

RESUME

Dr. VIVEK V. ANTAD

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Current Position

Mar 2014- **Assistant Professor of Physics** at Department of Physics, Nowrosjee Wadia Institute
Till date: of Arts and Science, Pune, India.

June 2021- **Associate NCC Officer (ANO)** of 3 Maharashtra Air Squadron NCC Pune,
Till date: at NCC Group Headquarter, Pune

Scientific Research Projects

Nov 2018- **Role:** Principal Investigator for Major Research Project

Nov 2021: **Funding Agency:** DST - Science and Engineering Research Board (SERB), India

Scheme: Teachers Associateship for Research Excellence (TARE - 2018)

Project Grant: INR 18,30,000/-

Project Status: Ongoing

Project Title: "Insights on the resistive switching mechanisms in exotic manganite/transition metal oxide nano-heterostructured devices grown via pulsed laser deposition (PLD): A comparative investigation using conductive atomic force microscopy (cAFM) and classical probe station assembly for applications in Non-Volatile Memory."

Nov 2017- **Role:** Principal Investigator for Minor Research Project
Mar 2019: **Funding Agency:** B. C. U. D., Savitribai Phule Pune University, Pune
Scheme: University Research Grant Scheme
Project Grant: INR 2,75,000/-
Project Status: Completed
Project Title: "Synthesis of bimetallic core-shell plasmonic nanostructures and their applicability in opto-electronic devices."

Education & Research Experience

Feb 2014 - **Dr. D. S. Kothari Postdoctoral Fellow** at University of Pune, Pune, India.

Mar 2014: **Division:** Department of Physics
Project Title: "Synthesis of bimetallic plasmonic nanostructures and their applicability in opto-electronic devices"

Supervisor: Prof. S. I. Patil

June 2013- **Research Associate** at National Chemical Laboratory (CSIR-NCL), Pune, India.

Jan 2014: **Division:** Center of Excellence in Solar Energy
Project Title: "Fabrication, designing, & characterization of Large Area Dye Sensitized Solar Cells"

Supervisor: Dr. S. Ogale.

Jan 2013- **Research Associate** at University of Southern California, Los Angeles, CA, USA.

May 2013: **Laboratory:** Nanostructure Materials and Devices Laboratory,
Project Title: "Nanotemplate-directed arrays of highly heterogeneous semiconductor nanostructures for infrared detection and power generation."

Supervisor: Prof. A. Madhukar.

June 2012- **Research Associate** at National Chemical Laboratory (CSIR-NCL), Pune, India.

Dec 2012: **Division:** Center of Excellence in Solar Energy
Project Title: "Design, development, & demonstration of high performance Parabolic Trough based 300kW Solar Thermal Power Plant: A CSIR-NMITLI Project."

Supervisor: Dr. S. Ogale.

- Oct 2008- **Ph. D. (Physics)** at Institute Pprime, University of Poitiers, France.
- Nov 2011: **Specialization:** Thin Film & Nano-structured Materials
Thesis Title: "Monitoring the growth & reactivity of metal nanoclusters by *in situ* optical spectroscopy"
Supervisors: Dr. L. Simonot, **Dr. D. Babbonneau.**
- Sep 2007- **M. S. (Research - Materials Science)** at University of Poitiers, France.
- Oct 2008: **Specialization:** Physics and Mechanics of Material Surfaces
Grade: Second Class Honors
Project Title: "Physical characterization of nanoclusters in Pt-Ge/Al₂O₃ catalyst by EXAFS technique."
Supervisors: Dr. L. Pirault-Roy, **Dr. C. Kappenstein.**
- July 2005- **M. Sc. (Physics)** at Shivaji University, Kolhapur, India.
- April 2007: **Specialization:** Materials Science
Grade: First Class (65.79%)
Project Title: "Fabrication & characterization of MgCuZn Ferrite & PbZrTiO₃ Ferroelectric (composite) materials."
Supervisor: Dr. Y. Kolekar.
- June 2002- **B. Sc.** at DBF Dayanand College of Arts and Science, Solapur, India.
- April 2005: **Specialization:** Physics
Grade: First Class with Distinction (75.56%)
- June 1999- **D. Ed.** at District Institute of Education and Training, Solapur, India.
- July 2001: **Grade:** A+ Distinction (71.08%)
- June 1997- **HSC** at Walchand College of Arts and Science, Solapur, India.
- April 1999: **Grade:** First Class (72.33%)
- June 1996- **SSC** at Haribhai Devkaran High School, Solapur, India.
- April 1997: **Grade:** First Class (74.26%)

Personal Skills

- **Techniques implemented for Nanomaterials and Nanoscience**
 - ▷ Physical Vapor Deposition Techniques:
 - Magnetron sputtering deposition
 - Thermal evaporation technique
 - Pulsed laser deposition (PLD)

- ▷ Spectroscopy Techniques:
 - Real-time surface differential reflectance spectroscopy (SDRS)
 - Ellipsometry spectroscopy
 - Diffused reflectance spectroscopy (DRS)
 - UV-Visible spectroscopy
- ▷ Characterization Techniques:
 - High resolution transmission electron microscopy (HRTEM: JEOL 2100F)
 - Field emission scanning electron microscopy (FESEM: HITACHI S-4800)
 - Conductive atomic force microscopy (CAFM: JPK-NanoWizard II)
 - X-ray scattering technique: GISAXS (at BM02-D2AM Beam-line, ESRF, France)
 - Current-Voltage (*I-V*) measurements using Keithley 4200 and 2400 Source Meters

• Softwares

- ▷ Python Programming with Spyder, L^AT_EX, Igor Pro, Origin, EndNote, Adobe Photoshop, ImageJ, MS Office

• Linguistic Skills

▷ Indian Languages

- Hindi (Read/Write/Speak)
- Marathi (Read/Write/Speak)
- Kannada (Speak)

▷ Foreign Languages

- English (Read/Write/Speak): TOEIC-895/1000
- French (Read/Write/Speak): Average
- Russian (Basic)

Scientific Contributions

• Research Publications

- ▷ **V. Antad**, P. A. Shaikh, A. Biswas, S. Rajput, S. Deo, M. Shelke, S. Patil, S. Ogale “*Resistive Switching in $HfO_2 - x/La_{0.67}Sr_{0.33}MnO_3$ Heterostructures: An Intriguing Case of Low H-Field Susceptibility of an E-Field Controlled Active Interface*” ACS Applied Materials and Interfaces, **13** 54133 (2021) **Impact Factor: 9.23**.
- ▷ A. Biswas, A. Sengupta, U. Rajput, S. K. Singh, **V. Antad**, S. K. M. Hossain, S. Parmar, D. Rout, A. Deshpande, S. Nair, S. Ogale “*Growth, properties and applications of pulsed laser deposited layered nanolaminate Ti_3AlC_2 thin films*” Physical Review Applied, **13** 044075 (2020) **Impact Factor: 4.99**.
- ▷ R. Devan, V. Thakare, **V. Antad**, P. Chitake, R. Khare, M. More, R. Dhayal, S. Patil, Y-R Ma, L. Schmidt-Mende “*Nano-heteroarchitectures of Two-dimensional MoS_2 @ One-dimensional Brookite TiO_2 nanorods: Prominent electron emitters for displays*” ACS Omega, **2** 2925 (2017) **Impact Factor: 3.51**.
- ▷ R. Devan, Y. Ma, M. More, R. Khare, **V. Antad**, R. Patil, V. Thakare, R. Dhayal, L. Schmidt-Mende “*Promising field electron emission performance of vertically aligned one dimensional (1D) brookite (β) TiO_2 nanorods*” RSC Advances **6** 98722 (2016) **Impact Factor: 3.36**.

- ▷ **V. Antad**, L. Simonot, D. Babonneau *"Influence of low-energy plasma annealing on structural and optical properties of silver nanoclusters grown by magnetron sputtering deposition"* Journal of Nanoparticle Research **16** 3 (2014) **Impact Factor: 2.25**.
- ▷ **V. Antad**, L. Simonot, D. Babonneau *"Tuning the surface plasmon resonance of silver nanoclusters by oxygen exposure and low-energy plasma annealing"* Nanotechnology **24** 045606 (2013) **Impact Factor: 3.87**.
- ▷ **V. Antad**, L. Simonot, D. Babonneau, S. Camelio, F. Pailloux, P. Guérin *"Monitoring the reactivity of Ag nanoparticles in oxygen atmosphere by using in situ and real time optical spectroscopy"* Journal of Nanophotonics **6** 061502 (2012) **Impact Factor: 1.49**.
- ▷ **V. Antad**, L. Simonot, D. Babonneau, S. Camelio, P. Guérin, F. Pailloux, *"Monitoring the reactivity of Ag nanoparticles for different atmospheres by using in situ and real time optical spectroscopy"* Proceedings SPIE **8104** 810407 (2011) **Impact Factor: -**.
- ▷ L. Simonot, D. Babonneau, S. Camelio, D. Lantiat, P. Guérin, B. Lamongie, **V. Antad**, *"In situ optical spectroscopy during deposition of Ag:Si₃N₄ nanocomposite films by magnetron sputtering"* Thin Solid Films **518** 2637-2643 (2010) **Impact Factor: 2.18**.

• Oral Presentations

- ▷ **V. Antad**, L. Simonot, D. Babonneau, S. Camelio, P. Guérin, F. Pailloux, *"In situ and real time optical spectroscopy to study Au or Ag nanoparticles growth and their capping by a Si₃N₄ matrix"* - at GOLD 2009 (26-29 July 2009, Heidelberg, Germany).
- ▷ **L. Simonot**, V. Antad, D. Babonneau, S. Camelio, P. Guérin, F. Pailloux, *"Contrôle in-situ de nanoparticules d'or ou d'argent"* - at Réunion plénière GDR Or-Nano, (3-5 November 2009, Dijon, France).
- ▷ **V. Antad**, L. Simonot, D. Babonneau, S. Camelio, P. Guérin, F. Pailloux, *"Ag:Si₃N₄ nanocomposites studied for thermal and plasma annealing by real time optical monitoring and post-mortem STEM characterizations"* - at IRUN International Research Symposium on Nanotechnology, (14-15 October 2010, Barcelona, Spain).
- ▷ **V. Antad**, L. Simonot, D. Babonneau, S. Camelio, P. Guérin, F. Pailloux, *"Monitoring the reactivity of Ag nanoparticles for different atmospheres by using in situ and real time optical spectroscopy"* - at NanoScience + Engineering, SPIE (Optics and Photonics), (21-25 August 2011, San Diego, USA).

• Poster Presentations

- ▷ **V. Antad**, L. Simonot, D. Babonneau, S. Camelio, P. Guérin, F. pailloux, *"In situ and real time optical spectroscopy to study Au or Ag nanoparticles growth and their capping by a Si₃N₄ matrix"* - at GOLD 2009, (26-29 July 2009, Heidelberg, Germany).
- ▷ **V. Antad**, L. Simonot, D. Babonneau, S. Camelio, P. Guérin, F. pailloux, *"Monitoring the reactivity of Ag nanoparticles for different atmospheres by using real time optical spectroscopy"* - at 25èmes Journées Surfaces et Interfaces, (26-28 January 2011, Poitiers, France).
- ▷ V. Antad, L. Simonot, S. Camelio, P. Guérin, F. pailloux, **D. Babonneau**, *"Croissance et réponse optique de nanoparticules d'or et d'argent préparée par pulvérisation magnétron"* - at Réunion plénière GDR Or-Nano, (19-21 March 2012, Poitiers, France).
- ▷ **A. Shaikh**, V. Antad, K. Upadhye, V. Dhas, V. Thakare, S. Ogale, *"Synthesis, optimization and evaluation of W-(WO₃-Al₂O₃) cermet coatings on stainless steel capsule: A CSIR NMITLI Project with Milman Thin Films, Pune"* - at National Chemical Laboratory, (30 March 2012, Pune, India).

- ▷ **V. Antad**, S. Suryavanshi, S. Ogale, *"In situ growth of nanostructured metal oxide thin films by magnetron sputtering deposition and their ex situ sulfidation: Applicative studies in field emission and solar selective absorber coatings"* - at Fergusson College, (4-5 March 2016, Pune, India).

Extra Curricular Activities

- **Information and Technology**

- ▷ Diploma of Information and Technology (DIT)
- ▷ Maharashtra State Certificate in Information Technology (MS-CIT)
- ▷ Web Designing (2005)

- **National Cadet Corps (NCC): 2002-2005**

- ▷ Senior Under Officer (SUO), 38 Maharashtra Battalion, Solapur, India.
- ▷ NCC "C" Certificate completed with 'B' Grade.

- **Coordinator** for current institute to work with NGO Science Education Initiative (SEI)

References

- **Dr. S. Ogale.**

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Center of Excellence in Solar Energy,
Physical and Materials Chemistry Division,
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- **Dr. D. Babonneau.**

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- **Dr. Y. Kolekar.**

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