNS S32205. Materials Science and Engineering A 676 (2016): 88-99.*

**18.** *Ayush Bhattacharya, Siddharth Madan, Chirag Dashora,* **S. Prabhakaran***, V.K. Manupati, S. Kalainathan, K.P.K. Chakravarthi: Effect of Multiple Laser Shock Peening on the Mechanical Properties of ETP Copper. International Conference on Materials Processing and Applications; Open Access, 9 (2017).*

**19.** *Karthik, M., Parthibavarman, M., Kumaresan, A.,* **S. Prabhakaran,** *Hariharan, V., Poonguzhali, R., & Sathishkumar, S. (2017). One-step microwave synthesis of pure and Mn-doped WO3 nanoparticles and its structural, optical and electrochemical properties. Journal of Materials Science: Materials in Electronics, 28(9), 6635-6642.*

***20.*** *A Madhusudanan,* **S Prabhakaran***, PH Ruba, Elizabeth Rufus. "Structural health monitoring using ultrasonic techniques" IOP Conference Series: Materials Science and Engineering, 263-5 (2017), 052029.*

**21.** *M Parthibavarman, S Sathishkumar,* **S. Prabhakaran***: Enhanced visible light photocatalytic activity of tin oxide nanoparticles by different microwave optimum conditions. Journal of Materials Science Materials in Electronics, 29 (2018): 2341-2350.*

**22.** *G Ranjith Kumar, K Sowmya Joshi, G Rajyalakshmi, S Kalainathan,* **S. Prabhakaran***: Investigation of Mechanical, Microstructural and Corrosion behaviour of Titanium subjected to Laser Peening with and without Ablation. IOP Conference Series: Materials Science and Engineering, 02/2018; 310(1):012015.*

**23.** *S. Thiruvenkadam, P.Sakthi,* **S. Prabhakaran***, Sujay Chakravarty, V. Ganesan, A. Leo Rajesh: Deposition and characterization of spray pyrolysed p-type Cu2SnS3 thin film for potential absorber layer of the solar cell. Physica B Condensed Matter 03/2018; 538.*

**24.** *M Karthik, M. Parthibavarman,* **S. Prabhakaran,** *"Facile and one step synthesis of WO3 nanorods and nanosheets as an efficient photocatalyst and humidity sensing material" Vacuum, 155 (2018): 224-232.*

**25.** *Sandeep Varin, Mayank Agarwal, Aditya chugh, Manikandan Mano,* **Prabhakaran Subramaniyan***, S. Kalainathan, Pratik Shukla, Jonathan Lawrence, Arivazhagan N: Effect of laser shock peening on commercial pure Titanium-1 weldment fabricated by gas tungsten arc welding technique. Transactions of the Indian Institute of Metals 02/2019;*

**26.** *Y. F Ogbekene,, Pratik Shukla, Y. Zhang,, X. Shen,* **Prabhakaran Subramaniyan***, S. Kalainathan, K. Gulia, J. Lawrence: Laser Cleaning of Grey Cast Iron Automotive Brake Disc: Rust Removal and Improvement in Surface Integrity. International Journal of Peening Science and Technology.*

**27.** *Parthibavarman, M., M. Karthik, and* **S. Prabhakaran***. "Role of microwave on structural, morphological, optical and visible light photocatalytic performance of WO3 nanostructures." Journal of Cluster Science 30, no. 2 (2019): 495-506.*

**28.** *Jayashree, M., M. Parthibavarman, and* **S. Prabhakaran***. "Hydrothermal-induced a-Fe2O3/graphene nanocomposite with ultrahigh capacitance for stabilized and enhanced super capacitor electrodes." Ionics 25, no. 7 (2019): 3309-3319.*

**29.** *Shen, Xiaojun, Pratik Shukla, Philip Swanson, Zhibin An,* **S. Prabhakaran***, David Waugh, Xiangfan Nie, Christopher Mee, Soheil Nakhodchi, and Jonathan Lawrence. "Altering the wetting properties of orthopaedic titanium alloy (Ti–6Al–7Nb) using laser shock peening." Journal of Alloys and Compounds 801 (2019): 327-342.*

**30.** *Kumar, N. Navin, Aditya Chandrakant Yadav, K. Raja, C. D. Naiju,* **S. Prabhakaran,** *and S. Kalainathan. "Laser Shock Peening on Al-Si10-Mg Produced by DMLS Technique." Materials Today: Proceedings 22 (2020): 2916-2925.*

**31.** *Kumar, Nattudurai Navin, Aditya Chandrakant Yadav, Kumar Raja,* **S. Prabhakaran,** *Chooriyaparambil Damodaran Naiju, and Sivaperuman Kalainathan. Study on Effect of Laser Peening on Inconel 718 Produced by DMLS Technique. No. 2019-28-0146. SAE Technical Paper, 2019.*

**32.** *Chukwuike, V. I., O. G. Echem,* **S. Prabhakaran,** *S. Anand Kumar, and R. C. Barik. "Laser shock peening (LSP): Electrochemical and hydrodynamic investigation of corrosion protection*

*pre-treatment for a copper surface in 3.5% NaCl medium." Corrosion Science 179 (2021): 109156.*

**33.** *Zammit, Ann, Marlon Attard,* **Prabhakaran S,** *Sebastian Levin, Lothar Wagner, Jack Cooper, Laurent Espitalier, and Glenn Cassar. "Investigations on the adhesion and fatigue characteristics of hybrid surface-treated titanium alloy." Surface and Coatings Technology 431 (2022): 128002.*

**34.** *Zammit, Ann, Marlon Attard,* **Prabhakaran S,** *Sebastian Levin, Lothar Wagner, Jack Cooper, Laurent Espitalier, and Glenn Cassar. "Enhancing surface integrity of titanium alloy through hybrid surface modification (HSM) treatments." Materials Chemistry and Physics (2022): 125768.*

**35.** *Xiaojun Shen, Pratik Shukla, Sunita Nayak, Vasanth Gopal,* **Prabhakaran S,** *Amy Sarah Benjamin, Sivaperuman Kalainathan. "Biological and Mechanical Response of Laser Shock Peening Orthopaedic Titanium Alloy (Ti-6Al-7Nb)". Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine 236, no. 8 (2022): 1169-1187.*

**36.** *Tamiridi, Rajesh Dora, Rajendra Goud,* **Prabhakaran S**, *Kalainathan Sivaperuman, Anand Kumar Subramaniyan, Indrajit Charit, and Srikant Gollapudi. "Contrasting Effects of Laser Shock Peening on Austenite and Martensite Phase Distribution and Hardness of Nitinol." Crystals 12, no. 9 (2022): 1319.*

**37.** *Luana Bonnici,* **Prabhakaran Subramaniyan**, *Daniel Glaser, Glenn Cassar, Pratik Shukla, Pierluigi Mollicone, Ann Zammit. "Effect of Laser Shock Peening on Austempered Ductile Iron". Part B: Journal of Engineering Manufacture (2023): 09544054231166223.*

**38.** *Seddik, Raoudha, Alexandre Rondepierre,* **S Prabhakaran**, *Léo Morin, Véronique Favier, Thierry Palin-Luc, and Laurent Berthe. "Identification of constitutive equations at very high strain rates using shock wave produced by laser." European Journal of Mechanics-A/Solids 92 (2022): 104432.*

**39. S Prabhakaran*,** *S. Kalainathan, Pratik Shukla, Li Li, Shaoyua Yan, Vijay K. Vasudevan, "Severe plastic deformation induced phase transformations, electrochemical and corrosion fatigue mechanisms of SS316L through massive laser shock peening", Corrosion Science, (revision submitted).*

**Conferences/Seminars/Webinars:**
*To be updated*

**Workshops:**
*To be updated*

**FDP:**
*To be updated*