Cover Letter

Dear Sir

I am Dr. Subramani P., currently working as an Assistant Professor in the Department of Mechanical Engineering, Faculty of Engineering and Technology, Jain University (Deemed to be University), Bengaluru (2.9 Years). I have completed my Ph.D. from the School of Mechanical Engineering, Vellore Institute of Technology, Vellore, Tamilnadu. I have published 20 research papers in reputed international journals and I have also attended 4 international and two national conferences. Completed 8 week course (FDP) in "Fundamentals of Welding Science and Technology" conducted by Swayam and NPTEL with a score of 92%. I have obtained my M.Tech in Green Energy Technology from Madanjeet Singh School of Green Energy Technologies (South Asia Foundation, UNESCO), Pondicherry University, India. I have obtained a Merit Scholarship to pursue M.Tech. from the Ministry of New and Renewable Energy (MNRE), Govt. of India. I have one year and six months of industrial experience at Kraftwork Solar.Pvt.Ltd, Cochin. Prior to that I have completed B.E. in Mechanical Engineering from J. J. College of Engineering and Technology affiliated to Anna University.

I will be glad if my candidature is considered for the post of Assistant Professor in Mechanical Engineering in your reputed institute.

Thank you,

Regards,

Dr. Subramani P.

Resume

Dr. Subramani P.

Address:
66/107, Chamundi Street,
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Mobile: +91 9080789125, 7598199034
Date of Birth: 23.02.1992

Profile

- Currently working as an **Assistant Professor** in the Department of Mechanical Engineering, Faculty of Engineering and Technology – **Jain University** (Deemed to be University), Bengaluru (from 5/8/2019).
- Completed **Ph.D in Mechanical Engineering** (Full-Time) from **Vellore Institute of Technology** (VIT), Vellore, Tamil Nadu.
- Published **19 research articles** in International journals, **one book chapter with Springer Nature**; attended 4 International Conferences and 2 National conferences.
- Completed 8 week course (FDP) in "Fundamentals of Welding Science and Technology" conducted by Swayam and NPTEL with a score of 92%.
- **One and half year industrial experience** in **Kraftwork Solar Pvt. Ltd.**, Cochin.
- Completed **M.Tech in Green Energy Technology** from **Madanjeet Singh School of Green Energy Technologies (a unit of South Asia Foundation, UNESCO**), **Pondicherry University**, Puducherry, India in 2015 with First Class.
- Recipient of **Merit Scholarship** for pursuing M.Tech, from the Ministry of New and Renewable Energy (**MNRE**), **Govt. of India.**
- Completed **B.E in Mechanical Engineering** from J.J. College of Engineering and Technology (Affiliated to **Anna University**), Trichy, in 2013 with First Class**.**
- Recipient of **second prize in research paper** presentation at a National Conference in 2012.
- Completed 32 days of Industrial Training in three companies while pursuing B.E in Mechanical Engineering.

Researcher IDs

Google Scholar ID: https://scholar.google.co.in/citations?user=clgr0CQAAAAJ&hl=en
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International Publications

Year 2022:

1. **Subramani P,** M Sathishkumar, M Manikandan, Senthil Kumaran Selvaraj, V Sreenivasulu, N Arivazhagan and S Rajkumar, "Performance of air plasma sprayed Cr_3C_2–25NiCr and NiCrMoNb coated X8CrNiMoVNb16–13 alloy subjected to high temperature corrosion environment", Materials Research Express, 9 (2022), 016520, **Index : Scopus, Impact Factor: 1.620**
2. **Subramani P,** N Arivazhagan, Senthil kumar selvaraj, Simone mancin, M Manikandan, "Influence of hot corrosion on pulsed current gas tungsten arc weldment of aerospace-grade 80A alloy exposed to high temperature aggressive environment", International Journal of Thermofluids, 1 April 2022, 100148. Status: In Press, **Index : Scopus.**

Year 2021:

3. **Subramani P,** Sathishkumar M, Gokul Kumar K, Manikandan M, Naiju C D and Arivazhagan N, "Studies on Metallurgical and Mechanical Properties of Pulsed Current Gas Tungsten Arc Welded Aerospace 80A Grade Alloy", No. 2021-28-0241, SAE Technical Paper, 2021, Index: **Scopus**
4. Mohan Cigurupadi Ganesan, Arulmurugan Balasubramanian, **Subramani Pasupathi**, Sathishkumar Mathiyazhagan, Rajamurugan Govindasamy, Arivazhagan Natarajan, Manikandan Manoharan, "Influence of overalloyed filler wire to preclude the microsegregation in weld joint of alloy C-276", Journal of Chemical Technology and Metallurgy, 56, 4, 2021, 853 -856**, Index: Scopus**

Year 2020:

5. **Subramani P**, Sathishkumar M, Manikandan M, C D Naiju, Anbarasan N and Jerome S, "Studies on Metallurgical and Mechanical Properties of Plasma Arc Welded Aerospace 80A Grade Alloy", No. 2020-28-0466. SAE Technical Paper, 2020. Index: **Scopus**
6. Sathishkumar M, **Subramani P,** Arivazhagan N, Gokulkumar K, Jerome S, Naiju C D, and Manikandan M. "Hot Corrosion Demeanour of Key-Hole Plasma Arc Welded Aerospace Grade Hastelloy X in Molten Salt Environment", SAE Technical Paper, 2020, Indexing: **Scopus.**
7. **Subramani P**, Sanket Shetty, Khan Umar Ahmed Nisar Ali, Sathishkumar M, Jerome S, Arivazhagan N, Manikandan M. "Effect of Frequency on the Microstructural and corrosion behaviour of Alloy C-276 by pulsed current gas tungsten arc welding technique", Materials Today: Proceedings, 22 (2020), 3297-3285. Index: **Scopus and SCI**
8. Sathishkumar M, Manikandan M, **Subramani P**, Anbarasan N, Jerome S, Arivazhagan N. "Effect of welding speed on Aspect ratio of Hastelloy X weldment by key-hole plasma arc welding (K-PAW)", Materials Today: Proceedings, 22 (2020), 3297-3304, Index: **Scopus and SCI**

9. M. Sathishkumar, **P.Subramani**, M Natesh, M Venkateshkannan, N Arivazhagan, M Manikandan "Effect of Hot Corrosion Demeanor on Aerospace-Grade Hastelly X made by pulsed and constant current arc welding in molten salt at 820^{o}C" IOP Conf. Series: Materials Science and Engineering, 912 (2020), 032060, Index: **Scopus** and **SCI.**

Year 2019:

10. **Subramani P**, Manikandan M, "Development of Gas Tungsten Arc Welding Using Current Pulsing Technique to Preclude the Chromium Carbide Precipitate in the Aerospace Grade Alloy 80A", International Journal of Minerals, Metallurgy and Materials, 26 (2), 2019, 210-221, Index: **Scopus** and **SCI, Impact Factor: 2.232.**
11. **Subramani P,** Manikandan M, "Hot Corrosion Demeanour of Alloy 80A Weldments Fabricated Through Tungsten Inert Gas Welding Technique", Transition of Indian Institute of Metals, 72 (6), 2019, 1575-1578. Index: **Scopus** and **SCI**, **Impact Factor: 1.499**.
12. **Subramani P,** Nirmal Padgelwar, Sanket Shetty, Anirudha Pandit, V. Sreenivasulu, Arivazhagan N, Duoli W.U., Manikandan M, "Hot Corrosion studies on Detonation-gun-sprayed NiCrAlY and 80Ni-20Cr coatings on alloy X22CrMoV12-1 at 600 ^{o}C", Transition of Indian Institute of Metals, 72 (6), 2019, 1639-1642. Index: **Scopus** and **SCI**, **Impact Factor: 1.499**.
13. Arulmurugan B, Kunjan Modi, Amrutkar Pranit Sanjay, Patil Apurva Yashwant, Rickwith N, Mohan C G, **Subramani P**, Agilan M, Manikandan M and Arivazhagan N, "Effect of post weld heat treatment on the microstructure and tensile properties of Electron Beam Welded 21st century Nickel based Super alloy 686", Sãdhanã, 44, 2019, 38, Index: **Scopus** and **SCI, Impact Factor: 1.188**.

Year 2018:

14. **Subramani P**, Manikandan M, "Development of welding technique to suppress the microsegregation in aerospace grade alloy 80A by conventional current pulsing technique", Journal of Manufacturing Processes, 34 (2018), 579-592, Index: Scopus, **Impact Factor: 5.010.**
15. **Subramani P**, Sanket Shetty, Anirudhapandit R, Hari P R, Gokul Kumar K, Manikandan M, Arivazhagan N, Siva Shanmugam N, "Investigations on the Microstructure, Microsegregation and Hardness Properties of Bead on Plasma Arc Welded C-276 Alloy", Materials Today: Proceedings, 5 (2018), 13628–13636, Index: **Scopus** and **SCI.**
16. Srikanth A, **Subramani P**, Venkateshkannan, Mageshkumar K, Puneeth T, Manikandan M, Arivazhagan N, Siva Rama Krishna A, "Investigation on Microstructure, Micro-segregation and Mechanical Properties of Gas Tungsten Arc Weldment of Alloy 600 by ERNiCrMo-10", Materials Today: Proceedings, 5 (2018), 13244–13250, Index: **Scopus** and **SCI.**
17. Dhananjay Parashar Tumu, ***Subramani P**, Gokul Kumar K, Manikandan M, Mohan C G, Arivazhagan N, Deva N.Rajan, **"Investigation on microstructure and tensile properties of dissimilar weld joints between AISI 316L and duplex 2205 stainless**

steel", IOP Conf. Series: Materials Science and Engineering, 402 (2018), 012075, Index: **Scopus** and **SCI.**

18. Akshay Prasanna P, **Subramani P**, Sreenivasulu V, Arivazhagan N, Duoli WU, Manikandan M, "High-temperature corrosion behavior of HVOF sprayed Cr_3C_2-25NiCr Coated on alloy X22CrMoV12-1 at 600^oC", Journal of Thermal Spray and Engineering, 2018.
19. Ghosh A, Madhumathi P, **Subramani P**, "Effects of demonetisation amidst the workers of construction and engineering sectors" International Journal of Civil Engineering and Technology, 9(2), 2018, 854-858, Index: **Scopus** and **SCI.**

Book Chapters

1. Chapter Title: **Welding Metallurgy of Corrosion Resistant 21st Century Ni-Based Superalloy 686**; Book Title: Advanced Manufacturing and Materials Science, **Springer Nature**, 2018, 457-463.

National and International Conference Presentation / Design

- Presented a paper on **"Influence of Overalloyed fillerwire to preclude the microsegregation in the weld joint of alloy C-276"** in International conference on Advanced Materials and Manufacturing Processes for Strategic Sectors (ICAMPS-2018), Trivandrum, **conducted by IIM and ISRO**. October 25-27, 2018.
- Presented a paper on "**Welding Metallurgy of Corrosion Resistant 21st Century Ni-Based Superalloy 686"** in International conference on advanced manufacturing and materials science, conducted by MITS during 15-26 January 2018.
- Presented a paper on "**A Review on Development of Solar Drier for Proper Utilization of Solar Energy"** in 11th International conference on science, engineering and technology, conducted by VIT during 3-4 November 2015.
- Achieved second place in National conference for presenting a paper on **"Optimization of machining parameter during turning of valve steel (X45CrSi93) by using taguchi method"** in and published in **Engineering Today Journal.**
- Presented a paper on **"Effective use of water drips in the household air conditioner"** in national conference.
- Obtained third place in CAD modeling competition conducted in J.J. College, Trichy.

Research Articles UNDER REVIEW

- **P Subramani***, Kunjan Modi, Amrutkar Pranit Sanjay, V Sreenivasulu, N Arivazhagan, and M Manikandan, "**High Temperature Corrosion Studies on HVOF Coated Nimonic 80A Weldments Fabricated by Gas Tungsten Arc Welding",** Journal of Thermal Spray Technology, **IF: 2.522,** Index: **Scopus and SCI** (Under Review).
- V Sreenivasulu; **Subramani P**; Jayakumar V; Arivazhagan, N.; Manikandan, M.; Szymon Tofil; Sathishkumar, M. "**Development of Protective Coating for X8CrNiMoVNb16/13 Alloy in High-Temperature Molten Salt Environment through HVOF Sprayed NiCrMoNb and Cr3C2-25NiCr Powder Coating**", Materials Performance and Characterization (ASTM Journal), Index: **Scopus** (Submitted).

FDP/Webinar

- Attended 5 days FDP program on "Noval Materials and its Industrial Application" conducted by Karpagam College of Engineering, Coimbatore, from 13-5-2020 to 18-5-2020.
- Completed 8 week course (FDP) in "Fundamentals of Welding Science and Technology" conducted by Swayam and NPTEL with a score of 92%.
- Attended one day webinar on "Different Cyber Frauds and Social Media Usage" conducted by Jain University, Bangalore, on 22-3-2021.
- Attended one day webinar on "Malicious websites and Safe Browsing Habits" conducted by Jain University, Bangalore, on 26-3-2021.
- Attended one day webinar on "Metallurgical Failure Analysis" conducted by Amal Jyothi College of Engineering, Kottayam, on 26-3-2021.
- Attended one day webinar on "Welding of Nickel Based Superalloy in Power Plant Sectors" conducted by Ganadipathy Tulsi's Jain Engineering College". Vellore on 27/6/2020.
- Attended one day webinar on "Advancements in Industrial Automation and Latest Trends" conducted by Ganadipathy Tulsi's Jain Engineering College". Vellore on 20/6/2020.
- Attended one day webinar on "Advances in Automotive Engines" conducted by Jain University, Bangalore, on 6-6-2020.
- Attended one day webinar on "Overview of Non Destructive Testing on Weldment" conducted by Academy of Maritime Education and Training (AMET), Chennai, on 15-5-2020.
- Attended one day webinar on "How to get published in research journal: from research to publication" conducted by Sai Ram Institute of Technology, Chennai, on 27-4-2020.
- Attended one day webinar on "Industry 4.0" conducted by Jain University, Bangalore, on 15-5-2020.

International/National Workshop

- Attended two days international virtual workshop on "**High Performance Metallic Materials For Energy Storage And Power Generation Sector (MATAPP 2021)"** organized by School of Mechanical Engineering (SMEC) of Vellore Institute of Technology, Vellore in association with Forschungszentrum Julich, Germany and held during 22-23,April 2021.
- Attended one day workshop on "India's National Educational Policy" Conducted by Coimbatore Institute of Technology and TLC (MHRD), 27.3.2021.
- Attended one day workshop on "**Learning from Learner's Insight**" conducted by Jain University, Bangalore, 14 February 2020.
- Attended a Workshop on **"Writing a Methodological Revision Paper"** conducted by Vellore Institute of Technology, Vellore, on August 4, 2017.
- Attended a Workshop on **"Quality Issue in Research Publication"** conducted by Vellore Institute of Technology, Vellore, on July 25, 2017.
- Attended a Workshop on **"Basic Level Autonomous Robotics"** conducted by Robotic Core School in J.J college of Engineering and Technology, Trichy, from 31st March 2011 to 1st April 2011.
- Attended a Workshop on **"Automotive Technology and Design Tool"** conducted by National Institute of Technology (NIT-Trichy) Trichy, during 2-3 October, 2010.

Ph.D Details

Title of Dissertation: **Studies on Welding Processes on Metallurgical, Mechanical and Hot Corrosion Behavior of Aerospace 80A Grade Alloy**

Supervisor:

Dr. M. Manikandan,
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Abstract:

Alloy 80A is prone to hot cracking during conventional arc welding process. Microsegregation of alloying element Cr lead to the formation of $M_{23}C_6$ carbide phase during solidification of fusion zone, and it contributes to hot cracking. The current study employs different welding techniques and filler wires to minimize the microsegregation in the weld and also studies these weldments performance in the hot corrosion induced by Air Oxidation (AO) and Molten Salt (MS) environment at 900 ^oC. The weldments were fabricated by Gas Tungsten Arc Welding (GTAW) and Pulsed Current Gas Tungsten Arc Welding (PCGTAW) techniques using filler wires 263 and ERNiCrMo-3 (Mo-3) and ERNiCr-3 (Cr-3). Scanning Electron Microscope (SEM) reveals the existence of secondary phase in the interdendritic region for all the weldments. Energy dispersive X-Ray Spectroscopy (EDS) analysis reports that PCGTAW eliminates microsegregation of Cr precipitate and suppress Nb and Mo precipitates better when compared to GTAW. X-Ray Diffraction (XRD) analysis indicate the presence of $M_{23}C_6$ Cr and Mo-rich carbide phase in GTA weldment of 263 filler wire. Whereas in PCGTAW, NiCrCoMo phase is observed. In both GTAW and PCGTAW of ERNiCrMo-3, the intermetallic phases Ni_8Nb and Cr_2Ti are observed. In GTA ERNiCr-3 weldment the existence of $M_{23}C_6$ Cr-rich carbide, Ni_8Nb and Cr_2Ti phases was observed. By contrast, in the PCGTA weldments, the Ni_8Nb and Cr_2Ti phases was observed. The tensile test was conducted to assess the strength and ductility of the weldments. The results of the PCGTA weldments have improved compared to their respective GTA weldments.

In hot corrosion induced by AO and MS environment at 900 ^oC, AO substrates showed less weight gain compared to MS environment substrates. In MS environment, welded substrates showed higher weight gain compared to AO substrates, particularly GTA Mo-3 substrate showed more weight gain. The least weight gain was observed in the PCGTA Cr-3 substrate. Thus it is inferred that PCGTAW substrate performed well in molten salt environment compared to its respective GTAW substrate. The formation of protective oxides such as NiO, Cr_2O_3, $NiCr_2O_4$ and NbO are helpful in arresting the surface and sub-surface layer oxidation by providing good resistance against hot corrosion to the welded substrate.

Keywords: *Alloy 80A, Pulsed Current Gas Tungsten Arc Welding, Filler Wire, Hot Corrosion, Molten Salt Environment, Air Oxidation*

Educational Qualification

Institution	Degree	Year of Passing	Score (%)
Vellore Institute of Technology, Vellore, India	Ph.D. – Mechanical Engineering	2019	-
Pondicherry University, Puducherry, India	M.Tech- Green Energy Technology	2015	77.9
J.J. College of Engineering and Technology (Affiliated to Anna University) , Trichy, India	B.E- Mechanical Engineering	2013	78.3
Sri Sarada Balamandir Boys Matriculation Higher Secondary School, Salem.	Higher Secondary	2009	74
Sri Sarada Balamandir Boys Matriculation Higher Secondary School, Salem.	Secondary	2007	76.4

Projects Completed

- **"Design and Performance Analysis on Solar air heater based Dryer"** at Pondicherry University.
- **"Thermal cycling test on organic PCM for its thermal reliability and stability and development of suitable heat exchanger"**, at Pondicherry University.
- **"Improving the life of the feed roller in drum chipper"** at Tamil Nadu News Print and Paper Limited.
- **"Design and fabrication of exhaust braking system"** at J.J. College of Engineering, Trichy, Tamilnadu, India.

Onsite Industrial Training

- Ten days of training in **Southern Railways, Trichy**.
- Fifteen days of training in **Tamil Nadu State Transport Corporation**, Dindugal, Tamilnadu, India.
- Seven days of training in **Steel Authority of India Limited (SAIL)**, Salem.
- One day industrial visit to **BHEL, Kotak Urja Pvt.Ltd. and IISC**

Work Experience

- Currently working as an Assistant Professor in Department of Mechanical Engineering at **Faculty of Engineering and Technology (FET) – JAIN University (Deemed to be University),** Bengaluru (from 5/8/2019).
- Worked as a Senior Engineer for 16 months in **Kraftwork Solar Pvt. Ltd.**, Kerala, India.

Academic Activities

- Internal Quality Assessment Cell (IQAC) coordinator
- Monthly Information System (MIS) coordinator
- NAAC Coordinator of Metallurgy Department
- Placement coordinator for Metallurgy Department
- Class Teacher
- Mentor
- Internal Test Coordinator
- Board of Studies Member

Membership Details

- Hong Kong Society of Mechanical Engineering (Membership no.: m20191010001)

Skills

Software Applications	: Auto CAD, Pro-e, Basic of CATIA and Ansys
Vocational Skills	: Lathe, Welding, Carpentry, Automobile
Special Skills	: Drawing, Presentation and Organizational skills
Programming Languages	**:** C & C++
Languages known	: English, Kannada and Tamil

Declaration

I hereby declare that the information's provided above are true to my knowledge.

Date: 11.5.2022

Place: Bangalore

(SUBRAMANI P.)

References:-

Dr. M. Manikandan,
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