

# National Institute of Technology, Tiruchirappalli: Performa for CV of Faculty/ Staff Members

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## Curriculum Vitae

Dr. S. Muthukumaran is an alumnus of REC Trichy and presently working as an Associate Professor in the Department of Metallurgical and Materials Engineering, National Institute of Technology, Tiruchirappalli. He has obtained Ph.D (Engineering) from Birla Institute of Technology in the year 2007 and his research interest includes Welding Engineering, Energy Engineering and Materials Engineering. Before joining NIT Trichy, he has served as faculty member in MIT campus, Anna University, Birla Institute of Technology, Ranchi and Vellore Institute of Technology. He has more than fourteen years of teaching experience and introduced many new experiments in laboratories. He taught subjects including welding engineering, engineering mechanics, non destructive testing, thermo dynamics, thermal engineering, power plant engineering, energy engineering, engineering economy, manufacturing processes, engineering drawing, physical metallurgy and engineering design. He has published more than 30 articles in refereed Journals. Many of his research papers have been selected as best papers in international conferences. He has three patents in his credit and invented a process entitled “Friction welding of tube to tube late using an external tool” (FWTPET) in the year 2006 and received patent grant in the year 2008.

Dr. Muthukumaran has successfully guided four Ph.D. scholar, and one M.S (by research) scholar. Presently he is guiding four Ph.D. scholars and one M.S (by research) scholar. He has also successfully guided more sixty PG students and currently guiding ten students for their projects. He has successfully completed a NRB-DRDO project and the



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### 8. Academic Qualifications (From Highest Degree to High School):

Examination	Board / University	Year	Division/ Grade	Subjects
Ph.D (Engineering)	BIT Mesra	2007	—	Welding Engineering
M.E	REC Trichy	1999	First Class	Welding Engineering
A.M.I.E	IE	1996	First Class	Mechanical Engineering
HSC	Tamil Nadu	1991	First Class	Mathematics, Physics, Chemistry and Biology
SSLC	Tamil Nadu	1989	First Class	English, Tamil, Maths, Science, History & Geography

### 9. Academic/Administrative Responsibilities within the University

Position	Faculty/Department/Centre/Institution	From	To
Time table coordinator	Department	11/10/2009	12/10/2015
Head, IPR Cell	IPR Cell	11/04/2016	Till date

### 10. Academic/Administrative Responsibilities outside the University

Position	Institution	From	To
Serving as DC members in	Anna University		
Serving as Question Paper setter for	Pondicherry University and Anna University		

### 11. Awards, Associateships etc.

Year of Award	Name of the Award	Awarding Organization
NIL		

### 12. Fellowships

Year of Award	Name of the Fellowship	Awarding Organization	From (Month/Year)	To (Month/Year)


### 13. Details of Academic Work

#### (i) Curriculum Development

- Introduced an elective to B. Tech (MME) final year entitled MT028 Automotive Materials
- Introduced Non Destructive laboratory to B.Tech (MME) Curriculum

#### (ii) Courses taught at Postgraduate and Undergraduate levels

##### Undergraduate Level

- Physical Metallurgy
- Non Destructive Testing
- Automotive Materials
- Recent Developments in Welding Processes
- Engineering Materials

##### Post Graduate Level

- Welding Processes-I
- Welding Processes-II
- Design of Weldments
- Welding Application Technology
- Electrical Aspects of Welding
- Non Destructive Testing

##### Ph.D Level

- Research Techniques in Mechanical Sciences

#### (iii) Projects guided at Postgraduate level

#### (iv) Other contribution(s)

### 14. Details of Major R&D Projects

Title of Project	Funding Agency	Duration		Status
		From	To	Ongoing/ Completed
Friction stir welding of high strength materials using double shouldered tool (Carried out as a PI)	Naval Research Board, DRDO, New Delhi	2011	2013	Completed

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Friction welding of tube to tube sheet or plate by adopting an external tool (Carried out as a PI)	UGC- DAE Consortium	2012	2014	Completed
Friction stir welding of aluminium alloys for aero space applications	VSSC	2015	2018	Ongoing
Application of Multi-Scale Modelling for Dissimilar Welding and Improving Graduate Employability in India through e-Learning	Royal Academy, London	2015	2017	Ongoing

**15. Number of PhDs guided**

<b>Name of the PhD Scholar</b>	<b>Title of PhD Thesis</b>	<b>Role(Supervisor/ Co-Supervisor)</b>	<b>Year of Award</b>
S. Senthil Kumaran	Friction welding of aluminum tube to tube plate by external tool process	Supervisor	2012
S.Venukumar	Studies on Refilling Techniques in Friction Stir Spot Welding of Aluminium and Magnesium Alloys	Supervisor	2014
A. Pradeep	A Study on Tool Wear During Friction Stir Welding of Low Alloy Steel Plates using Tungsten Alloy Tools	Supervisor	2015
Joby Josep	Weldability study of sintered forged steel	Supervisor	2016

**16. Participation in Workshops/ Symposia/ Conferences/ Colloquia /Seminars/ Schools etc. (mentioning the role)**

<b>Date (s)</b>	<b>Title of Activity</b>	<b>Level of Event (International/ National / Local)</b>	<b>Role (Participant/ Speaker/ Chairperson, Paper presenter, Any other)</b>	<b>Event Organized by</b>	<b>Venue</b>
04/06/2001 – 15/06/2001	An Approach to Integrated	National	Participant	Sri Venkateswara	Sri Venkateswara

	Machining			College of Engineering	College of Engineering
28/11/2005 -17/12/2005	Production Engineering – Automation in manufacturing Engineering	National	Participant	UGC	BITS, Mesra, Ranchi
10/04/2004 – 11/04/2004	Implementation of Six-Sigma Program in Foundry/ Forge. Industries	National	Participant	NIFFT, Ranchi	NIFFT, Ranchi
18/12/2004 – 30/12/2004	Soft Computing: Concepts and Applications	National	Participant		
01/02/2005 – 04/02/2005	An Modelling in Metals processing: Concepts, Theory and Application	National	Participant	IIT, Kanpur	IIT, Kanpur
21/05/2005 – 22/05/2005	Value added life style management	National	Participant	Department of Production Engineering	BITS, Mesra
09/12/2006 – 10/12/2006	Best Practices in Manufacturing	National	Participant	Department of Production Engineering	BITS, Mesra
08/09/2006 – 09/09/2006	Lean Manufacturing Implementation	National	Participant	Department of Production Engineering	BITS, Mesra
02/03/2009 – 04/03/2009	Electron Microscopy	National	Participant	GCE, Salem	GCE, Salem
18/02/2010	Welding Power Sources Evaluation and process Control	National	Participant	NIT, Trichy	NIT, Trichy
13/12/2011 – 17/12/2011	NRC-M Winter Workshop on Joining of Materials	National	Participant	NIT, Trichy	NIT, Trichy
09/03/2013	Perspectives on Curriculum	National	Participant	NIT, Trichy	NIT, Trichy
08/03/2014 – 10/03/2014	2 <sup>nd</sup> World Summit on Accreditation	National	Participant	National Board of Accreditation	New Delhi
21/03/2013 – 23/03/2013	Finite Element Method	National	Participant	NIT, Trichy	NIT, Trichy
13/06/2014 – 14/06/2014	International Mechanical Engineering Congress	International	Chairperson	Department of Mechanical Engineering	NIT, Trichy

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03/09/2014 – 05/09/2014	International Conference on Friction Based Processes	International	Chairperson	Department of Mechanical Engineering	IISc, Bangalore
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**17. Workshops/ Symposia/ Conferences/ Colloquia/Seminars Organized (as Chairman/ Organizing Secretary/ Convener / Co-Convener)**

<b>Title of Activity</b>	<b>Level of Event (International/ National/ Local)</b>	<b>Date (s)</b>	<b>Role</b>	<b>Venue</b>
Recent Trends in Corrosion Control and Surface Engineering	National Level Staff development Programme	08/06/2009-20/06/2009	Organizing Secretary	NIT, Trichy
Advancements in Welding Technology-2013 (AWT-2013)	National level workshop	04/07/2013 - 05/07/2013	Organizing Secretary	NIT, Trichy
Friction Stir Welding and Allied Processes (FSWAP-2014)	National level workshop	22/02/2014	Organizing Secretary	NIT, Trichy
Prediction, Prevention and Post Analysis of Engineering Failures	National level workshop	17/10/2014	Organizing Secretary	NIT, Trichy
Advancements in Welding Technology-2015 (AWT-2015)	National level workshop	19//12/2015	Organizing Secretary	NIT, Trichy
Advancements in Materials and Manufacturing Applications (AMMA-2015)	International Conference	07/04/2015 – 09/04/2015	Convener	NIT, Trichy

**18. Invited Talks delivered**

<b>Topic</b>	<b>Date</b>	<b>Inviting Organization</b>
Metal flow During Friction Stir Welding Process and Advancements in Friction Stir Welding Process	09/01/2009	NIT, Trichy
Friction Surfacing	18/06/2009	NIT, Trichy
Coatings for Non conventional Energy Applications	18/06/2009	NIT, Trichy
Friction welding of tube to tube plate welding using an	16/12/2010	NIT, Trichy

external tool		
Solid state Welding Processes	17/11/2012	DRDL, Hyderabad
Fusion welding processes	17/11/2012	DRDL, Hyderabad
Metal flow During Friction Stir Welding Process and Advancements in Friction Stir Welding Process	19/03/2013	Sri Vengateswara Engineering College, Erode
Friction Stir Welding and allied Processes	24/05/2013	NIT Trichy
Metal flow analysis in friction stir welding	24/05/2013	NIT Trichy
Solid State Welding Processes	04/07/2013	NIT Trichy
New development s in Welding Technology	05/07/2013	NIT Trichy
Friction stir welding and FWTPET Process	09/08/2013	NIT Trichy
Solid State Welding Processes	17/12/2013	NIT Trichy
Friction Stir Welding	22/02/2014	NIT, Trichy
Friction Stir Welding- Allied Processes	22/02/2014	NIT, Trichy
Advancement in Welding Engineering	05/03/2014	CARE School of Engineering, Trichy.
Friction Stir Welding and Friction welding of Tube to tube plate using a external tool	15/03/2014	Karpagam College of Engineering, Coimbatore.
Advancements in Welding Processes	09/07/2014	Jayaram Engineering College, Trichy.
Opportunities in Welding Industries	08/08/2014	Rover Engineering College, Trichy.
Weldment Failures	17/10/2014	NIT, Trichy

### 19. Membership of Learned Societies

Type of Membership (Ordinary Member/ Honorary Member / Life Member )	Organization	Membership No. with date
Life Member	Indian welding Society	16 March 2013

### 20. Academic Foreign Visits

Country	Duration of Visit	Programme
London	24-26 July 2013	6th International Light Metals Technology



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Singapore	16-18 September 2011	International Conference on Manufacturing Science and Technology
Korea	14-18 <sup>th</sup> September, 2010	The 3rd International Conference on Multi-Functional Materials and Structures

**21. Publications**

**(A) Refereed Research Journals:**

<b>Author(s)</b>	<b>Title of Paper</b>	<b>Journal</b>	<b>Volume (No.)</b>	<b>Page numbers</b>	<b>Year</b>	<b>Impact Factor of the Journal (Optional)</b>
S.Muthukumaran, S. K. Mukherjee	Two modes of metal flow phenomenon in friction stir welding	Science and Technology of Welding and Joining	11	337-340	2006	
S.Muthukumaran, Kumar Pallav, Vikas Kumar Pandey, S. K. Mukherjee	A Study on Electromagnetic Properties during Friction Stir Weld Failure	International Journal of Advanced Manufacturing and Technology	36	249-253	2008	
Preetish Sinha, S Muthukumaran, R.Sivakumar S.K.Mukherjee	Condition monitoring of first mode of metal transfer in friction stir welding by image processing techniques	International Journal of Advanced Manufacturing and Technology	36	484-489	2008	
Preetish Sinha, S.Muthukumaran S. K. Mukherjee	Analysis of first mode of metal transfer by image processing technique	Journal of Material Processing Technology	197	17-21	2008	
S.Muthukumaran, S. K. Mukherjee	Multilayered metal flow and formation of concentric ring pattern in friction stir welding process	International Journal of Advanced Manufacturing and Technology	38	68-73	2008	

R.P. Dobriyal , B.K. Dhindawa, S. Muthukumaran S.K. Mukherjee	Microstructure and properties of friction stir butt-welded AE42 magnesium alloy	Materials Science and Engineering A	477	243-249	2008	
S. Senthil Kumaran, S. Muthukumaran S. Vinodh	Optimization of friction welding of tube to tube plate using an external tool	Structural and Multidisciplinary optimization	42(3)	449-457	2008	
S. Senthil Kumaran, S. Muthukumaran S. Vinodh	Experimental and numerical investigation of weld joints produced by friction welding of tube to tube plate using an external tool	International Journal of Engineering Science and Technology	2(5)	109-117	2010	
S. Senthil Kumaran, S. Muthukumaran S. Vinodh	Optimization of friction welding of tube to tube plate using an external tool by hybrid approach	Journal of Alloys and Compounds	509(6)	2758-2769	2011	
S. Senthil Kumaran, S. Muthukumaran S. Vinodh	Optimization of friction welding of tube to tube plate using an external tool by Taquchi method and Genetic algorithm	International Journal of Advanced Manufacturing Technology	57(1-4)	167-182	2011	
S.Muthukumaran, S. Senthil Kumaran Saket Kumar	Friction welding of Cu-tube to Al- tube plate using an external tool	Transaction of Indian Institute of Metals	64(3)	255-260	2011	
C. Vijaya Kumar, S.Muthukumaran, A. Pradeep S. Senthil Kumaran	Optimization of friction welding of steel tube to commercial aluminum tube plate using an external tool	International Journal of Mechanical and Materials Engineering	6 (2)	300-306	2011	
John Prakash S, Muthukumaran S	Refilling probe hole of friction spot joints by friction forming	Materials and Manufacturing Process	26(12)	1539-1545	2011	
S. Senthil Kumaran,	Eco – Friendly	International	5 (2)	120-127	2011	

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S. Muthukumar, D.Venkateswarlu, G.K.Balaji S.Vinodh	aspects associated with Friction Welding of Tube to tube Plate using an External Tool process	Journal of Sustainable Engineering				
V. Balaji, S.Muthukumar, S. Senthil Kumaran, A. Pradeep	Optimization of friction welding of tube to tube plate using an external tool with filler plate	Journal of Materials Engineering and Performance	21 (7)	1199-1204	2012	
S.Muthukumar, C. Vijaya Kumar, S. Senthil Kumaran, A. Pradeep	Interfacial microstructure and strength of friction welding of steel tube to aluminum tube plate using an external tool	Advanced Materials Research	383	877-881	2012	
S. Senthil Kumaran, S.Muthukumar, C. Chandrasekhar Reddy	Effect of tube preparations on joint strength in Friction welding of tube to tube plate using an external tool process	Experimental Techniques	37 (3)	24-32	2013	
S. Senthil Kumaran, S.Muthukumar, C.Chandrasekhar Reddy	Suitability of friction welding of tube to tube plate using an external tool process for different tube diameters- a study	Experimental Techniques	37 (6)	8-14	2013	
S.Venukumar, Swaroop Yalagi, S.Muthukumar	Comparison of Microstructure and Mechanical Properties of Conventional and Refilled Friction Stir Spot Welds in AA 6061-T6 using Filler Plate	Transactions of Nonferrous Metals Society of China	23 (10)	2833-2842	2013	

A.Pradeep S.Muthukumar	An analysis to optimize the process parameters of friction stir welded low alloy steel plates	International Journal of Engineering, Science and Technology	5(3)	25-35	2013	
S.Venukumar, Swaroop Yalagi, S.Muthukumar	Microstructure and Mechanical properties of Refilled Friction Stir Spot Welding of commercial pure aluminum	Materials Science Forum	765	776-780	2013	
A. Pradeep, S.Muthukumar, P.R. Dhanush, T. Nakkeran	A Study on Friction Stir Welding of Low Alloy Steel by using a Tool with Conical Pin	International Journal of Mechanical and Materials Engineering	8	132-137	2013	
S. Venukumar, S. G. Yalagi, S. Muthukumar S. V. Kailas	Static shear strength and fatigue life of refill friction stir spot welded AA 6061-T6 sheets	Science and Technology of Welding and Joining	19 (3)	214-223	2014	
S. Venukumar, S.Muthukumar, Swaroop Yalagi, Satish V. Kailas	Failure modes and Fatigue behavior of conventional and Refilled Friction Stir Spot welds in AA 6061-T6 sheets	International Journal of Fatigue	61	93-100	2014	
S.Venukumar, S.Praveenkumar, S.Muthukumar	Underwater Friction stir spot welding of AA 6061-T6 sheets	OPJIT International Journal of Innovation & Research	03	2319-4340	2014	
S.Venukumar, Bibin Baby, S.Muthukumar, Satish V. Kailas	Microstructural and mechanical properties of walking friction stir spot welded AA 6061-T6 sheets	Procedia Materials Science	6	656-665	2014	

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A Pradeep, S.Muthukumaran, PR Dhanush,	Sub shoulder formation during friction stir welding of steel using tungsten alloy tool	Science and Technology of Welding and Joining	18 (8)	671-679	2014	
K Tejonadha Babu, P Athul, P Kranthi Kumar, S.Muthukumaran	Effect of R-DSFSW on Mechanical and Metallurgical Properties of Commercial Pure Aluminum	Procedia Materials Science	5	795-801	2014	
K.Tejonadha Babu, P.Kranthi Kumar, S.Muthukumaran	Mechanical, Metallurgical Characteristics and Corrosion Properties of Friction Stir Welded AA6061-T6 Using Commercial Pure Aluminium as a Filler Plate	Procedia Materials Science	6	648-655	2014	
Jazeel Rahman Chukkan, M Vasudevan, S.Muthukumaran, KC Ganesh, Ravi Kumar, S.Murugan, V.Maduraimuth	Numerical Simulation of Pulsed Nd-YAG Laser Butt Welding of AISI 304L Stainless Steel Sheet and Experimental Validation	Applied Mechanics and Materials	592	565-570	2014	
V.V.Narayanareddy, M Vasudevan, S.Muthukumaran, KC Ganesh, N.Chandrasekhar, P.Vasantaraja	Finite Element Modeling of TIG Welding of Aisi 304l Stainless Steel and Experimental Validation	Applied Mechanics and Materials	592	368-373	2014	
C. Maxwell Rejil, C. Sharan, S. Muthukumaran, M. Vasudevan	Influence of flash trap profiles on joint properties of friction welded CP-Ti tube to 304L stainless steel tube plate using external tool	Transactions of Nonferrous Metals Society of China	26	2067-2078	2016	

**(B) Conferences/Workshops/Symposia Proceedings**

<b>Author(s)</b>	<b>Title of Abstract/ Paper</b>	<b>Title of the Proceedings</b>	<b>Page numbers</b>	<b>Conference Theme</b>	<b>Venue</b>	<b>Year</b>
Senthil Kumaran.S S. Muthukumaran S. Vinodh	Taguchi method and Genetic algorithm based optimization of FWTPET process parameters	Taguchi method and Genetic algorithm based optimization of FWTPET process parameters	113-117	International conference on Frontiers in Mechanical Engineering	NIT, Suratkal	2010
Senthil Kumaran.S S. Muthukumaran	An investigation of tube preparation on joint strength in friction welding of tube to tube plate using an external tool process	An investigation of tube preparation on joint strength in friction welding of tube to tube plate using an external tool process	230	International Welding Symposium, IWS2k10	Mumbai	2010
Senthil Kumaran.S S. Muthukumaran	Fine-grained obtained during friction welding of tube to tube plate using an external tool process	Fine-grained obtained during friction welding of tube to tube plate using an external tool process	154-155	Multi-Functional Materials and Structures	South Korea	2010
Senthil Kumaran.S S. Muthukumaran	Interfacial Microstructure And Strength Of Friction Welding Of Steel Tube To Aluminium Tube Plate Using An External Tool	Interfacial Microstructure And Strength Of Friction Welding Of Steel Tube To Aluminium Tube Plate Using An External Tool		International Conference on Manufacturing Science and Technology		2011
S. Muthukumaran	Friction Stir Spot Welding	Friction Stir Spot Welding		International Conference		2011

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		of Al alloys with Refilling Technique - A Study	of Al alloys with Refilling Technique - A Study		on Science, Engineering and Technology		
S. Venukumar, S. Muthukumaran	S.	Novel Approach to Refill Probe hole in Friction Stir Spot Welding of AA6061-T6 sheets	Novel Approach to Refill Probe hole in Friction Stir Spot Welding of AA6061-T6 sheets		1 <sup>st</sup> International Joint Symposium on Joining and Welding	Osaka Japan	2013
Athul, S. Venukumar, S. Muthukumaran	S.	Friction welding of Cu-tube to Al-tube plate using an external tool by threaded tube interference method	Friction welding of Cu-tube to Al-tube plate using an external tool by threaded tube interference method		1 <sup>st</sup> International Joint Symposium on Joining and Welding	Osaka Japan	2013
A. Pradeep, S. Muthukumaran	S.	Two modes of metal transfer phenomenon in Friction Stir welding of low alloy steel plates	Two modes of metal transfer phenomenon in Friction Stir welding of low alloy steel plates		1 <sup>st</sup> International Joint Symposium on Joining and Welding	Osaka Japan	2013
S. Venukumar, S. Muthukumaran	S.	Effect of tool geometry on the mechanical and metallurgical properties of Friction stir spot welding of AA6061-T6 sheets	Effect of tool geometry on the mechanical and metallurgical properties of Friction stir spot welding of AA6061-T6 sheets		Advances in Welding Science and Technology	Puducherry	2013
S. Venukumar, S. Muthukumaran	S.	Microstructure and Mechanical properties of	Microstructure and Mechanical properties of		International Conference on Engineering	Chennai	2013

	Walking Friction Stir Spot Welding of commercial pure Magnesium	Walking Friction Stir Spot Welding of commercial pure Magnesium		Materials and Processes		
S. Muthukumaran	Friction welding of Cu-tube to Al-tube plate using an external tool by threaded tube interference method	Friction welding of Cu-tube to Al-tube plate using an external tool by threaded tube interference method		International Joint Symposium on Joining and Welding (IJS-JW)		2013
A. Pradeep, S. Muthukumaran, P.R. Dhanush	A Study on tool wears during friction stir welding of steel	A Study on tool wears during friction stir welding of steel		National Conference on Advances in Naval Materials	NIOT, Chennai	2013
C. Alex Chacko , C. Maxwell Rejil , C. Sharan, S. Muthukumaran	Friction Welding Of Stainless Steel Tube To Mild Steel Tube Plate Using An External Tool	Friction Welding Of Stainless Steel Tube To Mild Steel Tube Plate Using An External Tool		International Conference on Friction based Processing (ICFP 2014)	IISc, Bangalore	2014
M. Mahadeva Swamy, Rajeev, S. Muthukumaran	Modified Friction Stir Spot Welding Of Aluminium With Steel Using SiC Reinforcement	Modified Friction Stir Spot Welding Of Aluminium With Steel Using SiC Reinforcement		International Conference on Friction based Processing (ICFP 2014)	IISc, Bangalore	2014
K.Tejonadha Babu Kranthi Kumar S.Muthukumaran	Comparative Study of Microstructure and Mechanical properties of AA5052 and AA6061 aluminium alloys welded by TIG and friction stir	Comparative Study of Microstructure and Mechanical properties of AA5052 and AA6061 aluminium alloys welded by TIG and friction stir		International Conference on Friction based Processing (ICFP 2014)	IISc, Bangalore	2014



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**(C) Books & Monographs**

<b>Author(s)</b>	<b>Title of Book/Monograph</b>	<b>Name of Publishers</b>	<b>Year of Publication</b>	<b>ISSN/ISBN Number</b>
<b>NIL</b>				