

Curriculum Vitae

Dr. Suraj Kumar Sinha

Assistant Professor

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EDUCATION

Ph.D. in Physics, June 2009, Institute for Plasma Research, Gandhinagar.

M. Sc. Physics, May 2001, Pondicherry University, Puducherry, India.

AWARDS, FELLOWSHIPS, GRANTS

1. Junior Research Fellow, Sept. 2001-August 2003, Institute for Plasma Research, India
2. Senior Research Fellow, Sept. 2002-July 2006, Institute for Plasma Research, India
3. Buti Young Scientist Award, Dec 2005, Plasma Science Society of India (PSSI)
4. Fast-track Research Grant for Young Scientists, **Dec 2010**, Department of Science & Technology, Govt. of India
5. Best Teacher Award in **Physics, Sept 2011**, Pondicherry University
6. Raman Fellowship, University Grant Commission (UGC), Govt. of India. (***University of Texas at Austin***)

POSITIONS HELD

1. September 3, 2001 to July 4, 2006, Research Scholar
Institute for Plasma Research, Gujarat, India.
Carried out research "*Effect of Process Parameters on Plasma Nitriding*" towards PhD.
2. July 5, 2006 to April 24, 2009, Assistant Manager (R&D)
SAMTEL COLOR LIMITED, Ghaziabad, UP, India
Worked for research & development of PLASMA DISPLAY PANEL.
3. April 25 to August 10, 2010, Assistant Professor (Physics)
BIRLA INSTITUTE OF TECHNOLOGY, (Mesra) , Jaipur Campus, India
Research & Teaching.
4. **August 17, 2010 till date of superannuation May 31, 2040**, Assistant Professor (Physics)
Department of Physics, Pondicherry University, India.
Research & Teaching.

PUBLICATIONS

1. "***Development of a Gas-fed Plasma Source for Pulsed High-density Plasma/Material Interaction Studies***". IEEE Trans. on Plasma Science (under Review, 2014) Michael V. Pachuilo, Francis Stefani, Laxminarayan L. Raja, Roger D. Bengtson, Graeme A. Henkelman, A. Cuneyt Tas, Waltraud M. Kriven, Suraj K Sinha,
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2. [“Signature of fast H atoms from cathode glow region of a dc discharge,”](#) *Physics of Plasmas*. May2009, Vol. 16 Issue 5, p053504,(2010). Bharathi, P.; **Suraj, K. S.**; Prahlad, V.; Mukherjee, S.; Vasu, P.
 3. [“Pulsed plasma production for applications in plasma immersion ion implantation and its implications”](#) *Surface and Coatings Technology, Volume 201, Issue 15, 23 April 2007, Pages 6502-6507*, S. Mukherjee, M. Ranjan, R. Rane, N. Vaghela, A. Phukan, **K.S. Suraj**
 4. [“Near cathode optical emission spectroscopy in N₂-H₂ glow discharge plasma”](#) *Surface and Coatings Technology, Volume 202, Issue 2, 25 November 2007, Pages 301-309*, **K.S. Suraj**, P. Bharathi, V. Prahlad, S. Mukherjee.
 5. [“Effect of ion neutral collisions on the ion and neutral velocity distribution on negatively biased electrodes”](#) *Surface and Coatings Technology, Volume 196, Issues 1–3, 22 June 2005, Pages 267-270*, **K.S. Suraj**, S. Mukherjee
 7. [“Power balance at cathode in glow discharges”](#) *Phys. Plasmas* **12**, 113502 (2005),” K. S. **Suraj** and S. Mukherjee.
 8. [“Discharge current reduction in plasma displays for high Xe gas composition”](#), *J. Phys.: Conf. Ser.* **208**, 012115 (2010), **K S Suraj**, Shashank sharma and H K Dwivedi.
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9. [“Luminous efficacy improvement by selective suppression of xe ion current in ac pdp”](#), Proceedings of International Display Workshop 2008, **Suraj K.S.**

PATENTS

Patents as Inventor

1. “Plasma Display Apparatus with Enhance Brightness and Reduced Power Consumption”, Application No. 808/DEL/2010, 01/04/2010, India, [Published on 07/10/2011](#).
2. “Plasma display apparatus and method for driving there of” Application No. 1459/DEL/2009, 16/07/2009 India.
3. “Plasma display and method for manufacturing the same” Application No. 2719/DEL/2008, 02/12/2008, India, [Published on 11/06/2010](#).
4. “Apparatus and method for driving plasma display” Application No. 2302/DEL/2008 06/10/2008, India, [Published on 23/04/2010](#).

Patents as Co-Inventor

5. “A plasma display panel with enhanced luminance”, Application No. 2188/DEL/2007, 19/10/2007, India, [Published on 08/05/2009](#).
6. “A Plasma display panel and its manufacturing method thereof” Application No. 1885/DEL/2007. 06/09/2007. India [Published on 24/04/2009](#).

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PAPERS PRESENTED at **NATIONAL** CONFERENCES/SEMINAR/SYMPOSIA

Sr No.	Title of paper	Co-author(s), if any	Name of the Conference	Date & Year
1.	Phase depth distribution study of Nitrided layer in the mirror polished Plasma nitrided AISI304 Stainless Steel using XRD characterization	Prince Alex, J alphonsa, K S Suraj, and S.Mukherjee	27 th National Symposium on Plasma Science and Technology PLASMA-2012, Pondicherry University, Puducherry-605014	Dec, 10-13, 2012
2.	Role of Hydrogen in Plasma Nitriding: An analytical understanding	K.S.Suraj, P.Bharathi*, and S.Mukherjee	27 th National Symposium on Plasma Science and Technology PLASMA-2011, BIT, Patna	Dec, 20-23, 2011
3.	Dielectric Barrier discharges: Fundamentals and applications	K.S. Suraj	25 th National Symposium on Plasma Science and Technology, IASST, Guwahati	Dec 8-12, 2010
4.	Application of tokamak for diagnostics of fundamental forces	K.S. Suraj	25 th National Symposium on Plasma Science and Technology, IASST, Guwahati	Dec 8-12, 2010
5.	Cartwheel model for understanding Plasma Wall Interactions	K.S. Suraj	25 th National Symposium on Plasma Science and Technology, IASST, Guwahati	Dec 8-12, 2010
6.	Bi-polar Sustain Waveform for Efficient Driving of Plasma Displays	Shashank Sharma ¹ , Harmeet Singh ¹ , H. K. Dwivedi ¹ and K.S. Suraj ²	24 th National Symposium on Plasma Science and Technology, NIT Hamirpur, Plasma 2009	Dec 8-12, 2009
7.	Performance Of Plasma Nitrided Hot-Forging Dies And Punches In Service Conditions	Ravindra Kumar ¹ , Ram Prakash ¹ , J. Alphonsa ² , A. Pareek ³ , P. A. Rayjada ² , P.M. Raole ² , K. S. Suraj ¹	24 th National Symposium on Plasma Science and Technology, NIT Hamirpur, Plasma 2009	Dec 8-12, 2009

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		and S. Mukherjee ²		
8.	Thermometer For Measuring Gas Temperature Of Plasma Discharges	P.Bharathi*, K.S.Suraj, V.Prahlad and S.Mukherjee	24 th National Symposium on Plasma Science and Technology, NIT Hamirpur, Plasma 2009	Dec 8-12, 2009
9.	Bi-polar Sustain Waveform for Energy Efficient Driving of Plasma Displays	Harmeet Singh ¹ , Shashank Sharma ¹ and K.S. Suraj ²	24 th National Symposium on Plasma Science and Technology, NIT Hamirpur, Plasma 2009	Dec 8-12, 2009
10.	Discharge current reduction in plasma displays for high Xenon gas composition	Suraj K.S. , Shashank Sharma and H. K. Dwivedi	23 rd National Symposium on Plasma Science and Technology, BARC, Mumbai	Dec10-13 2008.
11.	Power balance at cathode in glow discharges	<u>Suraj K.S</u>	20 th National Symposium on Plasma Physics", CUSAT, Cochin	Dec 5-7, 2005
12.	Power balance at cathode in glow discharges	<u>K.S. Suraj</u> , and S. Mukherjee	Seventy Fifth Annual Session, National Academy of Sciences India	Dec 8-9, 2005
13.	Spectroscopic investigation of N ₂ -H ₂ DC glow discharge plasmas	<u>K.S. Suraj</u> , P. Bharathi, V. Prahalad and S. Mukherjee	20 th National Symposium on Plasma Physics", CUSAT, Cochin	Dec 5-7, 2005
14.	Power balance at cathode in glow discharges	<u>K.S. Suraj</u> , and S. Mukherjee	Young Physicist Colloquium, Indian Physical Society, SINP, Kolkata, INDIA.	Agust 26, 2005

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15.	Characteristics of Striation in Nitrogen Plasma	<u>K.S. Suraj</u> , MK Garg and Subroto Mukherjee	19 th National Symposium on Plasma Physics", Bundelkhand University, Jhansi	Dec, 2004
16.	Neutral and ion velocity distribution at cathode in glow discharges	<u>K. S. Suraj</u> & S. Mukherjee	DAE-BRNS Workshop on Plasma Surface Engineering, BARC, Mumbai	Sept 23-25, 2004
17.	Effect of gas composition on substrate temperature in abnormal glow discharges	<u>Suraj K.S.</u> , Shashank Sharma, J.Alphonsa, G. Jhala and S. Mukherjee	18 th National Symposium on Plasma Physics", BIT Meshra, Ranchi	Dec 8-11, 2003

PAPER PRESENTED at **INTERNATIONAL CONFERENCES/SEMINAR/SYMPOSIA**

S. No.	Title of paper	Co-author(s), if any	Name of the Conference/Country	Date & Year
1.	An Understanding Analytically: Role of Hydrogen in Plasma Nitriding	<u>K.S. Suraj</u> , and S. Mukherjee	PSE-2012, Germany	Sept 10-14, 2012
2.	Signature Of Potential Structure Of Anodic Double Layers In Glow Discharges	<u>K.S. Suraj</u> , G. Singh, Ramprakash and S. Mukherjee	International Symposium on Waves, Coherent structures and turbulence, IPR, India,Gandhinagar	Jan 12-15, 2010
3.	Luminous Efficacy Improvement by Selective Suppression of Xe ion current in AC PDP	<u>K. S. Suraj</u> (single author)	International Display Workshop, Niigata, Japan	Dec3-5, 2007
4.	Investigation of symmetric line shapes	P. Bharathi, <u>K.S. Suraj</u> , V. Prahlad, S. Mukherjee & P.	6th general scientific assembly of Asia plasma and fusion	Sept, 2005

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	of Balmer- γ in an abnormal DC glow discharge	Vasu	association (APFA-2007) Ahmedabad, India	
5.	Neutral and ion velocity distribution at cathode in glow discharges	<u>K. S. Suraj</u> & S. Mukherjee	Autumn College on Plasma Physics, ICTP, Trieste, ITALY	Sept 5-30, 2005
6.	Neutral and ion velocity distribution at cathode in glow discharges	<u>K. S. Suraj</u> & S. Mukherjee	International Symposium for Research Scholars, IIT Madras, INDIA	Dec 20-22, 2004

INVITED TALKS DELIVERED

INTER NATIONAL CONFERENCES

1. "*Energy Efficient Dielectric Barrier Discharges Arrays for Plasma Display*", PPOMP, NOV 2011, (IMSE) Kottayam, Kerala, India.

NATIONAL CONFERENCES

1. "*Fundamentals and Applications of Dielectric Barrier Discharges*", PLASMA 2010, DEC 2010, IASST, GUWAHATI, INDIA.
2. "*Cell Structures and driving for energy efficient displays*", Recent trends in Plasma Display Technology, 15th of September-2012., VIT university, Chennai.

SESSION CHAIRED at NATIONAL/INTERNATIONAL CONFERENCES/SEMINAR/SYMPOSIA

1. 37TH National Symposium of Optical society of India, 23rd -25th Jan, 2013, Pondicherry University, Puducherry.

ON GOING PROJECTS

S. No	Title	Funding Agency	Period	Grant / Amount Mobilized (INR)
1.	Characterization of Potential Structure of Anodic Double Layers in Glow Discharges	Pondicherry University	3 Years	5,00,000/-
2.	Luminous Efficacy Enhancement of Micro-discharge cells for Plasma Displays by Modifying Sustain Waveform	Department of Science & Technology, Govt. of India	3 Years	18,30,000/-
3	Effect of ion induced secondary electrons from cathode surface on formation of multiple anodic double layers in glow discharges	University Grants Commission, Govt. of India	3 Years	10,97,500/-

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A) Ph. D Thesis under Progress;

1. **Prince Alex** is working towards his PhD thesis in area "EFFECT OF SECONDARY EMISSION COEFFICIENT ON FORMATION & STRUCTURE OF ANODIC DOUBLE LAYERS".
2. Sarvanan A is working towards his PhD thesis in area "LUMINOUS EFFICACY ENHANCEMENT OF XENON-NEON DBD DISCHARGE"

B) M.Phil Thesis Guided:

1. Jaydevan P. M, a M.Phil., dissertation entitled "CALORIMETERY ON BEAM-LINE COMPONENTS OF SST-1 NBI TEST STAND" Awarded **27-01-2012**.

C) Project Guided (M. Sc.):

(2011-12)

1. AARAVAMUTHAN. K, dissertation titled, "ESTIMATION OF SECONDARY ELECTRON EMISSION COEFFICIENT FROM POWER BALANCE AT THE CATHODE".
2. Mohan S., dissertation titled, "ESTIMATION OF POWER INFLUX OF CATHODE MADE-UP OF DIFFERENT MATERIALS FOR KNOWN TOTAL DISCHARGE POWER".
3. MOHAMMAD IRFAN KHAN, dissertation titled "INVESTIGATION OF CORRELATION BETWEEN XE PERCENTAGE AND CHANGE IN LUMINOUS EFICACY OF AC PDP".
4. SURENDRA KEMBURI, dissertation titled "ANALYSIS OF POTENTIAL PROFILE OF ANODIC DOUBLE LAYER OF GLOW DISCHARGE PLASMA".

(2012-13)

1. A.CHARLES, dissertation titled "SURFACE MORPHOLOGY STUDY OF UN-IRRADIATED AND IRRADIATED GOLD THIN FILM".
2. HASEENA T. S., dissertation titled "NITROGEN PHASE DEPTH DISTRIBUTION STUDY OF PLASMA NITRIDED AISI 304 STAINLESS STEEL".
3. PANKAJ RAY, dissertation titled "ESTIMATION OF ENERGY CARRIED BY XE AND NE IONS IN AC PDP FOR DI_ERENT XENON PERCENTAGE".
4. SANJAY GUATAM, dissertation titled "ESTIMATION OF FREQUENCY OF THE ACOUSTIC WAVE GENERATED IN ATMOSPHERIC DISCHARGE".
5. SATHISH U, dissertation titled, "ESTIMATION OF SECONDARY ELECTRON EMISSION COEFFICIENT OF METALS USING PASCHEN'S LAW"