NAME : SANDESH ROHIDAS JADKAR

QUALIFICATION : M. Sc. Ph. D

DESIGNATION : READER

SPECIALIZATION : Physics (Energy Studies)

EMAIL : sandesh@physics.unipune.ernet.in

PHONE : **Office-**020-2569 2678 (x 305) **Home-**020-2663 2619

1. EDUCATION :

Course	Institution	Year	Details
Ph. D.	Department of Physics, University of Pune, Pune 411 007	2001	Study of Hydrogenated Amorphous and Microcrystalline Silicon and its alloys with Germanium deposited by HW-CVD for Photovoltaic applications
M. Sc.	Department of Physics, University of Pune, Pune 411 007	1991	Energy Studies and Material Science
B. Sc.		1988	Material Science

2. CARRIER PROFILE:

	Organisation / Institution	Designation	Duration
1.	Nowrosjee Wadia College, Pune 411 001	Lecturer	1991-1999
2.	Nowrosjee Wadia College, Pune 411 001	Lecturer (Senior Scale)	1999-2002
3.	Nowrosjee Wadia College, Pune 411 001	Lecturer (Selection Grade)	2002-2003
4.	Department of Physics, UoP, Pune 411 007	Reader	2002 till today

3. TEACHING EXPERIENCE (SUBJECTS/COURSES TAUGHT):

TOTAL = 18 Years

Undergraduate = 08 Years

Post Graduate = 18 Years

4. RESEARCH INTERESTS / SPECIALIZATION:

a) Non conventional energy sources, particularly solar energy.

b) Low cost solar cell materials.

c) Thin film solar cells.

d) Energy studies etc.

5. HONORS & AWARDS:

a) Awarded **'TRIL Fellowship'** by the Abdus Salem International Center for Theoretical Physics (ICTP) to work at University of Camerino, Italy for ten months, 19 Jan.-18 Nov. 2007.

b) Selected for **'BOYSCAST Fellowship'** by Department of Science and Technology, Government of India for one year 2007-2008.

c) Awarded **'CRNS Fellowship'** by Government of France for post doctoral research work at Ecole Polytechnique, Palaisue, Paris France for one year 2002-2003.

d) Awarded **'UGC Teacher Fellowship'** by the University Grants Commission, Government of India for completion of Ph. D under FIS for two years 1999-2001 under IX plan.

e) Awarded **'Dr. M. V. Gokhale Prize 2001'** by the Gokhale Felicitation Committee to a college Lecturer for the distinguish Academic and Research work.

6. PUBLICATION - BOOKS, JOURNALS, ARTICLES:

Books = 2

1. **'Problems in Physics'** for First Year Junior College **Publisher:** Suhas Agency, Appa Balwant Chawk, Pune (India) **Year:** 1995
2. **'Problems in Physics'** for Second Year Junior College **Publisher:** Suhas Agency, Appa Balwant Chawk, Pune (India) **Year:** 1996

Research papers = 27

1. **Si quantum dots for solar cell fabrication**
   M. Ficcadenti, N. Pinto, L. Morresi, R. Murri, L. Serenelli, M. Tucci, M. Falconieri, A. Krasilnikov Sytchkovab, M. L. Grilli, A. Mittiga, M. Izzi, L. Pirozzi and **S. R. Jadkar**
   Journal of Material Science and Engineering B *(In press)*
2. Influence of argon flow on deposition of hydrogenated nanocrystalline silicon (nc-Si:H) films by plasma chemical vapour deposition
   A. M. Funde, Nabeel Ali Bakr, D. K. Kamble, R. R. Hawaldar, D. P. Amalnerkar and **S. R. Jadkar**
   Journal of Nano-science and Nanotechnology *(In press)*
3. Synthesis and Characterization of Polyaniline-Crooked Gold Nanocomposite with Reduced Conductivity
   R. Hawaldar, M. Kulkarni, **S. Jadkar**, U. Pal, S. Ogale, D. Amalnerkar
   Journal of Nano-science and Nanotechnology *(In Press)*
4. Influence of hydrogen dilution on structural, electrical and optical properties of hydrogenated nanocrystalline silicon (nc-Si:H) thin films prepared by plasma enhanced chemical vapour deposition (PE-CVD**)**
   A. M. Funde, Nabeel Ali Bakr, D. K. Kamble, R. R. Hawaldar, D. P. Amalnerkar, **S. R. Jadkar**
   Solar Energy Materials and Solar Cells 92 1217-1223 **(2008)**
5. Deposition of hydrogenated amorphous silicon (a-Si:H) films by hot-wire chemical vapor deposition (HW-CVD) method: Role of substrate temperature
   S. R. Jadkar, J. V. Sali, A. M. Funde, P. B. Vidyasagar R. R. Hawaldar and D. P. Amalnerkar

Solar Energy Materials and Solar Cells 91 714-720 **(2007)**

6. Nanostructured thin films of anthracene by liquid-liquid interface recrystallization technique
   R. R. Hawaldar, A. M. Funde, D. Bhange, V. Ramaswamy, **S. R. Jadkar**, S. D. Sathaye, U. P. Mulik and D. P. Amalnerkar
   Solid State Phenomena 119 27-34 **(2007)**
7. Self-assembled nanocages of anthracene by liquid-liquid interface recrystallization technique
   Ranjit Hawaldar, **S. R. Jadkar**, Bharat Kale, Uttam Malik, Shivram Sathay and Dinesh Amalnerkar
   Chemistry Letter, **35/1** 26 **(2006)**
8. Transport in microcrystalline silicon thin films deposited at low temperature by hot-wire chemical vapor deposition
   Jean-Eric Bouree, **Sandesh Jadkar**, Samir Kasouit and Regis Vanderhaghen
   Thin Solid Films 501 133 **(2006)**
9. Deposition and Characterization of transparent and conductive sprayed ZnO:B thin films
   B. N. Pawar, **S. R. Jadkar** and M. G. Takwale
   Journal of Physics and Chemistry of Solids, **66/10** 1779 **(2005)**
10. Influence of process pressure on HW-CVD deposited a-Si:H films
    S. R. Jadkar, J. V. Sali, S. T. Kshirsagar and M. G. Takwale
    Solar Energy Materials and Solar Cells, **85/3**, 301-312, **(2005)**
11. Effect of substrate temperature on optical properties of EB-PVD deposited SiO_xN_y thin films
    K. C. Mohite, C. Nouveau, S. T. Pawar, B. N. Pawar, **S. R. Jadkar** and M. G. Takwale
    Proceedings of SPIE Vol. 5250 Advances in Optical Thin Films, Edited by Claude Amra, Norbert Kaiser and H. Angus Macleod, **Bellingham**, WA, 676 **(2004)**
12. Raman and spectroscopic ellipsometry studies on structural properties of µc-Si:H films deposited at low substrate temperature by hot wire method
    S. R. Jadkar and J. E. Bouree
    Proceedings of Third International Conference on Cat-CVD (Hot-Wire CVD) Process, Utrecht, **The Netherlands**, **(2004)**
13. Deposition of a-Si:H films by hot wire chemical vapor deposition: Role of filament temperature
    S. R. Jadkar, J. V. Sali, S. T. Kshrisagar and M. G. Takwale
    Thin Solid Films, **437**, 18-24 **(2003)**
14. Synthesis of a-Si:H/µc-Si:H multilayer structures by HW-CVD technique: Study of optoelectronic and photovoltaic properties
    S. R. Jadkar, Jaydeep V. Sali and M. G. Takwale
    Solar Energy Materials and Solar Cells, **71**, 543-551 **(2002)**
15. Influence of silane flow on structural, optical and electrical properties of a-Si:H thin films deposited by HW-CVD technique
    S. R. Jadkar, Jaydeep V. Sali, D. V. Musale, S. T. Kshirsagar and M. G. Takwale
    Solar Energy Materials and Solar Cells, **71,** 153-167, **(2002)**

16. Narrow band gap, high photosensitivity a-SiGe:H films prepared by HW-CVD method
S. R. Jadkar, J. V. Sali, S. T. Kshirsagar and M. G. Takwale
Materials Letters, **52**, 399-403 **(2002)**

17. **The effect of substrate temperature on HW-CVD deposited a-SiGe:H films**
S. R. Jadkar, Jaydeep V. Sali, S. T. Kshirsagar and M. G. Takwale
Journal of Non-Crystalline Solids, **299**, 168-173 **(2002)**

18. Opto-electronic and Photovoltaic properties of a-SiGe:H/μc-Si:H multilayers deposited by HW-CVD
S. R. Jadkar, J. V. Sali, B. N. Pawar, K. C. Mohite and M. G. Takwale
Proceedings of Second International Conference on Cat-CVD (Hot-Wire CVD) Process, Denver, Colorado, **U.S.A.** pp.107, (**2002)**

19. The effect of substrate temperature on HW-CVD deposited a-Si:H films
S. R. Jadkar, J. V. Sali, B. N. Pawar, K. C. Mohite S. T. Kshirsagar and M. G. Takwale
Proceedings of Second International Conference on Cat-CVD (Hot-Wire CVD) Process, Denver, Colorado, **U.S.A.** pp.307, **(2002)**

20. Role of filament temperature on HW-CVD deposited a-Si:H films
S. R. Jadkar, J. V. Sali, B. N. Pawar, K. C. Mohite S. T. Kshirsagar and M. G. Takwale
Proceedings of Second International Conference on Cat-CVD (Hot-Wire CVD) Process, Denver, Colorado, **U.S.A**. pp.311, (**2002)**

21. Influence of process pressure on Electrical, Optical and Structural properties of a-Si:H films deposited by HW- CVD
S. R. Jadkar, J. V. Sali, B. N. Pawar, K. C. Mohite, S. T. Kshirsagar and M. G. Takwale
Proceedings of Second International Conference on Cat-CVD (Hot-Wire CVD) Process, Denver, Colorado, **U.S.A.** pp.315, **(2002)**

22. The role of hydrogen dilution of silane and phosphorus doping on μc-Si:H films prepared by HW-CVD technique
S. R. Jadkar, J. V. Sali, M. G. Takwale, D. V. Musale and S. T. Kshirsagar
Thin Solid Films, **395**, 206-212 **(2001)**

23. Hot-wire CVD growth simulation for thickness uniformity
Jaydeep V. Sali, **S. R. Jadkar,** S. B. Patil and M. G. Takwale
Thin Solid Films, **395**, 66-70 **(2001)**

24. Synthesis of highly conductive boron-doped p-type μc-Si:H by HWCVD technique
S. R. Jadkar, Jaydeep V. Sali, M. G. Takwale, D. V. Musale and S. T. Kshirsagar
Solar Energy Materials and Solar Cells, **64**, 333-346 **(2000)**

25. Electrical, Structural and Optical properties of Undoped and phosphorous doped hydrogenated microcrystalline silicon (μc-Si:H) prepared by Hot Wire Chemical Vapor Deposition (HW-CVD) technique
S. R. Jadkar, J. V. Sali, M. G. Takwale, D. V. Musale and S. T. Kshirsagar

Proceedings of First International Conference on Cat-CVD (Hot-Wire CVD) Process, Kanazawa, **Japan**, p.177 **(2000)**

26. Hot-Wire CVD Growth Simulation for Thickness Uniformity
J. V. Sali, **S. R. Jadkar**, S. B. Patil and M. G. Takwale
Proceedings of First International Conference on Cat-CVD (Hot-Wire CVD) Process, Kanazawa, **Japan**, p.121 **(2000)**

27. Dependence of effective doping on structural order in hydrogenated amorphous silicon
R. O. Dusane, Suvarna Babras, **S. R. Jadkar** and V. G. Bhide
Solid State Communications, **77**, 195-197 **(1991)**

7. PUBLICATION - CONFERENCE PRESENTATIONS:

1. Silicon quantum dots embedded in silicon oxide for solar cell fabrication
N. Pinto, M. Ficcadenti, L. Morresi, R. Murri, L. Pirozzi, L. Serenelli, M. Izzi, A. Krasilnikova Sytchkova, M. L. Grilli, A. Piegari and **S. R. Jadkar**
23rd European Photovoltaic Solar Energy Conference and Exhibition, Feria Valencia in Valencia, **Spain (2008)**

2. Optical and electrical properties of synthetic melanin thin films for photovoltaic applications
L. Morresi, N. Pinto, M. Ficcadenti, P. Tombesi, D. Vitali, G. Di Giuseppe, R. Gunnella, F. D'Amico, M. Abbas, M. Cuccioloni, M. Angeletti, **S. R. Jadkar**
22nd European Photovoltaic Solar Energy Conference and Exhibition, Milan, **Italy (2007)**

3. Synthesis of hydrogenated nano-crystalline silicon (nc-Si:H) films by P-CVD for photovoltaic applications
A. M. Funde, R. R. Hawaldar, D. P. Amalnerkar and **S. R. Jadkar**
International Material Research Congress (Symposium-Photovoltaics, Solar Energy Materials and Thin Films), Cancun, **Mexico (2006)**

4. General Strategy for Nano-material Synthesis and Their Self-assembly: The Exploitation of Liquid Interfaces
R. R. Hawaldar, K. R. Patil, S. D. Sathaye, **S. R. Jadkar**, D. P. Amalnerkar
Theme Meeting on Self-assembly Routes for Nanotech Materials (SARNaM-06), BARC, Mumbai **(2006)**

5. Effect of substrate temperature on optical properties of EB-PVD deposited SiO_xN_y thin films
K. C. Mohite, C. Nouveau, S. T. Pawar, B. N. Pawar, **S. R. Jadkar** and M. G. Takwale
Proceedings of SPIE Vol. 5250 Advances in Optical Thin Films, Edited by Claude Amra, Norbert Kaiser and H. Angus Macleod, **Bellingham**, WA, 676 **(2004)**

6. Studies on Structural and Electrical properties of impurity-doped ZnO thin films by Chemical Spray deposition
B. N. Pawar, **S. R. Jadkar** and M. G. Takwale
3rd International Workshop on ZnO and Related Materials, Sendai, Japan, **(2004)**

7. Raman and spectroscopic ellipsometry studies on structural properties of μc-Si:H films deposited at low substrate temperature by hot wire method

S. R. Jadkar and J. E. Bouree

3rd International Conference on Cat-CVD (Hot-Wire CVD) process, Utrecht, **The Netherlands**, **(2004)**

8. Enhancement in physical properties of ZnO transparent conducting coating by Al incorporation

B. N. Pawar, **S. R. Jadkar**, K. C. Mohite and M. G. Takwale

International Workshop on Thin Films, World Scientific Publishing Co., Tehran, **Iran (2003)**

9. Transport properties of microcrystalline silicon films deposited by Hot-Wire CVD at low substrate temperature

J. E. Bouree, **S. R. Jadkar**, C. Niikura and J. Guillet

2nd aSiNet Workshop on Thin Silicon held jointly with 9th Euroregional Workshop on Thin Silicon Devices, Instituto Superior Técnico, Lisbon, Portugal, **(2003)**

10. Opto-electronic and Photovoltaic properties of a-SiGe:H/μc-Si:H multilayers deposited by HW-CVD

S. R. Jadkar, J. V. Sali, B. N. Pawar, K. C. Mohite and M. G. Takwale

2nd International Conference on Cat-CVD (Hot-Wire CVD) process, Denver, Colorado, **U.S.A.** pp.107, (**2002)**

11. The effect of substrate temperature on HW-CVD deposited a-Si:H films

S. R. Jadkar, J. V. Sali, B. N. Pawar, K. C. Mohite S. T. Kshirsagar and M. G. Takwale

2nd International Conference on Cat-CVD (Hot-Wire CVD) process, Denver, Colorado, **U.S.A.** pp.307, **(2002)**

12. Role of filament temperature on HW-CVD deposited a-Si:H films

S. R. Jadkar, J. V. Sali, B. N. Pawar, K. C. Mohite S. T. Kshirsagar and M. G. Takwale

2nd International Conference on Cat-CVD (Hot-Wire CVD) process, Denver, Colorado, **U.S.A.** pp.311, (**2002)**

13. Influence of process pressure on Electrical, Optical and Structural properties of a-Si:H films deposited by HW-CVD

S. R. Jadkar, J. V. Sali, B. N. Pawar, K. C. Mohite, S. T. Kshirsagar and M. G. Takwale

2nd International Conference on Cat-CVD (Hot-Wire CVD) process, Denver, Colorado, **U.S.A.** pp.315, **(2002)**

14. Structural and Electrical Properties of Al-doped ZnO films by Spray pyrolysis technique

B. N. Pawar, **S. R. Jadkar**, K. C. Mohite and M. G. Takwale

12th International Conference on Thin Films, Bratislava, **Slovakia Republic (2002)**

15. Opto-electronic and Structural Properties of HW-CVD deposited a-SiGe:H films

S. R. Jadkar, J. V. Sali, M. G. Takwale and S. T. Kshirsagar

19th International Conference on Amorphous and Microcrystalline Semiconductors, Nice, France **(2001)**

16. Electrical, structural and optical properties of undoped and phosphorous doped μc-Si:H prepared by HW-CVD technique

S. R. Jadkar, J. V. Sali, M. G. Takwale, D. V. Musale and S. T. Kshirsagar

First International Conference on Cat-CVD (Hot-Wire CVD) process, Kanazawa, **Japan**, p.177 **(2000)**

17. Hot-Wire CVD Growth Simulation for Thickness Uniformity
J. V. Sali, **S. R. Jadkar**, S. B. Patil and M. G. Takwale
First International Conference on Cat-CVD (Hot-Wire CVD) process, Kanazawa, **Japan**, p.121 **(2000)**

8. PROFESSIONAL SOCIETIES MEMBERSHIPS:

1. Founder member of **Wadian's Physics Association (WPA)**, Pune **(India)**.
2. Member of **Indian Physics Association (Pune Chapter)** Pune **(India)**.
3. Member of **Material Research Society of India** (MRSI), Bangalore **(India)**.
4. Member of organizing committee of **National Children Science Congress (NCSC) 2001**, Pune **(India)**.
5. Member of organizing committee of **Pune Children Science Meet 2001** Pune **(India)**.
6. Coordinator of **'Summer School Program'** for 2004, 2005 and 2006.
7. Worked as **Officiating Director,** School of Energy Studies, University of Pune, **(2005)**.

9. PUBLIC SERVICE / UNIVERSITY SERVICE / CONSULTING ACTIVITY: N. A.

10. PROJECTS (MAJOR GRANTS / COLLABORATIONS):

1. **Title of the project:** Establishment of dual chamber Hot Wire Chemical Vapor Deposition (HW-CVD) technique and synthesis of intrinsic and doped hydrogenated microcrystalline silicon (μc-Si:H) and evaluation of their opto-electronic properties for photovoltaic applications.
   Duration: 36 Months
   Total cost: Rs. 39,93,244.00
   Funding Agency: Department of Science and Technology, Government of India, New Delhi
   Current Status: ***In progress***
2. **Title of the project:** Synthesis and characterization hydrogenated nano-crystalline silicon (nc-Si:H) for solar cell fabrication.
   (Indo- Italian Executive program of scientific and Technological cooperation between Department of Science and Technology and Italian Ministry of Foreign Affairs for years 2008-2010)
   Duration: 36 Months
   Funding Agency: Department of Science & Technology (DST) and Italian Ministry of Foreign Affairs
   Current Status: ***In progress***
3. **Title of the project:** Synthesis and characterization of intrinsic and doped hydrogenated nano-crystalline silicon (nc-Si:H) and evaluation of their opto-electronic properties for solar cell applications
   Duration: 24 Months
   Total cost: Rs. 3,00,000.00
   Funding Agency: Pune University, Pune 411 007
   Current Status: ***Completed***

4. **Title of the project:** Establishment of Photo Chemical Deposition (PCD) technique for the synthesis of CdS/ZnS/CdSe/CdTe/ZnTe/ZnSe thin films from aqueous solutions for photovoltaic applications.
   Duration: 12 Months
   Total cost: Rs. 1,00,000.00
   Funding Agency: University Grants Commission, Government of India, New Delhi
   Current Status: ***Completed***
5. **Title of the project:** Synthesis of nanostructured hydrogenated Silicon (nc-Si:H) and the fabrication of single junction solar cells by using hot wire chemical vapor deposition (HW-CVD)
   Duration: 36 Months
   Total cost: Rs. 19,85,820.00
   Funding Agency: Ministry of New and Renewable Energy, New Delhi 110003
   Current Status: ***Under assessment***
6. **Title of the project:** Synthesis of low cost and environment friendly novel polymer (RR-P3HT)/Inorganic (InP nanorod) hybrid solar cell by spin coating technique and annealing study in presence of an electric field to improve the device performance
   Duration: 36 Months
   Total cost: Rs. 14,90,000.00
   Funding Agency: Council for Scientific and Industrial Research, New Delhi 110012
   Current Status: ***Under assessment*****.**

11. OTHER DETAILS:

Post doctoral research:

1. **Camerino University, Italy** during January-November, 2007 for the research activity under the ICTP (TRIL) fellowship.
2. **Ecole Polytechnique, Paris, France** during October 2002-September 2003 for the post doctoral research under the CNRS fellowship.