

National Institute of Technology, Tiruchirappalli:

Performa for CV of Faculty/ Staff Members

Curriculum Vitae



Brief Profile: Received the bachelor's degree in Chemical Engineering from A.C.Tech, Anna University, Chennai, India, and the Master's degree in Process Control and Instrumentation from the National Institute of Technology, Tiruchirappalli, India, in 2005 and 2010, respectively. Pursued the Ph.D (Title: Dynamics and Control of PEM fuel cell systems) degree from the Department of Chemical Engineering, IIT Kharagpur, Kharagpur, India, specializing in nonlinear process control. Research interests include process dynamics and nonlinear control, process modelling and simulation, and nonconventional energy system.

Over 8 years of total experience including waste water treatment division, Maintenance, Quality, process modelling and simulation and Teaching. Of which, 07 months in waste water treatment section, 05 months in modelling and simulation under MoA project at CDAC Trivandram, and 7 years in Institutes (PCE, SVCE, NITC, NITW and NITT) as a Teaching Faculty. Exposed to work in handling strongly acidic waste water from electro plating of metals using hydrochloric acid and sulfuric acid, operation and design of neutralisation tank, settling tank, sand filters, aerobic digestors and pumps. Strong knowledge and ability to use various chemical engineering software platforms including Hysys, Aspen plus and MATLAB/Simulink. Good research experience in industry and in academics with the research results published in international and national journals/conferences. Proficient in modeling, simulation, design and implementation of multivariable process control techniques. Ability to analyze data and designing suitable control strategy. Handled subjects like Process Instrumentation Dynamics and Control, Process Instrumentation, Process Intensification, Chemical Process Systems, Process Flowsheeting, Biomedical Instrumentation, Transport Phenomena, Chemical Process Calculations, Heat Transfer Operations, Unit Operations, Food Technology, Chemical Technology, Environmental Science and Engineering, Energy Management in Chemical Industries, Advances in Pollution control and Modern Separation Processes.

1.	Name :	Dr. K. Sankar
2.	Designation :	Assistant Professor
3.	Office Address :	Room No. 106, Project Lab, Ground Floor, Old building, Dept of Chemical Engineering, NIT Trichy – 620015.
4.	Telephone (Direct) (Optional): Telephone : Extn (Optional): Mobile (Optional):	0431-2503105 +91-9932077085/ +91-7427960065
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6.	Field(s) of Specialization:	Process Control
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7. Employment Profile

Job Title	Employer	From	To
Assistant Professor	NIT Trichy	March 2020	Till now
Adhoc Faculty	NIT Warangal	Jan 2012	Dec 2013
Adhoc Faculty	NIT Calicut	June 2011	Dec 2011
Assistant Professor	Sri Venkateswara College of Engineering	June 2010	May 2011
Lecturer	Pallavan College of Engineering	June 2006	Sep 2008

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

Examination	Board / University	Year	Division/ Grade	Subjects
Ph.D.	IIT Kharagpur	2013 - 2019	--	Process Control in Chemical Engineering
MTech	NIT Trichy	2008-2010	First Class with Distinction	Process Control and Instrumentation
BTech	ACTech, Anna University	2001-2005	First Class	Chemical Engineering

9. Academic/Administrative Responsibilities within the University

Position	Faculty/Department /Centre /Institution	From	To
NSS Program Officer	Institution	Sep 2020	Till now
Innovation activity coordinator for the Institute Innovation Council	Institution	Nov 2021	Till now
Committee head in recognised ses REC (social entrepreneurship, swachhta & rural engagement cell) action plan institution	Institution	Aug 2020	Till now
Faculty Advisor for Tamil Mandram	Institution	Aug 2021	Till now

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students club			
Garden Club Member	Department	Sep 2020	Till now
Work Load and Time Table committee member	Department	Jan 2021	Till now
NBA accreditation committee member	Department	July 2020	Till now
Faculty member in DPEC for MTECH PCI Projects	Department	July 2020	June 2021
Convener for departmental meeting	Department	Jan 2021	Till now
Class committee chairman for BTech III year	Department	July 2021	June 2022
Faculty for certificate verification in PhD admission and convocation	Institution/Department	July 2020	June 2021
Guide for the summer internship projects (BTech, Chemical Engg, III yr students – 2)	Department	May 2022	July 2022

10. Academic/Administrative Responsibilities outside the University

Position	Institution	From	To
Question paper setter	Anna University	August 2020	Feb 2021
External Examiner for UG project	VIT Vellore	10-06-2021	--
External Examiner for UG HT Laboratory exam	Anna University Tiruchirappalli	14-03-2022	--
Guide for the summer internship projects	Anna University Tiruchirappalli - Trichy, Sastra University - Tanjavur, St. Joseph's College of Engineering – OMR, Chennai, Coimbatore Institute of Technology - Coimbatore, Dayananda Sagar College of Engineering - Bangalore, Birsa institute of technology sindri Dhanbad (Jharkhand), Adikavi Nannaya University Rajamahendravaram, Andhra Pradesh,	May 2022	July 2022
Question paper setter	Anna University	May 2022	--
External Examiner for UG MT	Anna University Tiruchirappalli	20-06-2022	--

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Laboratory exam			
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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)
NIL				

13. Details of Academic Work

(i) Curriculum Development: NIL

(ii) Courses taught at Postgraduate and Undergraduate levels:

B.Tech: AY 2020-2021

1. CLPE18 Process Intensification (BTech, VII sem, July 2020 – December 2020)
2. CLOE16 Process Instrumentation (BTech, VIII sem, Jan 2021 – May 2021)
3. Faculty in-charge for Process Dynamics and Control Lab (BTech, VII sem, July 2020 – December 2020) and Heat Transfer Lab (BTech, IV sem, Jan 2021 – May 2021)
4. NSS Faculty in-charge for the first-year 2nd semester (Jan-May 2021) Chemical Engineering and ECE department students. Conducted invited guest lecture (Dr. Saamdu Chetri) on “Cultivating Happiness” from IIT Kharagpur. Also, instructed students to do social activities through online discussion.

BTech AY 2021-2022:

5. CLPE18 Process Intensification (BTech, VII sem, July 2021 – December 2021)
6. CLOE16 Process Instrumentation (BTech, VIII Sem, Jan 2022 – May 2022)
7. Faculty in-charge for Process Dynamics and Control Lab (BTech, VII sem, July 2021 – December 2021 and BTech, VI Sem, Jan 2022 – May 2022.
8. NSS Faculty in-charge for the first-year 2nd semester (Jan-May 2022) Chemical Engineering and ECE department students.

M.Tech AY 2020-2021:

1. CL651B Chemical Process System (MTech PCI, I sem, July 2020 – December 2020)
2. CL673 Biomedical Instrumentation (MTech PCI, II sem, Jan 2021 – May 2021)

M.Tech AY 2021-2022:

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3. CL651B Chemical Process System (MTech PCI, I sem, July 2021 – December 2021)
4. CL673 Biomedical Instrumentation (MTech PCI, II sem, Jan 2022 – May 2022)
5. CL654 Process Flowsheeting (MTech PCI, II sem, Jan 2022 – May 2022)

(iii) Projects guided at Postgraduate level

S. No.	Title of the Thesis	Guide / Co-Guide	Roll Number of Student
1	Nonlinear controller synthesis for boiler power generation system	Guide	202219001
2	Modelling of electrolysis for hydrogen production	Guide	202119024
3	Nonlinear control of PEM Water electrolyzer	Guide	202220008
4	Optimization of PEM fuel cell/electrolzer systems	Guide	202120013
5	Modeling and control of solid oxide fuel cell	Guide (on going)	202221020
6	Modeling and optimization (MI algorithm based) of SOFC.	Guide (on going)	202121024
7	Modeling and simulation of chloro-alkali electrolysis	Guide (on going)	202121015

(iv) Other contribution(s):

Participated as Session Coordinators in INTERNATIONAL CONFERENCE on Recent Technologies and Advanced Materials for Green Energy and Sustainable Environment ICRTAMGESE-2021 MARCH 12-13,2021 conducted by Department of Chemical Engineering, NIT Tiruchirappalli.

Participated as Session Co-Chair for the oral presentation under Process modeling and simulation topic in Online International Felicitation (in honor of Dr. N. Anantharaman) conference on “Environmentally Benign Processes, Products and Materials for Sustainable Ecosystem (EBPPM 2021), 19-20 November 2021.

14. Details of Major R&D Projects

Title of Project	Funding Agency	Duration		Status
		From	To	Ongoing/ Completed

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NIL				

15. Number of PhDs guided

Name of the PhD Scholar	Title of PhD Thesis	Role(Supervisor/ Co-Supervisor)	Year of Award
Kaushal Kishor Singh	Nonlinear controller synthesis	Co-Supervisor	On-going

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

Date (s)	Title of Activity	Level of Event (International / National/ Local)	Role (Participant/ Speaker/ Chairperson, Paper presenter, Any other)	Event Organized by	Venue
10-08-2020 to 14-08-2020	online training program on e-content development	National	Participant	NIT Trichy	Online mode
25-12-2020 to 30-12-2020	TEQIP sponsored one week FDP: Advanced rechargeable batteries from powder to power.	National	Participant	IIT Roorkee	Online mode
01-02-2021 to 05-02-2021	FDP program in System Engineering	National	Participant	MNIT Jaipur	Online mode
16-06-2021 to 18-06-2021	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Engineering Optimization Techniques and its Applications	National	Participant	Government College of Engineering Aurangabad	Online mode

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	(ENOTAA-2021)				
19-06-2021 to 23-06-2021	AICTE-Margdarshan sponsored Five Day workshop on “Quality assurance in Technical and Higher Educational Institutions and interpretation of requirements of NBA Accreditation”	National	Participant	NIT Trichy	Online mode
31-01-2022 to 04-02-2022	Five days’ workshop on “Advanced industrial automation training for engineering education and research.	National	Participant	IIT Trichy and INDWELL Mangalore	Online mode
27-10-2018 to 02-11-2018	AIChE Annual Meet: Paper title - Discrete-time nonlinear observer-based globally linearizing control of a PEM fuel cell”	International	Paper presenter	AIChE	Pittsburgh, PA, USA.
08-12-2017	Research scholar’s day at department of Chemical Engineering	National	Participant	IIT Kharagpur	Chemical Engineering Dept
16-11-2013 To 17-11-2013	International Conference on Chemical and Bioprocess Engineering	International	Participant/Volunteer	NIT Warangal	Chemical Engineering Dept
03-09-2011 To 04-09-2011	National level technical seminar on	National	Participant	Sri Venkateswara College	Chemical Engin

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	“Paradigm shift in chemical engineering with special reference to oil, refinery and gas sectors			of Engineering	eeing Dept
18-12-2010 to 19-12-2020	International Conference SYMOPA-2010, Paper title: Modelling, Simulation and Control of Multivariable System: Boiler Power Generation Plant	International	Paper presenter	CDAC Trivandram	Contro l & Instrumentat ion group, CDAC Trivan dram
17-11-2009	One day workshop on Polynomial Global Optimization & Constraint Propagation Techniques	National	Participant	NIT Trichy	ICE Dept
13-07-2009 To 17-07-2009	AICTE – MHRD sponsored FDP on “Chemical Systems Modeling & Simulation”	National	Participant	NIT Trichy	Chemi cal Engin eering dept
08-09-2004	One day seminar on Recent Trends in Petroleum Engineering	National	Participant	ACTech, Anna University	Chemi cal Engin eering dept

17. Workshops/ Symposia/ Conferences/ Colloquia/Seminars Organized (as Chairman/ Organizing Secretary/ Convenor / Co-Convenor)

Title of Activity	Level of Event (International/ National/ Local)	Date (s)	Role	Venue
NIL				

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18. Invited Talks delivered

Topic	Date	Inviting Organization
Dynamics and control of proton exchange membrane fuel cells	18-12-2020	Pondicherry Engineering College

19. Membership of Learned Societies

Type of Membership (Ordinary Member/ Honorary Member / Life Member)	Organization	Membership No. with date
AIChE (Senior Member)	American Institute of Chemical Engineers, New York, United States.	Senior Member ID: 009902898002, from 11-09-2018
IEI	The Institution of Engineers (India), Kolkata	Member: M-1708400, from 29-12-2020
IIChE (Life member)	IIChE, Kolkata	Life member: LM-73146, from 26-12-2021

20. Academic Foreign Visits

Country	Duration of Visit	Programme
NIL		

21. Publications

(A) Refereed Research Journals:

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Author(s)	Title of Paper	Journal	Volume (No.)	Page numbers	Year	Impact Factor of the Journal (Optional)
K Sankar, Amiya K Jana	Nonlinear control of a PEM fuel cell integrated system with water electrolyzer	Chemical Engineering Research and Design	171	150-167	2021	3.739
K Sankar, G Saravanakumar, Amiya K Jana	Nonlinear multivariable control of an integrated PEM fuel cell system with a DC-DC boost converter	Chemical Engineering Research and Design	167	141-156	2021	3.739
K Sankar, Augan K, Amiya K Jana	A proton exchange membrane fuel cell with an airflow cooling system: dynamics, validation and nonlinear control	Energy Conversion and Management	183	230 – 240	2019	9.709
K Sankar, Amiya K Jana	Nonlinear multivariable sliding mode control of a reversible PEM fuel cell integrated system.	Energy Conversion and Management	171	541 – 565	2018	9.709
K Sankar, Amiya K Jana	Dynamics and estimator based nonlinear control of a PEM fuel cell.	IEEE Transaction on Control Systems Technology	26	1124 – 1131	2018	5.485
K Sankar, Thakre N, Singh SM,	Sliding mode observer based nonlinear	Energy	139,	1126 – 1143	2017	7.147

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Amiya K Jana	control of a PEMFC integrated with a methanol reformer					
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(B) Conferences/Workshops/Symposia Proceedings

Author(s)	Title of Abstract/ Paper	Title of the Proceedings	Page numbers	Conference Theme	Venue	Year
K Sankar, Amiya K Jana	Discrete-Time Nonlinear Observer-Based Globally Linearizing Control of a PEM Fuel Cell	AICHE annual meeting	--	System and Process Control	David L. Lawrence Convention Center - Exhibit Hall B, Pittsburgh, PA, USA.	2018
K Sankar, Radhakrishnan TK, Valsalam SR.	Modelling, Simulation and Control of Multivariable System: Boiler Power Generation Plant	International Conference SYMOPA-2010	47-54	Advanced Process Automation	Uday Samudra Leisure beach hotel, Kovalam, Trivandram	2010
K Sankar, Radhakrishnan TK, Valsalam SR	Modelling, Simulation and Control of Boiler power plant	ChEmference'10	49-51	Process control and operation	Outreach 69 & 80 complex, IIT Kanpur	2010

(C) Books & Monographs

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

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