


Name: Dr. S. Prabhakaran	Photo 		
Designation:	Associate Professor of Physics & Liaison Officer, Office of International Affairs		
Qualification:	M.Sc., Ph.D., PDF (France&UK)., MIMMM.,		
Area of specialization:	Lasers, Solid State Physics, Materials Science and Engineering, Physical Metallurgy, Nanoscience and Technology		
Intro:	<p>A highly motivated young scientist and a committed team player with more than 9 years of research experience in the field of Lasers, Solid-State Physics and Metallurgy. Specially on various metal alloys (physical metallurgy), materials processing, surface engineering and advanced microstructure and mechanical property characterizations. Expertise areas are including heat treatment of various metal alloys, prevention methodologies of decarburization on automotive spring steels, peening technologies, Laser materials processing, advanced microstructural investigations, residual stress measurement techniques, coatings and tribological characterizations, high-cycle fatigue failure studies, stress corrosion cracking (SCC), electrochemical corrosion studies, finite element modeling and, backed by more than thirty-five highly reputed international journal publications and holds four granted patents.</p> <p><i>Email ID : spkaran.kmd@gmail.com; prabhakaran.phy@sairam.edu.in</i> <i>ResearchGate:</i>https://www.researchgate.net/profile/Prabhakaran_Subramaniyan Google Scholar: the total number of citations is 1230, the h-index is 19, and the i10 index is 23</p>		
Scholar Details:	★ Full-Time PhD Scholars - 4 (Currently working) ★ Masters Students - 3 (completed) ★ Bachelors students - 11 (completed)		
Experience:	Industrial Experience	Postdoctoral Experience	Teaching Experience
	<i>1 year</i>	<i>3 years 1 month</i>	<i>1 year 4 months</i>

Number of workshops / FDP attended:	Number of Workshops		Number of FDPs	
	19		13	
Publications:	Conference		Journal	
	National	International	National	International
	-	8	-	35
Books / Book Chapters	3 Book chapters			
Patents:	National		International	
	-		4 Indian Patents (Granted)	
Professional Body Membership	Professional members of <ul style="list-style-type: none"> • The International Laser Shock Peening Society • Indian Institute of Metals (IIM) • American Society for Testing of Materials (ASTM) • Synchrotron Beam line I11- Diamond Light Source, Rutherford Appleton Laboratory, UK 			
Technical Qualifications	<ul style="list-style-type: none"> • A Diploma in Laboratory Equipment Maintenance and Servicing (DLEMS) awarded by Bharathidasan University, India • A Diploma in Computer Programming (DCP) awarded by National Institute of Technology, Tiruchirappalli, India • PGDCSA (Post-graduate Diploma in Computer Science and Applications) awarded by Bharathidasan University, India • Summer Research Fellowship (SRF) at Indian Institute of Astrophysics (IIA) Bangalore, India 			

Educational Qualifications:

Category	Name of the Degree	Specialization	Year of Passing	Name of the College	Name of the University	% of Marks / Grades obtained	Class obtained
UG	BSc	Physcis	2012	St. Joseph's College	Bharathidasan University	74.9	First
PG	MSc	Physics	2014	St. Joseph's College	Bharathidasan University	74.1	First
	PGDCSA	Computer Science	2013	St. Joseph's College	Bharathidasan University	73.5	First
Doctorate	PhD	Physics	2019	VIT Vellore	VIT Vellore	Highly Commended and Received Best Thesis & Research Award	

Academic Experience:

Name of the College	Designation	Joining Date	Relieving Date	Experience		
				Years	Months	Days
Sri Sairam Engineering College, Chennai	Associate Professor	01-11-2024	Till date	-	-	-
Sri Sairam Engineering College, Chennai	Assistant Professor	22-09-2023	31-10-2024	1	1	0

- **Research Scientist (Materials Processing)**, Bright-Beams Laser Technology Ltd, Worcestershire, Coventry, UK; (Nov. 2022 – Sept. 2023); **Laser Surface Processing Treatments and Optimizations**
- **Research Support Officer-III (EU Horizon2020 Research Grant)**, Dept. of Metallurgy and Materials Engineering, University of Malta and, School of Mechanical Engineering, Coventry University, UK. (March 2021- December 2022); **Fatigue, Tribological and Microstructural characterizations of Surface Engineered Spur Gear Materials**
- **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 University of Ljubljana, Slovenia]* 2019-2021; **Completed Successfully (Grant – 7647 British Pounds)**
- **Postdoctoral Scientist (PDF)**, CNRS Paris, France; Applications of Laser Shock Peening (LSP) and Laser Shock Adhesion Test (LASAT) – *Partner Industries: Airbus and Rescoll Research Society. November 2019- February 2021*

➤ **PhD - Teaching Research Associate**, VIT University, India; Multiscale Investigations of Laser Shock Peening Technologies on ferrous and non-ferrous metal alloys – **4 years** [Supervisor: Prof. S. Kalainathan, VIT India; Co-Supervisors: Dr. Pratik Shukla, Coventry University, UK and Prof. Vijay K. Vasudevan, University of North Texas, USA]

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). **Patent Granted by Govt. of India; Patent no.: 505589;**
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). **Patent Granted by Govt. of India; Patent no.:482914;**
4. S Kalainathan, **S Prabhakaran**, Prashantha Kumar H.G, Anthony Xavier, "*Method for surface modification in graphene-aluminium alloy nanocomposites using low energy laser shock peening*", Indian Patent Application No. 201741034931 dated 03/10/2017. **Patent Granted by Govt. of India; Patent no.: 483040;**

PUBLICATIONS

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

- **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.
- S. Kalainathan, **S Prabhakaran**: *Recent development and future perspectives of low energy laser shock peening*. Optics & Laser Technology, 81 (2016): 137-144.
- 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).
- 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.
- S. Thiruvankadam, 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 Cu₂Zn_{1-x}Sn_xS₄ thin films prepared by spray pyrolysis technique*. Physica B Condensed Matter, 533 (2018): 22-27.
- 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).
- 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).
- 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).
- 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).
- 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.
- 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).
- 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.
- 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.

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

➤ 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.

➤ 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.