



## FACULTY PROFILE

**NAME** : Dr. Bharati Balasaheb Patil  
**QUALIFICATION** : M.Sc., B.Ed., Ph.D, Post Doc. (I.I.T.Delhi)  
**Email ID** : bharatibpatil@kbpcollegevashi.edu.in  
**DEPARTMENT** : Physics  
**DESIGNATION** : Assistant Professor  
**EXPERIENCE(Yrs.)** : 10 Years  
**SPECIALIZATION** : Energy Science



### **PUBLICATIONS:**

Book Chapters: 02

- Synthesis and Characterization of NiO-SDC Nano- powder by Glycine nitrate Combustion synthesis for its potential application as an anode for IT-SOFC, Recent Practices in Conventional and Non-conventional Energy Resources, <https://www.ibpbooks.com/recent-practices-in-conventional-and-non-conventional-energy-resources/p/23564>, Dr. V.V. Karjinni and Uday C. Kapale et al, Himalaya Publishing House, ISBN : 9789350976623, 2015.
- Synthesis and Characterization of SDC Nano-powder For IT-SOFC Applications, 2D Functional Nanomaterials: Synthesis, Characterization and Applications, Submitted to Wiley, Wiley, Germany, 2021.

### **Research Publications in Journals-**

- Spray Pyrolytic Synthesis of Samarium Doped Ceria ( $Ce_{0.8}Sm_{0.2}O_{1.9}$ ) Films for Solid Oxide Fuel Cell Applications, Applied Surface Science, 253 (2007) 4994-5002, ISSN: 0169-4332, IF: 6.182.
- Studies on Spray Deposited NiO-SDC Composite Films for Solid Oxide Fuel Cells, Journal of Alloys and Compounds, 460 (2008), 680-687, ISSN: 0925-8388, IF: 4.650.



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- Structural, Morphological and Electrical Properties of Spray Deposited Nano-crystalline CeO<sub>2</sub> Thin Films, Journal of Alloys and Compounds, 509 (2011) 414–420, ISSN: 0925-8388, IF: 4.650.
- Synthesis & Characterization of Spray Deposited PdO-NiO-SDC Composite Anode Material for Potential Application in IT-SOFC, Journal of Alloys and Compounds, 509 (2011) 3644-3650, ISSN: 0925-8388, IF: 4.650.
- Effect of Glycine Nitrate Ratio on SDC Nano Powder Synthesized by Glycine Nitrate Combustion Synthesis, Journal of Information, Knowledge and Research in Mechanical Engineering, 3(2),(2015) 619-624, ISSN: ISSN 0975 – 668X), IF:2.0580.
- Synthesis and Characterization of PdO-NiO-SDC Nano-powder by Glycine-Nitrate Combustion Synthesis for Anode of IT-SOFC, Energy Procedia, 54, (2014) 669-679, ISSN: 1876-6102, IF:1.15.
- Synthesis of SDC Nano-Powder by Glycine –Nitrate Combustion Method, IJREAM, (2018)95, ISSN: 2454-9150, IF: 6.466.
- Structural and Morphological Characterization of Ni<sub>1-x</sub>Co<sub>x</sub>O-SDC Nano-Powder Synthesized by Glycine- Nitrate Combustion Synthesis for its Application in IT-SOFC, International Journal of Scientific Research in Science and Technology (IJSRST), Vol.8, (2021), 126-128, ISSN: 2395-602X, I.F.7.214.

### **Papers Published in conference proceedings-**

- Spray Pyrolytic Synthesis and Electrolytic Properties of BiCuVO<sub>x</sub> Films for Fuel Cell Applications, DAE-SSP Symposium, BARC Mumbai, 5<sup>th</sup> -9<sup>th</sup> Dec. 2005,(Proceedings of the DAE, 2005-inis.iaea.org), **ISBN-81-8372-019-6**.
- Synthesis and Studies on Structural and Electrical Properties of Samaria Doped Ceria (Ce<sub>0.8</sub>Sm<sub>0.2</sub>O<sub>1.9</sub>) Thin Films, pg.no. 378-384, National Seminar – NASMAT-2006, Shivaji University, Kolhapur, 23<sup>rd</sup> -25<sup>th</sup> Jan. 2006.



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- Synthesis and Characterization of NiO-SDC Nano - powder by Glycine Nitrate Combustion Synthesis for Its Potential Application as an Anode for IT-SOFC, National Conference on, "Recent Practices in Conventional & Non - conventional Energy Resources RPCNeR-2013, pg.no. 128-134, 08-09 Feb. 2013, Sanjay Ghodawat Group of Institutions, Atigre, Kolhapur, (MH) India-416118, Proceedings, ISBN: 978-93-5097-485-8.
- Effect of Glycine Nitrate Ratio on NiO-SDC Nano- Powder Synthesized by Glycine Nitrate Combustion Process, National Conference on, "Emerging Trends in Engineering, Technology & Architecture, pg.no. 324-327, 25 January 2014, D.Y.Patil College of Engineering & Technology, Kasaba Bawada, Kolhapur, (MH) India-416 006, Proceedings, ISBN: 978-81-920561-4-2.
- Storage of Energy in the form of Hydrogen with Solid Hydride, All India Special Issue of Renewable Energy 2004, Institute of Engineers, Pune.
- Development of Biofuel Based Fuel Cells for Clean Environment, pg.no. 1-14, National Seminar on Physics of Non- Conventional Energy, 26<sup>th</sup> -27<sup>th</sup> Nov. 2005, Rajrshi Shahu College, Latur.

### **PAPERS PRESENTED:**

#### **Research Papers presented in international conferences-**

- Positron Annihilation, International Seminar on Smart Materials, Nano-composites, Industrial Applications and Devices, July 28<sup>th</sup> -29<sup>th</sup>, 2000, organized by Department of Physics, Shivaji University Kolhapur.
- Studies on Synthesis of Spray Deposited PdO-NiO-CeO<sub>2</sub> Composite Film as an Anode for Solid Oxide Fuel Cell, ICAMA- 2007, November 15-17, 2007, organized by Department of Physics, Shivaji University, Kolhapur.
- Consideration of PdO-NiO-SDC Composite Films as High-Performance Anodes for IT-SOFC, ICBENT - 2008, Oct 21-23, 2008, organized by D. Y. Patil University, Kolhapur.
- Synthesis and Characterization of PdO-NiO-SDC Nano - Powder by Glycine-Nitrate Combustion Synthesis for Its Potential Application as an Anode in Metal Supported Solid Oxide Fuel Cells, International Symposium on Energy Materials: ISEM-2011, During March 1-2, 2011, organized by Fuel Cell & Battery Division, Central Glass and Ceramic Institute, CSIR, Kolkata.
- Synthesis and Characterization of SDC Nano Powder by Glycine Nitrate



## **FACULTY PROFILE**

- Combustion Synthesis for Its Potential Application as an Electrolyte in IT-SOFC, 3<sup>rd</sup> International Conference on Fuel Cell and Hydrogen Technology (ICFCHT-2011), 22-23 Nov. 2011, Kuala Lumpur, Malaysia.
- International E-Conference on Strategies & Challenges in Higher Education During Covid19, Lockdown Period in India with respect to the World, 15-17 May 2020, organized by Gov. Vidarbha Institute of Science & Humanities, Amravati, India.
  - International Conference on “2D Nanomaterials: Recent Developments and Future Avenues, Feb. 24-26, 2021, organized by Centre for Nanoscience and Nanotechnology, Amity University Mumbai, Dept. of Physics SPPU, Pune, C-MET, Pune.
  - International E-conference on Recent Advances in Material Science and Nanotechnology (RAMAN-2021), organized by Department of Physics, Arts Commerce & Science College, Maregaon, during Feb. 7- 9, 2021 (Best Oral Presentation- I Prize).
  - Golden Jubilee International Conference on Nanomaterials and Nanotechnology (ICONN-2021) organized by Department of Physics, University of Mumbai, held during 25-27 March 2021 (Best Oral Presentation - III Prize).

### **Research Papers presented in National Conferences-**

- Presentation on work done at IUC Calcutta, Two days seminar on Radiation Physics & Peaceful uses of Nuclear Energy, held during 09-10 Sep.1999, organized by Department of Physics, Shivaji University, Kolhapur.
  - Studies on Growth Mechanism of Nickel Films by Electrodeposition Route for Fuel Cell Generation, MRSI-15<sup>th</sup> AGM, held during 9<sup>th</sup> -11<sup>th</sup> Feb. 2004, organized by BHU, Varanasi.
- Electrochemical Characterization of Cobalt Doped Lithium Nickel as Cathode for the Fuel Cell, MRSI -15<sup>th</sup> AGM, held during 9<sup>th</sup> -11<sup>th</sup> Feb. 2004, organized by BHU, Varanasi.
- Effect of Substrate Temperature on the Structural and Electrical Properties of Spray Deposited Samaria Doped Ceria Thin Films, National workshop on Advanced Methods for Materials Characterization (NWMC), held during Oct 11-15, 2004, organized by BARC, TSH, Anushaktinagar, Mumbai.



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- Studies on synthesis of spray deposited PdNiCeO<sub>2</sub> Films, 16<sup>th</sup> AGM, MRSI, held during 10<sup>th</sup>-12<sup>th</sup> Feb. 2005, organized by NCL Pune, Testing of Single Chamber Solid Oxide Fuel Cell Prepared Via Spray Pyrolysis Technique, Discussion Meeting on Materials for Future Energy Systems, BARC Mumbai, 18<sup>th</sup> -19<sup>th</sup> Jan. 2006, organized by BARC Mumbai.
- Synthesis and Structural Properties of Samaria Doped Ceria (Ce<sub>0.8</sub>Sm<sub>0.2</sub>O<sub>1.9</sub>) Thin Films, Campaign on University Research and Training (Court-2006), organized by Department of Physics, Shivaji University, Kolhapur.
- Synthesis of Spray Deposited Nano-crystalline CeO<sub>2</sub> Thin Films, Workshop on “Frontiers in Physics and Chemistry”, held during 8<sup>th</sup> -10<sup>th</sup> Jan. 2007, Indo-Korean Research Program: Shivaji University and Hanyang University.
- Synthesis and Characterization of PdNiCeO<sub>2</sub> Anodic Material for Fuel Cell Development MNRE, workshop cum Review Committee Meeting January 23-24, 2007, organized by IIT Delhi and MNRE, New Delhi.
- Spray Deposited NiO-SDC Composites as Anodes for Solid Oxide Fuel Cells, National Conference on, Recent Trends in Energy Engineering and Management (NCRTEAM-2007), organized by T.K.I.E.T., Warananagar, held during 1<sup>st</sup> – 2<sup>nd</sup> February 2007.
- Consideration of PdO-NiO-CeO<sub>2</sub> Composite Film as an Anode for Intermediate Temperature Solid Oxide Fuel Cell, First Indo-Italian workshop on “Frontiers of Fundamental and Industrial Electrochemistry: A Challenge of Science for a Better World”, Aug. 30<sup>th</sup> - 31<sup>st</sup>, 2010, Department of Chemistry, University of Delhi, India.
- Resistivity Studies of SDC Electrolyte Material, National Conference on Nanomaterials-2018, held at Vivekanand College, Kolhapur, on 21 Aug. 2018, organized by Vivekanand College, Kolhapur.
- Resistivity Studies of Samarium Doped Ceria Material for its Possible Application as Anode in IT- SOFC. National Conference on Recent Trends in Chemistry and Materials Science (RTCMS-2019), held at Department of Chemistry, Shivaji University, Kolhapur, on 9<sup>th</sup> February 2019 organized by Department of Chemistry, Shivaji University, Kolhapur.



## **FACULTY PROFILE**

- Fuel Cells for Space Applications First National Conference on Space and Atmospheric Science (NCSAS-2019), held during 10<sup>th</sup> - 11<sup>th</sup> May 2019 organized by Department of Physics, Sanjay Ghodawat University, Kolhapur.

### **CONFERENCES/SEMINARS/WORKSHOPS ATTENDED:**

#### **2018:**

- National Conference on Nanomaterials-2018, held at Vivekanand College, Kolhapur, on 21 Aug. 2018.
- Science Academies' Lecture Workshop on Recent Advances in Catalysis Sciences organized by Indian Academy of Sciences, Bangalore, Indian National Sciences Academy New Delhi, The National Academy of Sciences India, Allahabad and SGU, Kolhapur during 23/02/2018-24/02/2018.
- Attended 2 days workshop on Electrochemistry, organized by Metrohm India Limited and Department of Nanoscience and Biotechnology, Shivaji University Kolhapur, organized by Metrohm India Limited and Department of Nanoscience and Biotechnology, Shivaji University Kolhapur, during 05/09/2018 - 06/09/2018.

#### **2019:**

- National Conference on Recent Trends in Chemistry and Materials Science (RTCMS-2019), held at Department of Chemistry, Shivaji University, Kolhapur, on 9<sup>th</sup> February 2019.
- First National Conference on Space and Atmospheric Science (NCSAS-2019), organized by Department of Physics, Sanjay Ghodawat University, Kolhapur, during 10<sup>th</sup> -11<sup>th</sup> May 2019.
- Attended two days Faculty Conclave, Effective Student Participant Engagement in Learning Through Active Learning Techniques, organized by SGU, Kolhapur, during 11/01/2019-12/01/2019.
- One day workshop on question paper setting in outcome-based education, organized by SGU Kolhapur, on 20/04/2019.

#### **2020:**

- International Webinar on Interdisciplinary Scientific Research, Status & Opportunities, organized by Dept. of Physics, K.B.P. College Vashi, Navi Mumbai on 12/05/2020.
- International E-Conference on Strategies & Challenges in Higher Education During Covid19, Lockdown Period in India with respect to the World, organized by Gov. Vidarbha Institute of Science & Humanities, Amravati, India



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during 15-17 May 2020.

- International Web Seminar on Recent trends in Nanostructured Materials Based Devices & Their Applications, organized by Dept. of Physics & IQAC, D.P. Bhosale College Koregaon in Association with Electra Solar Energy System Pvt Ltd, MIDC, Koregaon, Satara on 18/07/2020.
- One day International E- Conference on Advance Functional Nanomaterials and their Device Applications organized by Krishna Mahavidyalaya, Rethre BK, Karad, Satara on 10/08/2020.
- International E-Conference, Cutting Edge Smart Materials & Nanotechnology, organized by SGM College, Karad during 20-21 Aug. 2020.
- One Day International Webinar on Recent Scenario in Energy Generation & Storage Technologies, organized by Dept. of Physics, Dahiwadi College, Dahiwadi, Satara on 05/09/2020.
- International Web-conference on Advanced Nanostructured Materials for Energy Generation, Storage and Smart Applications, organized by Sharadabai Pawar Mahila Arts, Commerce and Science College, Baramati held during 09-10 Oct 2020.
- One Day National E-Conference on Progress in Material Science, organized by Dept. of Physics, S.B.D.M.College, Atpadi on 13/07/2020.
- One Week Faculty Orientation Workshop on Revised Guidelines of NAAC organized by IQAC, YCIS, Satara, held during 27/04/2020 – 02/05/2020.

### **2021:**

- International E-conference on Recent Advances in Material Science and Nanotechnology (RAMAN-2021), organized by Department of Physics, Arts Commerce & Science College, Maregaon, during Feb. 7- 9, 2021 (**Best Oral Presentation- I Prize**).
- International Conference on “2DNanomaterials: Recent Developments and Future Avenues, organized by Centre for Nanoscience and Nanotechnology Amity University Mumbai, Dept. of Physics SPPU, Pune, C-MET, Pune during Feb. 24-26, 2021.
- Golden Jubilee International Conference on Nanomaterials and Nanotechnology (ICONN-2021) organized by Department of Physics, University of Mumbai during 25-27 March 2021. (**Best Oral Presentation - III Prize**).
- Secured 5th Rank in the Essay Writing Competition organized by Government of Maharashtra's, Institute of Science, and Mumbai in Collaboration with The Leading Phase entitled, remembering the Missile Man on the occasion of 89th Birth Anniversary of Dr. A.P.J. Abdul Kalam, dated 15/10/2021.



## **FACULTY PROFILE**

### **ACTIVITIES ORGANIZED:**

- Co-ordinator for State level Poster Presentation event during Sci-STAR-2018, at SGU, Kolhapur and Sci-STAR-2019, at SGU, Kolhapur.
- Co-ordinator for WET-LAB Championship Program, an I.I.T. Madras Event.

### **FDP/TRAINING COURSES COMPLETED:**

- 9<sup>th</sup> orientation course on research using nuclear techniques for post- graduate students conducted by IUC Calcutta, India during 10/06/2000-19/07/2000.
- 4-Weeks MHRD-Orientation Course, conducted by Teaching Learning Centre, Ramanujan College, Delhi, during 04/06/2020 - 01/07/2020, under Ministry of Education, Pandit Madan Mohan Malviya, National Mission On Teachers Training.
- 2-Week Interdisciplinary Refresher Course on Managing Online Classes & Co-Creating MOOCs 6.0., Teaching Learning Centre, Ramanujan College, Delhi, during 05/07/2021-19/07/2021, Under Pandit Madan Mohan Malviya, National Mission On Teachers Training.
- 2-week ISTE workshop on Solar Photovoltaics: Fundamentals, Technologies and Applications. Department of Technology, Shivaji, University, Kolhapur, during 12/12/2011-22/12/2011, sponsored by IIT Bombay under the National Mission on Education through ICT.
- Two Week ISTE (STTP) on Engineering Physics. TKIET, Warananagar, Kolhapur, during 08/12/2015-18/12/2015, sponsored by IIT Bombay under the National Mission on Education through ICT.
- One-week STTP on Recent Trends in Interdisciplinary Research in Material Sciences, Department of Basic Sciences, ADCET, Ashta held during 26/12/2017-30/12/2017, Under lead college scheme of Shivaji University, Kolhapur.
- One Week FDP on LaTeX, Spoken Tutorial IIT, Bombay, 27/04/2020-02/05/2020, sponsored by IIT Bombay conducted by Sanjay Ghodawat University, Kolhapur.
- Two Weeks FDP on Empowerment Through Digital Technology & E-learning, SNDT Women's University, Mumbai, held during 18/05/2020 - 30/05/2020.
- One Week online FDP on Research Methodology Tools & Techniques, IQAC & Higher Learning & Research Centre, Priyadarshini College of Engg. Nagpur, conducted during 29/05/2020 - 02/06/2020, organized by IQAC & Higher Learning & Research Centre, Priyadarshini College of Engg. Nagpur.





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- One-week online FDP on Problem based learning Dept. of E & TC, JSPM's Rajarshi Shahu College of Engg, Pune, held during 01/06/2020- 05/06/2020, organized by Dept. of E & TC, JSPM's Rajarshi Shahu College of Engg, Pune.
- FDP on Photonics R.S.M. College, Latur, held during 03/11/2020 - 07/11/2020 sponsored by AICTE and ATAL Sponsored FDP.
- FDP on Nano-sensors, I.I.T. Jodhpur, conducted during 05/07/2021- 09/07/2021, sponsored by AICTE and ATAL Sponsored FDP.
- Course on Learning Physics through Simple Experiments, organized by I.I.T. Kanpur, during 02/04/2020 - 10 /06/2020.
- Online Course on Human Values, School of Nanoscience & Technology, 11/05/2020 - 30/06/2020, organized by School of Nanoscience & Technology, Shivaji University, Kolhapur.
- Course on Classical Mechanics, organized by I.I.T. Kanpur, during 26/01/2021-25/04/2021.
- 4 Weeks, MHRD-Orientation Course, Teaching Learning Centre, Ramanujan College, Delhi, 04/06/2020 to 01/07/2020, Ministry of Education, Pandit Madan Mohan Malviya, National Mission On Teachers Training.
- 2 Week Interdisciplinary Refresher Course on Managing Online Classes & Co-Creating MOOCs 6.0. Teaching Learning Centre, Ramanujan College, Delhi, 05/07/2021-19/07/2021, Teaching Learning Centre, Ramanujan College, Delhi Ministry of Education, Pandit Madan Mohan Malviya, National Mission on Teachers Training.
- Participated in the MS-DEED Level 1 Workshop on Introduction to Innovative Pedagogies for Science & Mathematics Undergraduate Teachers on 27<sup>th</sup> and 28<sup>th</sup> July 2022 at Ramnarain Ruia Autonomous College, Mumbai.
- 4-Week Faculty Induction/Orientation Programme for "Faculty in Universities/Colleges/Institutes of Higher Education" from 20 January – 18 February, 2023.

### **MEMBERSHIPS/AFFILIATIONS:**

- Member of University Department Student Council during 1999-2000.
- Life Time Member of the ISTE, New Delhi, No. LM87012 year 2012.
- Professional Membership with life time Validity, Institute of Scholars, Bengaluru.

### **AWARDS AND ACHIEVEMENTS:**

- Passed Homi Bhabha Bal Vaidnyanic Competition in 1992-93.
- Awarded with Shivaji University Merit Scholarship for Meritorious performance at B.Sc. Part III during academic year 1998-99.



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- Awarded with MNRE, New Delhi, Junior Research Fellowship (JRF).
- Awarded with MNRE, New Delhi, Senior Research Fellowship (SRF).
- Awarded with MNRE, New Delhi Post Doctoral Research Fellowship (PDF).
- Biography has been considered and published in 30<sup>th</sup> Pearl Anniversary Edition of Who's Who in the World (Nov. 2012), USA.
- Nominated and considered as TOP 100 SCIENTISTS-2013 by the International Biographical Centre, Cambridge, England.
- World Book of Record, London 19/11/2020 Letter, Atal Academy got this for 1000 online FDP, in 9 thrust areas being conducted in 2020-21(Gold Edition -2020) and I have attended one such FDP.
- Research Excellence Award by Institute of Scholars, Bangalore – 2020
- Awarded with Best Oral Presentation - I Prize during International E-conference on Recent Advances in Material Science and Nanotechnology (RAMAN-2021), organized by Department of Physics, Arts Commerce & Science College, Maregaon, Maharashtra, conducted during Feb. 7- 9, 2021.
- Awarded with Best Oral Presentation - III Prize during Golden Jubilee International Conference on Nanomaterials and Nanotechnology (ICONN-2021), organized by Department of Physics, University of Mumbai, conducted during 25-27 March 2021.
- Awarded 5<sup>th</sup> Prize in an Essay Writing Competition organized by Institute of Science Mumbai.

### **ANY OTHER DETAILS:**

- Working as a Reviewer for International Journals, Journal of Alloys & Compounds, Physica B., Indian Journal of Pure & Applied Physics (IJPAP) and InSc Journals.