

## Curriculum Vitae

**Dr. Sambhaji Shivaji  
Pawar**

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### Permanent/Communication address:

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Department of Engineering Sciences,  
Sinhgad College of Engineering,  
Off Sinhgad Road, Vadgaon (BK)  
Pune - 411041  
(MS) India



### Date of Birth

28.01.1984

### Mother tongue

Marathi

### Gender

Male

### Nationality

Indian

### Education

Sr. No	Qualification	Institute/School	Board/ University	Year of Passing	Marks obtained
1.	Ph. D.	Shivaji University, Kolhapur	Shivaji University, Kolhapur	2013	-
2.	M.Sc.	Shivaji University, Kolhapur	Shivaji University, Kolhapur	2006	62.58
3.	B.Sc.	KBP College, Pandharpur	Shivaji University, Kolhapur	2004	72.04

### Title of Ph. D. Thesis

Synthesis and Characterization of  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  Films for Solid Oxide Fuel Cell Application

## Teaching Experience

### PG Teaching Experience

18.01.2012 to 17.07.2012	Worked as assistant professor at post graduate level in D.Y. Patil University Kolhapur (6 months)
02.08.2012 to 21.06.2013	Worked as assistant professor at post graduate level in D.Y. Patil University Kolhapur (10 months 19 days)
09.07.2013 to 22.02.2014	Worked as assistant professor at post graduate level in D.Y. Patil University Kolhapur ( 7 months)

### UG Teaching Experience

01/08/14 to till Date	Working as an Assistant professor at Sinhgad college of Engineering Pune-41
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### Teaching Interests

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Energy Science, Material Science, Statistical Physics, Condensed matter, Optics, Mechanics, Experimental Methods and Physics based interdisciplinary syllabi etc.

Faculty development programs organized	1
Journal Editor	1
Journal Reviewer	5

Material Chemistry and Physics D (Elsevier), Journal of Materials Science JMISC (Springer), Micromolecules (Wiley International), Ionics (Springer), Scientific Reports (Nature)

### Faculty Development programmes

2

1. Physics of Materials, Oct 2019, NPTEL, Two Week
2. Electrochemical impedance Spectroscopy April-2019, Two Week
3. Student Induction (FDP- - SI), May-2019, Two week
4. Chemical crystallography, Oct 2018, NPTEL, Two Week
5. Introduction to R Software, Sep 2017, NPTEL, Two Week

## Research Experience

08

## Doctoral Research Experience 7 Years

- 2006-2013
- ◆  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  films and  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3/\text{Sm}_{0.2}\text{Ce}_{0.8}\text{O}_{2-6}$  were successfully synthesized by cost effective spray pyrolysis technique
  - ◆ The electrochemical performance of  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  cathodic films and  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3/\text{Sm}_{0.2}\text{Ce}_{0.8}\text{O}_{2-6}$  planar interface for its possible application as cathode have been successfully studied.
  - ◆ The detailed study of effect of nano-scaled  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  films on its electrochemical properties have been studied.
  - ◆ The catalytic performance of the  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  cathodic films and  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3/\text{Sm}_{0.2}\text{Ce}_{0.8}\text{O}_{2-6}$  with grain-size have been studied for oxygen.

## PG Research Experience 1 Year

**2005-2006** Worked on solid state synthesis of carbon doped superconducting  $\text{MgB}_2$  samples. The effect of carbon doping on microwave absorption properties of  $\text{MgB}_2$  superconducting samples have been successfully studied.

	M.Sc	M.E	M.Phil/Ph. D.
<b>Research Work Directed</b>	02	3	-

### Honours/Awards/ Fellowship

- 2006-2007 Junior Research Fellowship on DRDO superconductor project (5 months)
- 2008-2010 Junior Research Fellowship on DRDO funded "Studies on Development of  $\text{SmSrCoO}_3/\text{BiCuVO}_x/\text{Ni-SDC}$  Planar Solid Oxide Fuel Cells" Project (two years)
- 2011-2012 Senior Research Fellowship on DRDO funded "Fabrication and Performance studies of Co-Planner single chamber  $\text{SmSrCoO}_3/\text{BiCuVO}_x/\text{Ni-SDC}$  unit cell" Project (one year)

### Professional body

## membership

- ◆ The International association of Engineers (IAENG) Society of Chemical Engineering (Since: 22 February 2016) Life membership

## Reviewer for Journals/ conferences

- ◆ Journal of alloys and compounds
- ◆ Journal of Materials Science JMSC
- ◆ Ionics (Springer) 2013,2014
- ◆ Materials Chemistry and Physics
- ◆ 2014\_Micromolecules (Wiley International) Proceeding
- ◆ 6th Global Conference on Materials Science and Engineering (CMSE 2017)

## International Journal Publications

No.	Citations	h-index	i10
11	111	6	5

1. J. S. Shaikh, N.S. Shaikh , Y. Kumar Mishra, **S.S.Pawar**, N. Parveen, P. M. Shewale, S. Sabale, P. Kanjanaboos, S. Praserthdam and C.D. Lokhande1, "The implementation of graphene-based aerogel in the field of supercapacitor" Nanotechnology 32 362001 (23pp)
2. TS Bramhankar, **SS Pawar**, JS Shaikh, VC Gunge, NI Beedri, PK Baviskar, HM Pathan, PS Patil, RC Kambale, RS Pawar "Effect of Nickel-Zinc Co-doped TiO<sub>2</sub> blocking layer on performance of DSSCs" Journal of Alloys and Compounds 817 152810
3. TL Gilbile, RS Pawar, VN Kapatkar, RC Kamble, **SS Pawar** "Synthesis and Performance Tuning of Sm<sub>0.2</sub>Ce<sub>0.8</sub>O<sub>2-δ</sub> Electrolyte for Low Temperature Solid Oxide Fuel Cell Application" Journal of Electronic Materials 48 (6) 4117-4124
4. S. S. Khemalapure, P. L. Hosamani, S. N. Mathad, A. S. Pujar, C. S. Hiremath, P. R. Jeeragal, **S. S. Pawar**, and Rangappa B. Pujar, " Synthesis, Structural and Dielectric Properties of Ni-Zn-Cu Ferrites" Materials Focus 718
5. **S.S. Pawar**, K.P. Shinde, A.G. Bhosale, R.S. Pawar, S.H. Pawar, "Studies on role of grain-size on transport properties of Sm<sub>0.5</sub>Sr<sub>0.5</sub>CoO<sub>3d</sub> cathodic films" Materials Chemistry and Physics

163 (2015) 30-37

6. **S. S. Pawar**, K. P. Shinde, A. G. Bhosale, S. H. Pawar "Studies on Electric and Dielectric Properties of Porous  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_{3.6}$ " J. of Materials <http://dx.doi.org/10.1155/2013/987328>
7. K.P. Shinde, N.D. Thorat, **S.S. Pawar**, S.H. Pawar, "Combustion synthesis and characterization of perovskite  $\text{La}_{0.9}\text{Sr}_{0.1}\text{MnO}_3$ " Mater. Chem.Phys. 134 881-885
8. K.P. Shinde, **S.S. Pawar**, P.M. Shirage, S.H. Pawar "Studies on morphological and magnetic properties of  $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ " Appl. Surf. Sci. 258 7417-7420
9. A. G. Bhosale, Rajeev Joshi, **S. S. Pawar** & C. A. Betty, R. Mishra, C. G. S. Pillai, S. H. Pawar "Relaxation studies of bulk samarium doped ceria electrolyte" Ionics 17 61-68
10. K.P. Shinde, **S.S. Pawar**, N.G. Deshpande, J.M. Kim, Y.P. Lee, S.H. Pawar "Magnetocaloric effect in LSMO synthesized by combustion route", Mater. Chem. Phys., 129 180
11. K.P. Shinde, **S.S. Pawar**, S.H. Pawar "Influence of annealing temperature on morphological and magnetic properties of  $\text{La}_{0.9}\text{Sr}_{0.1}\text{MnO}_3$ " Appl. Surf. Sci. 257 ( 9996).
12. **S. S. Pawar**, K. P. Shinde, R. S. Joshi, R. S. Kalubarme, A. G. Bhosale, S. H. Pawar "Effect of PVA addition on formation of spray-deposited  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  thin films on  $\text{CeO}_2$  substrates" Ionics 16 649-654
13. A.G. Bhosale, M.B. Kadam, Rajeev Joshi, **S.S. Pawar**, S.H. Pawar "Studies on electrophoretic deposition of nanocrystalline SDC electrolyte films" J. Alloy. and Comp. 484 795-800
14. V. D. Patil, D. B. Patil, **S. S. Pawar**, S. V. Otari, M. B. Deshmukh and S. H. Pawar "Studies on electrochemical performance of microbial fuel cell based on dairy waste for energy conversion" International Journal of Chemical Sciences and Applications 4 111-115

Research Paper Published in  
proceeding 4

1. T. L. Gilbile, S. S. Pawar, A. A. Godse, R. C. Kamble, Ajay Bidwal, "Development and Performance Evaluation of SDC-GDC Composite Electrolyte for Low Temperature SOFC Application", ICSD , Sinhgad College of Engineering, Pune A
2. A.C.Dhotre, A.P.Pawar, **S.S.Pawar** "Studies on Synthesis and

Characterization of Cu<sub>0.1</sub>Ni<sub>0.9</sub>Mn<sub>2</sub>O<sub>4</sub> Nanoparticles as an Additive in Conventional Fuels” Department of Mechanical Engineering, SCOE,Pune Future trends and challenges in mechanical Engineering (FTCME), 2017 (17-19 Feb), India

3. **S.S. Pawar**, R.S.Pawar, V.K.Chaudhari, S.H.Pawar “Studies On Effect Of Nano-Grains Of Sm<sub>0.5</sub>Sr<sub>0.5</sub>CoO<sub>3</sub> Film On Transport Properties Of Sm<sub>0.5</sub>Sr<sub>0.5</sub>CoO<sub>3</sub>/Sm<sub>0.2</sub>Ce<sub>0.8</sub>O<sub>2</sub> (cathode/electrolyte) Planar Interface “ Nano electronics and sensors, Bloomsbury publishing India, ISBN-978-93-85436-94-9 page no.89-92 (2015)
4. **S. S. Pawar**, K.P. Shinde, R.S. Kalubarme, R.S. Joshi, S. H. Pawar “Spray deposited porous Sm<sub>0.5</sub>Sr<sub>0.5</sub>CoO<sub>3</sub> cathodic thin films for Solid Oxide Fuel Cell” Proceedings of the 54th DAE Solid State Physics Symposium (14-18 Dec. 2009)

**Paper Presented in  
National / International  
Conferences**

**10**

15. Tukaram L. Gilbile, V. N. Kapatkar, **S. S. Pawar** , R. C. Kamble , S. V. Gavali “Synthesis and Characterization of Sm<sub>0.2</sub>Ce<sub>0.8</sub>O<sub>2-δ</sub> Electrolyte for Intermediate Temperature Solid Oxide Fuel Cell Application” International Engineering Research Journal, Special issue PGCON-2017
16. A.A.Godse, R.C.Kamble, S. Chary, V.N.Kapatkar, S.S.Pawar, “Structural and electrical performance study of doped SDC samples for SOFC application” ICSD-2018, Sinhgad College of Engineering, Pune
17. T.L.Gilbile, V. N. Kapatkar, S.S. Pawar "Synthesis and Characterization of Sm<sub>0.2</sub>Ce<sub>0.8</sub>O<sub>2</sub> electrolyte for Intermediate temperature Solid Oxide Fuel cell application"Center for Reserch and technology development, NBN SOE, Solapur (ITRDC-2017) February 18-21
18. S. S. Pawar, K. P. Shinde, R. S. Pawar , A.G. Bhosale and S. H. Pawar “Grain-boundary mediated catalytic activeness promotion in nanocrystalline Sm<sub>0.5</sub>Sr<sub>0.5</sub>CoO<sub>3</sub> cathodic films”2nd International Conference on Physics of Materials and Materials Based Device Fabrication,Department of Physics Shivaji University, Kolhapur (ICPM-MDF-2014)
19. S. S. Pawar, K. P. Shinde, A.G. Bhosale, S. H. Pawar “Studies on effect of grain-size on electrical properties of Sm<sub>0.5</sub>Sr<sub>0.5</sub>CoO<sub>3</sub> films” 24th general meeting of MRSI organized by Indira Gandhi Centre for Atomic Research, Kalpakkam, February 11-13 (2013)
20. S. S. Pawar, S. H. Pawar “Frequency domain study of electric and

dielectric properties of porous  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_{3-x}$ ” Second National seminar on Physics of Materials and Materials based Device fabrication (NSPM-MDF) organized by Department of Physics Shivaji University Kolhapur, January 4-5 (2013)

21. S.S.Pawar, K.P. Shinde, R.S. Joshi, R.S. Kalubrame, S. H. Pawar “Studies on AC response of spray deposited  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  cathode for Intermediate Temperature Solid Oxide Fuel Cell” Commercialization of renewable energy technology: A multi mega Event organized by Centre for Interdisciplinary research, D.Y. Patil university Kolhapur, October 21-23 (2009)
22. S. S. Pawar, R. S. Kalubarme, D. A. Bhise, A.U. Jadhav,S.H.Pawar “Substrate Dependent Structural And Morphological Evolution Of  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  Thick Films By Spray Pyrolysis” 19th general meeting of MRSI organized by Sree Chitra Tirunal Institute for Medical Science and technology, February 14-16 (2008)
23. S.S. Pawar, A.U. Jadhav, D.A. Bhise, S.H. Pawar “Combustion Synthesis of  $\text{Sm}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$  Cathode for Low Temperature SOFC Applications” International conference on Advanced materials and Applications (ICAMA-2007) organized by Department of Physics Shivaji University Kolhapur, November 15-17 (2007)

#### **Conferences/Workshops Attended**

**07**

1. Recent advances in Bioelectrical Impedance for body composition and its clinical application (RABICA) Organized by centre for Interdisciplinary Research and department of Physiology, D. Y. Patil University, Kolhapur, March 26-27 (2011)
2. 22th general meeting of MRSI organized by CSIR-AMPRI, February 14-16 (2011)
3. National Conference on Resent Trends in harnessing of Non-Convestional energy resources (RTHNCER) organized by Vivekanand college, Kolhapur, December 15-16 (2010)
4. International conference on Biomedical Engineering and Nanotechnology (ICBENT-2008) organized by Centre for Interdisciplinary Research, D.Y. Patil University Kolhapur, October 21-23 (2008)
5. Accelerator User Workshop held by Inter-University Accelerator Centre (An Autonomous Centre of UGC) New Delhi, July 6-7 (2007)
6. One day National seminar on applications of particle accelerators

organized by Department of Physics Pune University Pune, May 11 (2007)

7. Workshop on Frontiers in Physics and Chemistry Vision to 21<sup>th</sup> Century: First Interdisciplinary Shivaji University, Kolhapur(India)- Hanyang University (S. Korea) Bilateral Summit hosted by Department of Physics Shivaji University Kolhapur, January 8-10 (2007)

## **Academic Community Involvement**

### **Conferences organization / committee work**

1. 2nd International Conference on Physics of Materials and Materials Based Device Fabrication, Department of Physics Shivaji University, Kolhapur (ICPM-MDF-2014)
2. National workshop on Ph. D. Program for medical innovations (PPMI) Organized by centre for Interdisciplinary Research, D. Y. Patil University, Kolhapur, October 18-19 (2012)
3. Radiological Imaging and Advances organized by IRIA CME, Kolhapur and Centre for Interdisciplinary research, D. Y. Patil University Kolhapur, August 25-26 (2012)
4. Recent advances in bioelectrical impedance impedance for body composition and its clinical application (RABICA) Organized by centre for Interdisciplinary Research and department of Physiology, D. Y. Patil University, Kolhapur, March 26-27 (2011)
5. Symposium on Nuclear energy and Health care: A Multi Mega Event organized by Centre for Interdisciplinary research, D.Y. Patil university Kolhapur, October 22-24 (2011)
6. Commercialization of renewable energy technology: A multi mega Event organized by Centre for Interdisciplinary research, D.Y. Patil university Kolhapur, October 21-23 (2009)

## **Material Characterization techniques handled**

1. Electrochemical Impedance spectrometer (Solartron 1260 A)
2. Electrochemical analyser/ work station (Ch Instruments 650E)
3. Potentiostat (Versastat-II model)
4. Scanning electron microscope (Jeol JSM 6360)



5. X-ray diffractometer (Rigaku MiniFlex 600)
6. Electrochemical quartz crystal microbalance and Surface Profiler
7. Electro meter (Keithley)
8. Close cycle Helium Cryogenic I-V properties measurements unit
9. Zeta potential/practical size analyser(Nicomp 380 PSS)
10. Gas sensor unit
11. Fuel cell testing unit
12. Microbial fuel cell testing unit
13. Atomic Force Microscope

### **Material Characterization techniques known**

1. Transmission electron Microscope
2. UV-VIS spectrophotometer
3. TG/DT analyzer
4. Microwave Vector Network Analyzer
5. Positron annihilation spectrometer
6. Contact angle meter
7. FT Raman spectrophotometer
8. Solar PV systems

### **Material/Thin film synthesis techniques used**

1. Spray pyrolysis thin film deposition unit
2. Vacuum thin film deposition Unit
3. Electrophoresis thin film deposition technique
4. Reflux thin film coating unit
5. Screen printing thick film coating unit

6. Co-Precipitation techniques of nano material synthesis
7. Combustion synthesis unit
8. Spin coating Unit
9. Solid State material synthesis

### **Material/Thin film synthesis techniques Known**

1. Thin film Chemical vapour deposition Unit
2. Physical vapour deposition unit (PVD)
3. Chemical vapour deposition unit (CVD)
4. Electrochemical thin film deposition unit
5. Doctors blade thick film deposition
6. Thin film sputter coating unit
7. Ultrasonic Spray pyrolysis Unit
8. Sol-gel

### **Computer Skill**

#### **Operating Systems Used**

Windows, Linux

#### **Software Packages Used**

#### **Impedance data analysis and Circuit fitting**

Z-Plot, Z-View, Smart, EIS Spectrum analyser

#### **Document Processing**

Microsoft office, Open office, Google office

#### **X-Ray diffraction data processing**

Crystal Match, Phillips X'Pert High Score, Powder X, APD Demo, Fullprof

#### **Visualization**

Crystal Diamond, Jmol

#### **Data Plotting and analysis**

Origin, Gnuplot, SciDAVis, Engauge Digitizer, Graph

#### **Numerical computations**

Matlab, Octave, Scilab

**Image Processing**

Image J

**Developing**

NetBeans

**Nuclear Physics**

RadLab (Virtual Radiation Exp.)

I hereby declare that all the entries are true and correct to the best of my knowledge and belief.

Yours faithfully,

Place: Pune

**Dr. Sambhaji S. Pawar**