Dr. Sanjay S. Ghosh
Professor and Head
Department of Physics
KBC North Maharashtra University
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MSc, NET, SET, PhD-University of Pune, India, Postdoc-University of St Andrews, UK.

EDUCATION

Jul 2008 – Jun 2013	**SavirtibaiPhule Pune University** PhD, Physics (Organic Photovoltaics) Pune, India
Thesis:	**On morphology Control in bulk-heterojunction for polymer based solar cells**
Jul 1999 – Jun 2001	**SantGadge Baba Amravati University** MSc, Physics, Amravati, India

RESEARCH EXPERIENCE

22 Feb 2005 – present	**Professor (present post)** KBC North Maharashtra University, Physics Jalgaon, India
Jan 2014 – Dec 2014	**Postdoctoral Research Fellow (group of Prof. Ifor D. W. Samuel)** University of St. Andrews, Physics and Astronomy St. Andrews, United Kingdom
Jul 2008 – Jun 2013	**Ph. D. Research Scholar** University of Pune, School of Energy Studies, Department of Physics Pune, India
Research Interest	**Organic Photovoltaics (OPV), Organic Light Emitting Diode (OLED), Perovskite Solar Cell**

TEACHING EXPERIENCE

Feb 2005 – present	**Professor (present post)** Department of Physics, North Maharashtra University Jalgaon, India
Dec 2004 – Feb 2005	**Assistant Professor** Department of Physics, Vidnyan Mahavidyalaya Malkapur, India
Aug 2005 – Dec 2005	**Assistant Professor** Department of Physics, Vidyabharati Mahavidyalaya Amravati, India

PROFESSIONAL AFFILIATIONS

- Life member of Indian Physics Association (IPA)
- Life member of India Association of Physics (IAP)

AWARDS AND ACHIEVEMENTS

20120-21	Research publication award by KBCNMU, Jalgaon, India.
2017-18	Research grant award by KBCNMU, Jalgaon, India.
Jan 2014	One year Study Leave from North Maharashtra University for postdoctoral research at the University of St. Andrews, UK.
Jan 2014 to Dec 2014	Worked as a postdoctoral research fellow on EPSRC funded international project at the University of St. Andrews, UK.
Dec 2003	Qualified National Eligibility Test (NET) for Lectureship in Physics.
Mar 2004	Qualified State Eligibility Test (SET) for lectureship in Physics (Maharashtra and Goa).
Feb 2003	Qualified Graduate Aptitude Test for Engineers (GATE).
Feb 2001	Qualified Joint Entrance Screening Test (JEST).
Nov 2011	1st prize in the University Level Research Festival 'Avishkar' in the teacher's category held at North Maharashtra University, Jalgaon.

PUBLICATIONS

1. Gauri G Bisen, Balaji V Sanap, Milan S. Sonawane, Lekhamala D. Ingale, Anirudha M. Mangidkar, Jaydeep V Sali and **Sanjay S Ghosh**, *Optoelectronic processes in ultrasonic spray coated organic solar cells*, Synthetic Metals, 2024, 308, 117733.
2. Gauri G Bisen, Balaji V Sanap, Swapnil R Tak, Hemant S Tarkas, Bushra B Meer, Raees Shaikh, Sagar A More, Ganesh A Bathe, Jaydeep V Sali and **Sanjay S Ghosh**, *Effect of substrate temperature on ultrasonic spray deposited film morphology and coffee stain effect*, Bulletin of Materials Science, 2024, 47, 67.
3. Bushra Basharatali Meer, Dhruv Sharma, Swapnil Tak, Gauri Govardhan Bisen, Mahendra D. Shirsat, Kalpathy Ganapathy Girija and **Sanjay Sanatan Ghosh**, *Effect of thermal annealing on an emissive layer containing a blend of a small molecule and polymer as host for application in OLEDs*, RSC Adv., 2023, 13, 33668.
4. Bushra Basharatali Meer, Dhruv Sharma, Swapnil Tak, Hemant Sudhakar Tarkas, Gauri Govardhan Bisen, Shubham Sanjiv Patil, Jaydeep Vinayak Sali, M. D. Shirsat, Kalpathy Ganapathy Girija, **Sanjay Sanatan Ghosh**, *Effect of Phosphorescent and TADF Guests on the Absorption, Emission, and Nanoscale Morphological Properties of Thin Emissive Layer*, Brazilian Journal of Physics, 2022, 52, 121.
5. Sagar A. More, Rajendra G. Halor, Meer Bushra, Raees Shaikh, Shanabhau D. Bagul, Vasant Sathe, **Sanjay S. Ghosh**, *Study of step annealing method and the effect on optical, structural, morphological and transport properties of* $CH_3NH_3PbI_3$, Synthetic Metals, 2022, 287, 117081.
6. Sagar A. More, Rajendra G. Halor, Raees Shaikh, Gauri G. Bisen, Hemant S. Tarkas, Swapnil R. Tak, Bharat R. Bade, Sandesh R. Jadkar, Jaydeep V. Sali and **Sanjay S. Ghosh**, *Investigating the effect of solvent vapours on crystallinity, phase, and optical, morphological and structural properties of organolead halide perovskite films*, RSC Adv., 10, 39995–40004 **(2020)**, IF-3.36, 2046-
   2069.
7. Sagar A. More , Rajendra Halor, Shaikh Raees and **Sanjay S. Ghosh**, *A comparative study of two-step and three-step methods for coating organometallic lead halide perovskite thin films*, JOURNAL OF MATERIALS SCIENCE: MATERIALS IN ELECTRONICS, **31**, 17995–18003 **(2020)**, IF-2.478, 1573-482X.
8. R. A. Gani Shaikh, S. A. More, G. G. Bisen and **S. S. Ghosh**, *Study the Properties of Solution Processable CZTS Thin Films Induced by Annealing Treatment: Study of Annealing Time*, SEMICONDUCTORS, 54 (9), 1011-1015 **(2020)**, IF-0.674, 1090-6479.
9. RA Gani Shaikh, SA More, GG Bisen, **SS Ghosh**, *Annealing Effect on Morphology Optical and Crystallographic Properties of Solution-Based* Cu_2ZnSnS_4 *Thin Films*, Advanced Science, Engineering and Medicine, 2020, 12 (3), 388-391.

10. Hemant S. Tarkas, Swapnil R. Tak, Vinita V. Deo, Sagar A. More, Devashri P. Upasani, **Sanjay S. Ghosh**, Jaydeep V. Sali, *A New Approach for One-step Synthesis of Perovskite:fullerene Bulk Heterojunction Using Surfactant Free Microemulsion in Slot Die Method*, *JOURNAL OF NANO- AND ELECTRONIC PHYSICS, 2020,* 12 No 6, 06014.
11. S. Tak, H. Tarkas, G. Bisen, **S. Ghosh**, J. V. Sali, *A new approach for preparation of ternary bulk-heterojunction using dual-feed ultrasonic spray for organic solar cells*, OPTICAL MATERIALS, 91, 296, **(2019)**. IF- 3.06, 0925-3467
12. R. A. G . Shaikh, S. A. More, G. G. Bisen, S. R. Jadkar, J. V. Sali, **S. S. Ghosh**, *Effect of thermal annealing and cooling rate on CBD grown thin films*, JOURNAL OF MATERIALS SCIENCE: MATERIALS IN ELECTRONICS, https://doi.org/10.1007/s10854-019-02238-4 **(2019)** IF-2.478, 1573-482X.
13. G. Conboy,R. G. D. Taylor, N. J. Findlay,A. L. Kanibolotsky,A. R. Inigo, **S. S. Ghosh**, B.Ebenhoch,L. K.Jagadamma, G. K. V. V. Thalluri,M. T. Sajjad,I. D. W. Samuel and P. J. Skabara, *Novel 4,8-benzobisthiazole copolymers andtheir field-effect transistor and photovoltaic applications*, JOURNAL OF MATERIALS CHEMISTRY C,5, 11927**(2017),** IF-7.059, 2050-7534.
14. Eli Zysman-Colman, **Sanjay S. Ghosh**, Guohua Xie,Shinto Varghese, Mithun Chowdhury, Nidhi Sharma, David B. Cordes, Alexandra M. Z. Slawin, and Ifor D. W. Samuel; *Solution-Processable Silicon Phthalocyanines in Electroluminescent and Photovoltaic Devices;* ACS APPLIED MATERIALS AND INTERFACES, 8, 9247**(2016), IF-9.229,** 1944-8252.
15. DM Marathe, HS Tarkas, MS Mahajan, **SS Ghosh**, RS Khadayate, JV Sali, *Poly 3-Hexylthiophene: Single Wall Carbon Nanotube Active Layer by Dual Feed Ultrasonic Spray Method for Solar Cell Application*, Journal of Nanoelectronics and Optoelectronics, 2016, 11 (1), 12-17.
16. Adam F. Henwood, Yue Hu, Muhammad T. Sajjad,Gopala K. V. V. Thalluri,**Sanjay S. Ghosh**,David B. Cordes, Alexandra M. Z. Slawin, Ifor D. W. Samuel,Neil Robertson, and Eli Zysman-Colman; *Unprecedented Strong Panchromic Absorption from Proton-Switchable Iridium(III) Azoimidazolate Complexes;* CHEM. EUR. J. 21; 1-9 **(2015),** IF- 5.236, 1521-3765.
17. **Sanjay S Ghosh**,Luis A. Serrano, Bernd Ebenhoch, Vincent M. Rotello Graeme Cooke Ifor D. W. Samuel; *Organic solar cells based on acceptor-functionalized diketopyrrolopyrrole derivatives;* JOURNAL OF PHOTONICS FOR ENERGY; 5, 057215 **(2015),** IF- 1.836, 1947-7988.
18. Shuyu Zhang,DobroslavTsonev, Stefan Videv, **Sanjay Ghosh**, Graham A.Turnbull, IforD. W. Samuel and Harald Haas;*Organic solar cells as high-speed data detectors for visible light communictions;*OPTICA;*2(7); 607***(2015). *IF-*** 9.778, 2334-2536.
19. Mrunal S Mahajan, Ganesh S Lonkar, **Sanjay S Ghosh**, Mahendra B Patil, Dipak S Dalal, Jaydeep V Sali: *Formation of P3KHT:PCBM bulk-heterojunction using orthogonal solvents by*

ultrasonic spray method; JOURNAL OF PHYSICS D: APPLIED PHYSICS;; *48; 265105****(2015).*** **IF-3.207,** 1361-6463.

20. Mrunal S Mahajan, D. M.Marathe, **Sanjay S Ghosh**, V. Ganesan, Jaydeep V Sali: *Changes in in-plane electrical conductivity of PEDOT:PSS thin films due to electric field induced dipolar reorientation*; RSC ADVANCES; 5; 86393 **(2015)**, IF-3.36, 2046-2069.

21. V.S. Waman, M.M. Kamble, **S.S. Ghosh**, A.H. Mayabadi, B.B. Gabhale, S.R. Rondiya, A.V. Rokade, S.S. Khadtare, V.G. Sathe, H.M. Pathan, S.W. Gosavi, S.R. Jadkar: *Evolution of microstructure and opto-electrical properties in boron doped nc-Si:H films deposited by HW-CVD method*; JOURNAL OF ALLOYS AND COMPOUNDS; 585; 523***(2014)***, IF-5.316, 0925-8388.

22. MM Kamble, VS Waman, AH Mayabadi, SS Ghosh, BB Gabhale, SR Rondiya, AV Rokade, SS Khadtare, VG Sathe, T Shripathi, HM Pathan, SW Gosavi, SR Jadkar, *Hydrogenated silicon carbide thin films prepared with high deposition rate by hot wire chemical vapor deposition method*, Journal of Coatings, 2014, Volume 2014 | Article ID 905903.

23. A. H. Mayabadi, V. S. Waman, M. M. Kamble, S. S. Ghosh, B. B. Gabhale, S. R. Rondiya, A. V. Rokade, S. S. Khadtare, V. G. Sathe, H. M. Pathan, S. W. Gosavi, S. R. Jadkar*; Evolution of structural and optical properties of rutile TiO2 thin films synthesized at room temperature by chemical bath deposition method*; JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS; 75, 182 **(2014)**. IF-3.995, 0022-3697.

24. MM Kamble, VS Waman, SS Ghosh, A Mayabadi, VG Sathe, T Shripathi, Habib M Pathan, Sandesh R Jadkar, *High growth rate of a-SiC: H films using ethane carbon source by HW-CVD method*, Bulletin of Materials Science, 2013, 36, 1177-1185.

25. S. S. Ghosh, G. S. L.onakar, M. S. Mahajan, J. V. Sali, *P3HT:PCBM/TiOx interface modification through annealing for improvement in organic solar cell performance,* AMERICAN JOURNAL OF MATERIALS SCIENCE AND TECHNOLOGY, 2013, 1, 88-95

26. **S. S. Ghosh**, A. P. Zerwal, G. G. Bisen, G. S. Lonkar, J. V. Sali, V. S. Waman, S. R. Jadkar;*Why specific mixed solvent composition leads to appropriate film formation of composite during spin coating?*; APPLIED PHYSICS LETTERS;102; 051918 ***(2013)***, IF-3.791**,** 1077-3118.

27. SS Ghosh, MS Mahajan, GS Lonkar, JV Sali, SR Jadkar, *Poly (3-hexylthiophene): TiO2 Bulk-heterojuction Hybrid Solar Cells*, Research and Application of Material, 2013, 1 (4), 44-48.

28. **S. S. Ghosh**, G. S. Lonakar, M. S. Mahajan, J. V. Sali and S. R. Jadkar, Effect of thermal annealing on P3HT:PCBM blend films; INVERTIS JOURNAL OF RENEWABLE ENERGY; 3, 183 **(2012)**. 2231-3419.

29. **Sanjay S. Ghosh**, Ganesh S. Lonkar, Mrunal S. Mahajan, Sandesh R. Jadkar, Vaishali S. Waman, Mahesh M. Kamble, V. Ganesan, Jaydeep V. Sali: *Bulk-heterojunction morphology control during spin coating: Modelling diffusion assisted phase separation*. APPLIED PHYSICS LETTERS; 101; 173305 **(2012)**. IF-3.791, 1077-3118.

30. Ganesh. S. Lonkar, Mrunal. S. Mahajan, **Sanjay. S. Ghosh**, Jaydeep V. Sali: *Modeling thin film formation by Ultrasonic Spray method: A case of PEDOT: PSS thin films*. ORGANIC ELECTRONICS;13; 2575 **(2012).** IF-3.721, 1566-1199.

31. Vaishali S. Waman, Mahesh M. Kamble, **Sanjay S. Ghosh**, AzamMayabadi, Vasant. G. Sathe, Habib M. Pathan, Shashikant D. Shinde, Kiran P. Adhi, Sandesh R. Jadkar: *Highly conducting phosphorous doped n-type nc-Si:H films by HW-CVD for c-Si heterojunction solar cells*. RSC ADVANCES; 2; 9873 **(2012).** IF-3.36, 2046-2069.

32. V. S. Waman, M. M. Kamble, S. S. Ghosh, R. R. Hawaldar, D. P. Amalnerkar, V. G. Sathe, S. W. Gosavi, S. R. Jadkar; *Influence of helium dilution of silane on microstructure and opto-electrical properties of hydrogenated nanocrystalline silicon (nc-Si:H) thin films deposited by HW-CVD*; MATERIALS RESEARCH BULLETIN; 47, 3445 **(2012)**. IF-4.641, 0025-5408.

33. SS Ghosh, BV Dhaduk, MV Patil, SR Jadker, JV Sali, *Synthesis and Characterization of Nanocrystalline TiO2 by Sol-Gel Combustion Method*, Invertis Journal of Renewable Energy, 2011,1 (3), 138-141.

CONFERENCE/PRESENTATIONS (Selected)

1. Invited talk, "Organic and Organic-inorganic hybrid materials for application in solar cells in the International e-Conference on ES Energy and Environment, organized during 27-05-2021 to 30-05-2021.
2. Key note speaker at national seminar "Properties Fabrication and applications of nano-materials and devices" organized by Uka Tarsadia University, Bardoli, "Organic Solar Cells: Principles and Techniques on 5th July 2019.
3. Invited talk as chief guest on "Research in organic solar cell" on the occasion of inauguration of Physics society at the Vidyabharati Mahavidyalaya, Amravati, India on 29 August 2018.
4. Plenary talk "Organic Solar Cells: Materials and Principles", at Second International Conference on Advanced Polymeric Materials (ICAPL 2017), Kottayam, Kerala, India during 7-9 April, 2017.
5. Invited talk "Organic Solar Cells: A bet for future", at Inter University Consortium (IUC), Indore on 26th December 2016.
6. Oral presentation "What happens when diiodooctane is used in small molecule-fullerene organic solar cells?, at 14th International Conference on Electrical and Related Properties of Organic Solids (ERPOS)-2017, St. Andrews, United Kingdom during 9-13th July 2017.
7. Organic photovoltaic meeting at The Burn, Scotland, with collaborators from the University of Glasgow (Prof. Graeme Cooke) and Strathclyde University (Prof. Peter Skabara), June 2014 (Presentation).

PROJECTS

AS PRINCIPAL INVESTIGATOR

1. Title: Synthesis of low cost and environmental friendly organic/inorganic hybrid solar cells and their study.
   Funding agency: University Grants Commission of India (UGC).
   Duration: May 2009 to April 2011, (Amount-1.5 lakh)
   Status: COMPLETED

2. Title: Fabrication and study of Perovskite Solar Cells by Ultrasonic Spray Coating Technique with targeted efficiency ~15%: Research and Technology.
   Funding agency: Solar Energy Research Initiative (SERI), DST.
   Duration: 2017 to 2020, (Amount-38.6 lakh)
   Status: Completed

3. Fabrication and study of low cost solution processed TADF-OLEDs by ultrasonic spray coating method.
   Funding Agency: DAE-BRNS.
   Duration: 2017-2020 (Amount: -31.9 lakh)
   Status: Completed

4. Study of varied stoichiometry organometallic metal halide perovskite materials to improve their stability: Research and Technology
   Funding Agency: UGC-DAE Consortium for Scientific Research.
   Duration: 2018-21 (Extendable) (Amount: ≈1.35 lakh)
   Status: Completed.

5. Study of polymer donor and polymer acceptor blends for device application
   Funding agency: VCRMS, KBCNMU
   Duration: 2023-2025 (4.8 lakh)
   Status: Ongoing

AS Co-INVESTIGATOR

1. Title: Design and development of three wheeler efficient bullock cart.
   Funding agency: Rajiv Gandhi Science and technology commission, Mumbai.
   Duration: 2008 to 2011 (5 lac 16 thousand six hundred and fifty)
   Status: COMPLETED
   PI: PROF. J. V. SALI

2. Investigating Dual Liquid Feed Ultrasonic Spray Method as a mean to control bulk-heterojunction morphology in ternary polymer (P3HT): polymer (PBDTTT-E) :

Fullerene(PC70BM/ICBA)* bulk heterojunction Organic Solar Cells and evaluation of their performance with efficiency target of better than 5%
DST, 2014-17, (Amount-51 lac 50 thousand)
Status: Completed
PI: PROF. J. V. SALI

SCHOOL OF PHYSICAL SCIENCES PROJECTS

1. Co-coordinator of DST, FIST, Level 2 project, Amount-INR 152 Lakh.

PhD STUDENTS

Awarded-3, Working-5

MSc PROJECT STUDENTS

More than 100 students have completed their MSc project.

ORGANIZATION OF CONFERENCES AND WORKSHOPS (Selected)

1. Convener of International Materials Science Conference (e-conference) organized by School of Physical Sciences during the period 18-20 March 2021.
2. Convener of one day national workshop "Characterization Techniques" at the Department of Physics, North Maharashtra University, India on 9 Jan 2015.
3. Co-Convener of one day national workshop "Grid Connected Solar Photovoltaic System in Feb 2014 at the Department of Physics, North Maharashtra University.

SUBJECTS TAUGHT AT POST GRADUATION LEVEL

1. Mathematical methods for Physics,
2. Electromagnetic Theory,
3. Statistical Mechanics,
4. Quantum Mechanics,
5. Semiconductor Physics,
6. Condensed Matter Physics,
7. Characterization Techniques.
8. Grid Connected Photovoltaic Systems.

ADMINISTRATION RESPONSIBILITIES

1. Head, Department of Physics,
2. Coordinator of International Students Cell, KBCNMU,
3. Coordinator of Rajiv Gandhi Science and Technology Commission, KBCNMU Centre,

4. Member of Board of Studies, Physics, KBCNMU.

RESEARCH INTERESTS

At present I have am involved in research related to organic solar cells, organic light emitting diodes and perovskite materials including materials optoelectronics and other characterizations, device fabrication and simulations.