



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

GUWAHATI - 781039

1.	Department	MECHANICAL ENGINEERING
2.	a) Designation	ASSOCIATE PROFESSOR
	b) Field of specialisation	THERMAL ENGINEERING (Organic Rankine Cycle, Engine Aftertreatment, Heat Recovery)
3.	Name in full (in capital letters)	CHANDRAMOHAN SOMAYAJI
4.	Date of birth	30-01-1980
5.	Date of joining in the Institute	01-04-2009

6. Summary of educational qualifications:

Sl. No	Name of the Board / University / Institution and Department	Examination / Degree / Diploma passed	Discipline/ Specialization	Year of Passing	Distinction / Class / Division and CPI / Percentage
1	Karnataka State Secondary Education Board	S.S.L.C	-	1995	89 %
2	Karnataka Pre-University Education	P.U.C	-	1997	84 %
3	Manipal Institute of Technology, Mangalore University	Bachelor of Engineering	Mechanical Engineering	2001	Distinction (71 %)
4	National Institute of Technology Surathkal (NITK)	M.Tech	Heat Power Engineering	2004	Distinction
5	Mississippi State University	PhD	Mechanical Engineering	2008	4.0/4.0
		Title: Analysis and Optimization of Organic Rankine Cycle			

7. Particulars of present and past employments in chronological order, starting with the present one:

Sl. No.	Organisation / Institute	Position held	Nature of duties / work	Date of joining	Date of leaving
1	Michigan technological University	Post doctoral fellow	Research	May 2008	Jan 2009
2	Indian Institute of Technology Guwahati	Assistant Professor	Teaching and Research	April 2009	Feb 2015
3	Indian Institute of Technology Guwahati	Associate Professor	Teaching and Research	Feb 2015	Till Now

8. Summary of Research & Development Activities (please submit the details in an annexure)

No. of PG projects guided	No. of Ph.D. thesis guided		No. of Projects involved in		
	Completed	On-going	Sponsored	Consultancy	
23	1 (Thesis Submitted)	6	02	-	
Number of Journal publications		Number of Conference publications			
National	International	Refereed		Un-refereed	
		National	International	National	International
-	6	4	7	1	
No. of Patents:	NA				

9. Summary of Present and Past Teaching Experience:

Name of the Institute	Number of Courses taught	PG/UG
Indian Institute of Technology Guwahati	08	03/05 (PG/UG)

10. Details of Activities at the Institute:

I	Teaching					
(a)	Courses taught at IIT Guwahati					
	Sl. No.	Name of Course	Whether PG/UG	Single instruction / Shared instruction	Class strength (pprox..)	No. of times taught
	1.	Energy Conservation and Waste Heat Recovery	PG	Single	30	04
	2.	Advanced Engineering Thermodynamics	PG	Single	45	03
	3.	Thermodynamics (minor)	UG	Single	25	02
	4	Heat Exchanger Design	PG	Single	40	03
	5	Machine Drawing Lab	UG	Joint	30	01
	6	Thermal science laboratory	UG	Joint	25	02
	7	Engineering Mechanics (Tutor)	UG	Joint	45	03
	8	Workshop	UG	Joint	25	03
(b)	Laboratory Set up		Thermal energy storage systems in collaboration with Dr. P Muthukumar			
I	Teaching Material Development		National Mission Project on Pedagogy (Main Phase) course development on "Design of Thermal Systems (PI, ongoing)"			

	(d)	Any other information related to teaching		<p>Developed course content for Heat Exchanger design</p> <p>Collaborator in the submitted joint proposal on “Development of Online Courses and a curriculum on Solar and Renewable Energy Applications” in response with Obama-Singh 21st Century Knowledge Initiative Grant to Indo – USA Science and Technology Forum.</p>				
ii	Ph.D. Supervision							
	Sl. No	Name of the Student	Thesis Title / Area	Period		Category (Regular/ PT/ Spon/ QIP)	Joint/Single Supervisor	
				From	To			
	<i>Provided in Annexure – I</i>							
iii	M.Tech. Supervision							
	Sl. No	Name of the Student	Thesis Title/ Area	Period		Category (Regular/ PT/ Spon/ QIP)	Joint/Single Supervisor	
				From	To			
	<i>Provided in Annexure – I</i>							
iv	List of Publications (in reverse chronological order, including earlier publications)							
	(a) Books/Book Chapters							
	<i>Provided in Annexure – II</i>							
	(b) Research Papers in refereed journals							
	<i>Provided in Annexure – II</i>							
	© Research Papers in non-refereed journals / conferences							
	<i>Provided in Annexure – II</i>							
v	List of Patents							
	NA							
vi	Sponsored Project / Consultancy (in reverse chronological order)							
	Sl. No.	Title	Sponsoring Agency	Sponsored (Amount in lakhs unless otherwise mentioned)	Period		Co-Investigators	PI or CO-PI; PI name if not PI
					From	To		
	1.	Performance and Emission studies on biofuel blended with high Oxygen Storage Capacity nanoparticles using an indirect Injection engine	DST-UKIERI	GBP 40000	Jan 2015	Mar 2016	Dr. S. Kanagaraj Dr. Shanmuga Priya Dr Panagiota Pimenidou (Universiity of Ulster)	PI
	2.	Analysis of Diesel engine aftertreatment systems	IIT Guwahati	5	Startup Grant		NA	PI

	3	Liquid Desiccant Systems	IIT Guwahati	13	IIT Guwahati	Prof. P Muthukumar	Co-PI
Research Proposals Under Review							
	1	Development of Online Courses and a curriculum on Solar and Renewable Energy Applications	Indo-USA Science and Technology forum	61 for IITG	June 15	May 18	Prof. Y.D.Goswani, University of South Florida Co-PI PI: Prof. Y.D.Goswani, University of South Florida, Dr. P. Muthukumar
	3	Design and development of a hybrid multi-crop solar dryer for subtropical climate of North-eastern region of India	DST	66.95	Mar 2015	Feb 2018	Dr. P Muthukumar Co-PI
	4	Development and Comparative Study of Hybrid Friction Stir Welding Processes to Join High Strength, High Temperature Capability Materials	Defence Metallurgical research Laboratory, Ministry of Defence	70	June 2015	June 2018	Dr. Sukhomay Pal Co-PI
	5	CRTDH: Development of Common research and Technology Development Hub	MHRD	1500	-	-	Prof. Pinakeswar Mahanta Co-PI
	6	Development of Solar Assisted Organic Rankine Cycle	DST, Ministry of Food Processing Industries	164	July 2015	June 2018	Dr. P Muthukumar Co-PI
vii	Short-term courses / workshops / conferences organized						
	Sl. No.	Courses / Workshops / Conferences				Year	
	1.	Advancement in Renewable Energy Utilization Systems – Indian perspective - AICTE sponsored QIP short-term course: Co-PI. Dr.P Muthukumar				2-6 th March 2015	
	2.	Recent Trends in Renewable Energy Utilization Systems, TEQIP sponsored workshop: Co-PI. Dr.P Muthukumar				23-24 th Jan 2015	
viii	Important Seminar/ Conference Attended						
	Sl. No.	Conference/Seminar			Title of Paper/ Invited talk or Chairing Session if any		Year
	1.	<i>Provided Annexure – II</i>					
ix	Awards / Honours etc.						

	1.	Commonwealth Academic Fellowship funded by the UK Government tenable in the UK for 2014	
	2.	Graduate Research Assistantship by Mississippi State University from Jan 2005-May 2008	
	3	GATE Scholarship for Masters studies	
x	Administrative responsibilities (Please indicate the periods also)		
	(a)	Institute level	Involvement in convocation activities
	(b)	Departmental level	Training and Placement In charge , Department of Mechanical Engineering, Jan 2012- Till Now Involved in the PhD selection process of ME and centre for Energy

Students Guidance at IIT Guwahati

II. PhD Students Guided at IIT Guwahati

Sl. No.	Name of the student	Duration	Co-Supervisor	Project title / research area
1	N. Shanmuga Priya	2011-2014	Dr. S Kanagaraj	Synthesis and characterization of high Oxygen storage capacity nanoparticles dispersed Diesel for the emission reduction and performance enhancement for a direct Injection Engine
2	C.H. Chandra Rao	2011- ongoing	Dr. P Muthukumar	Development of thermal energy storage systems for solar thermal power plant
3	B.Kiran Naik	2014- ongoing	Dr. P Muthukumar	Air-conditioning in hot and humid climates
4	R.Nithin Narmada	2014- ongoing	Dr. P Muthukumar	Sorption heating and cooling systems
5	Deva Kanta Rabha	2014- ongoing	Dr. P Muthukumar	Solar Drying of food crops
6	Mayur Kevat	2013-ongoing	Prof. S C Mishra	Fluidized bed combustion
7	Shashank Shekhar	2013-ongoing	-	Organic Rankine Cycles

M.Tech Students Guided at IIT Guwahati

Sl. No.	Name of the student	Duration	Co-Supervisor	Project title / research area
1	Amol S Chaudhari	2009-2010		Modeling and simulation of a brayton cycle cogeneration plant using biomass as a source
2	Mahesh Kumar	2009-2010		Modelling and simulation of a cogeneration plant using ASPEN PLUS
3	Ranjith V	2010-2011		Modeling and analysis of PEM fuel cells
4	Jaradi Pritesh Kanaiyalal	2011-2012		Modeling and analysis of methanol fuel processor for hydrogen production for PEM fuel cell application
5	Vijay Shankar Gupta	2011-2012		Modeling and analysis of fuel processor for hydrogen production
6	Ajay Kumar	2012-2013	Dr. S Pal	Modeling and optimization of proton exchange membrane fuel cell
7	Ajit Singh	2012-2013		Modeling and optimization of proton exchange membrane fuel cell
8	Gumeet Kumar Sahu	2013-2014	Dr. S Pal	Modeling and Optimization of biogas digester and fuel reformer for high hydrogen yield
9	Subhash Kumar Laik	2013-2014		Characterization of nanomaterials
10	Kuldeep Kumar Singh	2013-2014		Design and Analysis of Spiral Plate Heat Exchangers
11	Subodh Diwan	2014-2015		Investigation of enhanced coal bed methane recovery using CO ₂ injection
12	Bhim Kumar Choure	2014-2015		Study of biogas production using solar heating of digester
13	Mohan Kumar	2014-2015		Oil debris detection in oil fuel tank using capacitive sensor
14	Ankit Varshney	2015-2016		Solar Dryers
15	Vikas Kumar Chaudhary	2015-2016		Heat Recovery systems
16	Sanjeev kumar vishwakarma	2015-2016		Feasibility of solar energy for combined heat and power applications.

Number of B.Tech Students Guided at IIT Guwahati: 09

JOURNAL PUBLICATIONS

1	Mago, P.J., Chamra, L.M., and Somayaji, C. , "Analysis and Optimization of Organic Rankine Cycles". IMechE Journal of Power and Energy, Vol. 221, No. 3, May 2007, pp. 255-263
2	Mago, P.J., Srinivasan, K., Chamra, L.M., and Somayaji, C. , "An Examination of Exergy Destruction in Organic Rankine Cycles", International Journal of Energy Research, Vol. 32, No. 10, August 2008, pp. 926-938
3	Mago, P.J., C. Somayaji , Chamra, L.M., Srinivasan, K., "An Examination of Regenerative Rankine Cycles Using Dry Fluids." Applied Thermal Engineering, Vol. 28, No. 8-9, June 2008, pp. 998-1007
4	N. Shanmugapriya, C. Somayaji , S. Kanagaraj. Optimization of $Ce_{0.6}Zr_{0.4-x}Al_{1.3}O_2$ solid solution based on oxygen storage capacity. Journal of Nanoparticle Research, DOI: 10.1007/s11051-013-2214-0, 2013
5	N. Shanmugapriya, Chandramohan Somayaji and S. Kanagaraj. "Optimization of Ceria-Zirconia solid solution based on OSC measurement by cyclic heating process" Procedia Engineering, 64, 1235-1241, 2013
6	N. Shanmuga Priya, Chandramohan Somayaji and S. Kanagaraj. "Oxygen storage capacity of $Ce_xZr_{1-x}O_2$ ($0.4 \leq x \leq 0.8$) solid solution using thermo-gravimetric analysis" Advanced Materials Research, 747, 579-582, 2013

Conference Proceedings

1	Mago, P. J., Somayaji, C. , and Chamra, L. M., Second Law Analysis and Optimization of Organic Rankine Cycles. Proceedings of IMECE2006 ASME International Mechanical Engineering Congress and Exposition, November 5-10, 2006, Chicago, Illinois, USA
2	Somayaji, C. , Devarakonda, M., Parker, G., Johnson, J., and Strots, V., Integrated DOC-SCR Aftertreatment System Simulation Studies", CTI Technology Conference for NOx Reduction, Southfield, MI, Dec 2-4 2008.
3	Mago, P. J., Somayaji, C. , and Chamra, L. M., "Second Law Analysis and Optimization of Organic Rankine Cycles." ASME Power Conference, Paper No. PWR2006-88061, Atlanta, GA, May 2-4, 2006.
4	Somayaji, C. , Devarakonda, M., Parker, G., and Johnson, J., Aftertreatment Model Based Analysis to Evaluate the Performance of Dual-Fuel Engines on Diesel NOx Emissions", SAE World Congress 2009.
5	N. Shanmugapriya, M. Bala Subramaniam, Chandramohan Somayaji and S. Kanagaraj., "Dispersion stability of surfactant coated Ceria in nanofuel", 22nd National and 11th ISHMT-ASME Heat and Mass Transfer Conference, ISHMT-2013, IIT Kharagpur, India. December 28-31, 2013
6	N. Shanmugapriya, Chandramohan Somayaji and S. Kanagaraj., "Oxygen storage capacity of Nanostructured Ceria-Zirconia solid solution prepared by sol-gel technique using Thermogravimetric studies" International conference on Design and Manufacturing, IConDM-2013, Indian Institute of Information Technology, Design, Manufacturing, Kancheepuram Chennai. July 18-20, 2013.
7	N. Shanmugapriya, Chandramohan Somayaji and S. Kanagaraj, "Oxygen storage capacity of $Ce_xZr_{1-x}O_2$ ($0.4 \leq x \leq 0.8$) solid solution using Thermogravimetric Analysis" Multi-functional materials and structures, Bangkok, Thailand, July 14-17, 2013.
8	N. Shanmuga Priya, Chandramohan Somayaji and S. Kanagaraj, "Comparative studies on characteristics of $Ce_xZr_{1-x}O_2$ nanoparticles prepared by sol-gel and co-precipitation technique

	"Processing and Fabrication of Advanced Materials XXI, Indian Institute of Technology Guwahati, India, December 10-13, 2012.
9	N. Shanmuga Priya, M. Petchimmal, Chandramohan Somayaji and S. Kanagaraj, "Synthesis of ultrafine $Ce_{0.4}Zr_{0.6}O_{2-x}Al_2O_3$ nanostructure using controlled flow rate of precursor". 4th International conference on Advanced nanomaterials, IIT Madras, Chennai, October 17-19, 2012
10	N. Shanmuga priya, Saptarshi Mandal, Mantulal Basumatary, Chandramohan Somayaji and S.Kanagaraj. "Environmental friendly nanofuel for enhanced performance of an IC engine". Presented at 3rd Bangalore Nano, Frontiers of Nanotech.: Impact on India, Dec. 8-9, 2010.
11	Invited talk in "Advances in Renewable Energy Materials and Technology" (ANREMT-2015) ISM Dhanbad-Mar 2015
12	N. Shanmuga Priya, Chandramohan Somayaji , S Kanagaraj. "Comparative studies on characteristics of $Ce_xZr_{1-x}O_2$ nanoparticles prepared by sol-gel and co-precipitation technique", Proceeding of 21st Int. symposium on Processing and Fabrication of Advanced Materials, pp 285-290, 2012

Talks in workshops

1	C. Somayaji , "Interactive meeting on environmental issues pertaining to Power Projects", Ministry of Environment and Forests, Oct 2009, Bhubaneswar
2	N. Shanmugapriya, Swapnita Kakati, Chandramohan Somayaji and S.Kanagaraj, "Performance Enhancement of Conventional stove using a new class of fuel: Nanofuel" Rural Technology Action Group North East, Trade Centre, Guwahati, January 23 - 25, 2013.
3	Solar Energy Workshop, Amity University, Noida, 2009
4	Somayaji, C "Combustion based cogeneration systems", Resource person lecture at Quality Improvement Programme (QIP) conducted by Department of Science and Technology, organized at IIT Guwahati during aug-sep 2011
5	Mago, P.J., Srinivasan, K.K, Chamra, L.M., Somayaji, C. , Sham, D. Use of Organic Rankine Cycles to Produce Power from Low Temperature Waste Heat Sources. 1st Energy-Synergy Workshop, Mississippi State University, April 17, 2008
6	N. Shanmugapriya, Mantuala Basumatary, Saptarshi Mandal, C.Somayaji and S.Kanagaraj, "Enhanced performance of Environmental friendly nanofuel for internal combustion engine", Rural Technology Action Group North East, Trade Centre, Guwahati, January 23 - 25, 2013.