

Curriculum Vitae
Dr. Swapnil Sureshrao Pote
M.Sc. (Physics), Ph. D.(Physics)

Corresponding Address:-

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♦ **Career objective:-** To undertake teaching and research job in an academic institution of Excellence.

♦ **Education:-**

- **Ph.D.:-, “Synthesis and Characterization of phosphors for Solid State Lighting”**
Deptt.of Physics, Shri Ramdeobaba College of Engg. and Management,
RTM Nagpur University, Nagpur
- **M.Sc. (Physics)** Department of Physics RTM Nagpur University, Nagpur with 66.70 % in 2007.
- **B.Sc.(Comp.Sci.),** Shivaji Science College, RTM Nagpur University, Nagpur with 61.77% in 2004
- **H.S.S.C.** J.B. Science College, Wardha, Maharashtra State Board with 63.50 % in 2000.
- **S.S.C.** Lokmanya Vidyalyaya, Ashti, Maharashtra State Board with 78.26 % in 1998.

♦ **Total Experience :- (14 Years)**

- Teaching 11.5 year (**University approved vide letter no.1545 dated 27/10/2010.**)
- Research 2.5 year as research fellow **DST Project, Govt. of India, New Delhi.**

♦ **Teaching Experience:-**

Institute	Post	Nature of Appinment	Scale of Pay	Duration
G.N.I.T., NAGPUR	Lecturer	Regular	15600-39000 + AGP 6000	2.9 Years
V.N.I.T., NAGPUR	Teaching Assistant	On contract	Consolidated 35000	0.6 Years
S.V.P.C.E.T. NAGPUR	Assistant Professor	Regular	15600-39000 + AGP 6000	3.5 Years
Shri Shivaji Science College, Nagpur	Assistant Professor	Temporary	As per RTM Nagpur University, Nagpur	2.5 Years
NEET Coaching	Faculty	NA	VARY	2 Years

♦ **Courses/ Subjects Taught:-**

Under graduate:- 1) Engineering Physics 2) Advanced Physics (To B.E, B.Tech and B.Sc. Students)

Post Graduate:- 1) Material Science 2) Electrodynamics (To M.Sc. Students)

♦ **Research Publications:- 21**

- International Journal: 07, ● International Conference: 06, ● National Conference: 08.

● **Doctoral work**

Objective of thesis has been to synthesize and characterize the materials for Solid State Lighting (SSL) (Producing clean and green WHITE Light as an alternative source to present lighting). I have studied (Synthesis and Characterization) various properties such as emission and excitation spectra, X ray diffraction study of some systems which includes Sulfides, Fluorides, Tungstates Phosphates, Oxides Quinolines etc when doped by various activators and their application as materials for SSL (RGB/WHITE LEDs)

The doctoral work has established one entirely new material Ca-La-F system doped by Ce material emits blue colour when excited by near uv. Besides this we have synthesized entire series of RED, BLUE, GREEN Materials which includes Sulfides, Fluorides, Tungstates Phosphates, Oxides Quinolines etc. which on excitation by near uv or Blue light emits RGB Colours hence may be used as potential candidate for different components of White or RGB LEDs

● **M. Sc. Project:**

"During my M.Sc. project, I synthesized sample (AlQ_3 , $(\text{ZnQ}_2, \text{BaQ}_2, \text{KSrQ}_3, \text{CaQ}_2, \text{Q}=8\text{hydroxy quinoline})$ and various other Metal quinoline derivatives by using precipitation method and then by rude method sample (film and powder) of various concentration with respect PPMS (plastic reagent) was prepared and their luminescence spectra was studied by Fluorescent spectrophotometer F4500 and F7000. These phosphors can be applicable as organic blue light emitting diodes.

♦ **Foreign Country Visited:- JAPAN (On DST Fellowship, Govt. of India, New Delhi.)**

♦ **Awards and Academic Achievements:-**

- **International travel grant** for a conference in **Japan** by Department of Science and Technology (**DST**), **Govt. of India, New Delhi.**
- **Research Fellowship** by Department of Science and Technology (**DST**), **Govt. of India, New Delhi.**
- **Officer In-charge (O I C)** for R T M Nagpur University **Summer 2011** Examination.

♦ **MEMBERSHIP OF PROFESSIONAL BODIES:-**

- **Life member of** Indian Science congress Association, Kolkata (Membership No. **L17456**)

♦ **Demonstrated expertise: -**

- X-ray Powder Diffraction used to characterize the synthesized samples.
- Hitachi F-7000 Spectrophotometer used to measure emission and excitation spectra.
- Flux Synthesis Route
- Wet Chemical Route
- Solid State Reaction Route and Reduction Route.
- Construction of Laboratory furnaces up to 1100°C

♦ **Publication Details:-**

● **International Referred Journal Articles:-**

- 1 “ **Luminescence of Ce^{3+} IN $\text{Ca}_{0.65}\text{La}_{0.35}\text{F}_{2.35}$ Host**” , **S.S.Pote** , C.P.Joshi, S.V.Moharil, P.L.Muthal and S.M.Dhopte, **J.Luminescence 130(666-668) 2010 (Impact Factor 2.69).**
- 2 “**Luminescence in $\text{Ca}_{1-x}\text{Y}_x\text{F}_{2+x}$** ” , **S.S.Pote** , C.P.Joshi, S.V.Moharil, P.L.Muthal and S.M.Dhopte, **J.Physica B .(Elsevier) 406(1308-1311) 2011(Impact Factor 1.35).**
- 3 “**Preparation of $\text{CaF}_2\text{:U}$ Phosphor by solid state metathesis** ”.**S.Pote**, C.P.Joshi,S.V.Moharil,P.L.Muthal and S.M.Dhopte,., **International Journal of Self_Propagating High_Temperature Synthesis, 2013, Vol. 22, No. 1, pp. 37–40. (Impact Factor 0.241).(Springer Link)**
- 4 “ **Comparison with industrial oxysulphide phosphor for solid state lighting**”, **S.S. Pote**, 60th DAE-Solid State Physics Symposium (DAE-SSPS-2015), AMITY UNNIVERSITY,NOIDA **(to be published in AIP)**
5. “**Luminescence in $\text{CaS}:\text{Cu}$** ” **S.S.Pote*** , C.P.Joshi, S.V.Moharil, Advances in Materials Science and Technologies, AMST-2012 Conference Proceedings, pp48-54 ,Lambert Publication Germany
6. ” **Luminescence of the Eu^{3+} ion in the ordered perovskite structure**” **S.S. Pote**, Accepted to “ International conference on Defects in Insulating Materials **(ICDIM 2016) FRANCE.**
(To be Published in Institute of Physics, London)
7. “**Green Emission of U^{6+} activated Lithium based Tungstates** “ **S.S. Pote** , Accepted to “ 19th International Conference on Dynamical Processes in Excited States of Solids **(DPC'16) FRANCE (To be Published in Journal of Luminescence-Elsevier)**
- 8 “**Luminescence of Ce^{3+} In Sulfate Hosts** ” ,**S.S.Pote** , C.P.Joshi, S.V.Moharil, P.L.Muthal and S.M.Dhopte, **J.Lum. .(Elsevier) (To be Communicated)**
- 9 “ **CaS Based host for Solid State Lighting**” **S.S.Pote** , C.P.Joshi, S.V.Moharil, P.L.Muthal and S.M.Dhopte, **Journal of.Optical Materials. .(Elsevier) (To be Communicated)**
- 10 “**Luminescence of Uranium In Sulfate Hosts** ” ,**S.S.Pote** , C.P.Joshi,S.V.Moharil, P.L.Muthal and S.M.Dhopte, **J.Alloy & Comp. .(Elsevier)(To be Communicated)**

● **99th Indian Science Congress Article:-**

- 1 . **Synthesis and Luminescent Properties of $\text{Ba}_2\text{CdWO}_6\text{:U}$** **S.S.Pote**,C.P.Joshi, S.V.Moharil in the proceedings of physical science section of Indian Science Congress 2012(ISC- 2012) pg. no.127.

● **International Conference Articles:-**

1. “**Uranium activated Lithium Tungstates for Solid State Lighting** ” ,**S.S.Pote** , C.P.Joshi, S.V.Moharil, ,presented for Publication in ICOOPMA 2012, June 03-07, **Nara, Japan)**
2. “ **Novel Eu^{2+} activated Phosphate Based Phosphors for Solid State Lighting**”, **S.S.Pote*** , C.P.Joshi, S.V.Moharil , P.L.Muthal and S.M.Dhopte, Published in the proceedings of“**InternationalConference on Electroceramics, (ICE 2009)**” page No.344-345

- 3 **“Fluorescence Characterization of some Metal and Rare Earth Salicylate Complexes” S.S.Pote* , C.P.Joshi, S.V.Moharil , P.L.Muthal and S.M.Dhopte in MATCON 2010 Jan. 11-13, 2010. Cochin University of Science and Tech. Kochi.**
- 4 **”Solid State Lighting- A New Lighting Paradigm” Swapnil Sureshrao Pote,C.P.Joshi,S.V.Moharil , in 1st India International Energy Summit (IIES’11), at VNIT on 28-31 Jan 2011.**
- 5 . **“Some aspects of f-f Excitation in Eu activated Rare Earth Tungstates” S.S.Pote , C.P.Joshi, S.V.Moharil in International Conference on Luminescence and its Applications (ICLA-2012) 07-10, Feb., 2012 at Indian Institute of Chemical Technology, (IICT),Hyderabad(In the Proceedings)**
6. **“Y₂O₂S:Eu³⁺ Phosphor- A Comparison with industrial phosphor for WLEDs” S.S.Pote , C.P.Joshi, S.V.Moharil in International Conference on Material Science and Technology (ICMST-2012) 10-14, June., 2012 at St.Thomas College Pala, Kerala.**

● **National Conference Articles:-**

1. **“Eu³⁺activated Double Pervoskite Tungstates(A₂BWO₆) for solid state lighting.”Swapnil Pote. C.P. Joshi,S.V. Moharil, in National Symposium for Material Research Scholars 2010 (MR-10) at IIT, Bombay , May 6-8, 2010.**
2. **“Tri colour Sulphide phosphors for solid state Lighting”, Swapnil Pote. C.P. Joshi, S.V. Moharil, in National Conference of Luminescence and its application, at CGCRI(CSIR-Lab),Kolkata, Feb. 13-17,2009.**
3. **“UV-A Emitting Sulphate based Phosphors” Swapnil Pote.C.P. Joshi,S.V. Moharil, in UGC Sponsered National Conference at Govt. Institute of Science , Nagpur Jan. 10-11, 2009.**
4. **“Novel Uranium (U⁶⁺) Activated Barium Halo-Phosphate for Solid State Lighting”, Swapnil Pote. C.P. Joshi, S.V. Moharil, P.L. Muthal, S.M.Dhopte in National Conference of Luminescence and its application, at Gandhigram Rural University, Gandhigram, on Feb. 09-11, 2010.**
5. **“Some aspects of Synthesis and Luminescent properties of NaCaPO₄:Eu²⁺” Swapnil Pote. C.P. Joshi,S.V. Moharil, in proceedinds of SAMA -2010,01-02. N.H. Science college, Bramhapuri, India , March 13th, 2010.**
6. **“Synthesis and characterization of some Quinolines base Organic Phosphor”. Amol V. Nande, D.H. Gahane, Swapnil.S.Pote, C.P.Joshi, S.V.Moharil in the proceedings of Symposium of Advanced Materials (SAMA-2010) on Mar.07, 2010.**
7. **“Thin film and solid state luminescence of some Novel Metal Quinolates” Swapnil Pote. C.P. Joshi, S.V. Moharil in National Conference of Luminescence and its aplication, at Pt.Ravishankar Shukla University,Raipur on Feb. 07-09, 2011. (In Proceedings pg. no.158)**

◆ **SHORT TERM COURSES/WORKSHOPS/SEMINARS CONFERENCES ATTENDED:-**

- Participated and presented paper in International conference on Optics, Optoelectronics, Photonics materials and applications (**ICOOPMA 2012**), **NARA, JAPAN.**
- Completed Short Term course on **“Material Science Influence in Tribology of Engineering Ceramics”** ,at IIT, Roorkee, in July, 2014.

- Completed Short Term course on “**Smart Nanoceramics & Nanoscience Research Tools** .at IIT, Roorkee, in July, 2012.
- Participated in “Second Science Conclave: A congregation of **Nobel Laureates**” at IIIT Allahabad during Dec. 08-14, 2009.
- **International Conference on Luminescence and its Applications(ICLA) at National Physical Laboratory(NPL-CSIR Lab.)**, New Delhi, Feb. 16-20, 2008.
- Completed **UGC Sponsored workshop on “PBAS and RESEARCH METHODOLOGY”** at Academic staff college , R.T.M. Nagpur University in March 2012.
- **International Conference on Material Science and Technology (ICMST-2012)** 10-14, June., 2012 at St.Thomas College Pala, Kerala.
- Participated in **First International India Energy (IIES-2011) Summit** at VNIT, Nagpur on Jan 28-31, 2011.
- **National Conference on Luminescence and its Applications(NCLA) at Central Glass and Ceramic Research Institute(CGCRI-CSIR Lab.)**, Kolkata, Feb. 17-19, 2009.
- **UGC Sponsored National Conference on Recent trends in basic and applied Materials(RTBAM)** held at **Govt. Institute of Science** on Jan 10-11, 2009.
- Workshop on **Recent Trends in Applications of Luminescence** on Jan. 19th 2008, at Shri Ramdeobaba Kamla Nehru Engg. College, Nagpur.
- Workshop on **Patent Information System** at patent office CGO Complex, Seminari Hill, Nagpur.

♦ **Software Exposure:-**

Languages : C, C++, Basic.

Knowledge of Computer : Ms-Office.

♦ **Interests and Activities:-**

I am interested in Science and technology. I also interested to teach science & technology in easy way, encouraging and guiding students to take part in various conferences and seminars. I always in search of new technologies and other advanced topics, beside this my hobbies are reading Novels, articles ; playing Badminton.

♦ **PERSONAL PROFILE**

Name : Swapnil Sureshrao Pote
Date of Birth : 30th April 1983
Father's Name : Sureshrao R. Pote
Sex : Male
Marital Status : Married
Languages Known : English, Hindi and Marathi
Nationality : Indian
Permanent Address : At post - Vardhapur (wadala) Taluka – Ashti ,Dist.– Wardha-442202(MH)

♦ **Declaration:-**

I hereby declare that the information furnished above is true to the best of my knowledge.

Date :

Place : Nagpur

(Swapnil Sureshrao Pote)

Title of Thesis:- Synthesis and Characterization of Phosphors for Solid State Lightng.

Abstract of Ph.D. Work

As the world's population and standard of living increases, the demand for energy is also increasing. Strategies for meeting this challenge include building new nuclear power plants, renewable energy sources and reducing the consumption of energy. Replacing conventional lighting with energy efficient Solid State Lighting (SSL) is an approach for reducing the consumption of energy. Solid state lighting (SSL) in the form of inorganic compound semiconductors known as light emitting diodes (LEDs) is perhaps the most significant advance in illumination since the inventions of the light bulb by Thomas Edison more than a century ago. The term "solid state" refers to the fact that light in an LED is emitted from a solid object-a block of semiconductors-rather than from a vacuum or gas tube, as is the case in traditional incandescent light bulbs and fluorescent lamps.

LEDs are a truly disruptive technology providing a serious alternative to conventional lighting technologies in many applications because they can create visible light with virtually no heat or parasitic energy dissipation. Besides, the solid-state nature provides for greater energy efficiency, resistance to shock, vibration, wear and increased lifespan.

Hence, SSL is a pivotal emerging technology that promises to fundamentally alter and improve lighting systems of the future.

The development of phosphors for solid state lighting (Materials for SSL LEDs) is our main concern in this course of work. The materials (Phosphors) of different compositions with desired properties are synthesized and characterized by XRD for structural confirmation that are required for SSL applications. The materials synthesized for SSL during this work include several synthesis methods ranging from solid state reaction, Flux Method, Wet chemical synthesis method for fluorides etc. I have explored various families such as sulfides, fluorides, tungstates, phosphates, quinolines etc doped by suitable activators which includes some rare earth, transition metals etc to obtain suitable materials for Solid State Lighting (SSL).

The doctoral work has led to development of various RED, BLUE and GREEN material exhibiting enhanced emission and excitation properties required for SSL Materials/ White LEDs.

Name:- Dr. Swapnil Suresh Rao Pote

Post Applied for :- Assistant Professor

Department:- Physics

Teaching Plan :-

Teaching is the most important part of the academic profession. As teacher it is not only important to explain the things but also it the pleasure to understand the things first and explain to others. It's very important to involve the students in to the physics by day to day life examples or by simple interesting experiments for the better understanding.

Many people thinks that physics is all about the memorizing the formula but as the physics teacher I know it more than that. Student must learn to how to relate these formulas in day to day life. Student must understand how to look at the day to day phenomenon by remembering the Newton's laws of motion, Einstein's equation or by understanding the effect of Force and field.

When I started working as lecturer, before joining my duties I use to sit in the class of senior faculty of the department with student. As student I learn the things but before start teaching I use to observe the faculty how they put efforts to make the physics simple to the student. I use to observe their gesture, teaching style and how they start the class. I worked in various capacities such as teaching Assistant, lecturer and Assistant professor over 11 years and every day I try to physics simple in class room by explaining the concept by day to day examples. During PhD I use to take part in teaching activity to learn and understand the student and physics.

My teaching philosophy is to keep the student interested and involve in the physics. The best way to do that is to get feedback from the student and fellow faculty members. During my experience in teaching, I observe that it is always important to encourage student for asking question or discuss some topics during and after classroom teaching. Instant feedback from the student what they didn't understand and focus on the student who didn't understand the concept is key to improve the understanding physics.

During my PhD I worked with master students and help them to understand the physics and their projects. I guided six master student (M.Sc.). I am comfortable in teaching the standard introductory physics courses and the quantum mechanics and solid state physics which are my favorite subjects and related to my PhD.

I am enthusiastic about teaching as well as research. I am looking forward to helping to educate the next generation of physics lovers. Finally, I would like to add that teaching people about physics should continue outside of the university, and therefore I am quite interested in participating in outreach to the general public.

Research Plan :-

Currently I am involved in the synthesis and characterization of materials for Solid State Lighting and making of small testable pallets of materials ready to be used for testing in LEDs. In order to make this happen on wide scale one need some funding hence as part of the research program. I would like to join hands with similar industries or funding agencies that could fund this research for mass production and high end testing.

As I did calculation on how to choose and synthesize particular material from particular family (sulfide, fluoride etc) for SSL application I will apply the this strategy to hunt materials for other applications. My another plan is to utilize my knowledge of synthesis gained during doctoral work to find new materials for Optically stimulated luminescence (OSL) and Thermoluminescence (TL). Some of the samples that I have synthesized for SSL may be useful for OSL, hence further it could be nice extension of my doctoral work in to a new arena.