



ARUN SINGH PATEL

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PERSONAL DETAILS

- Date of birth : July 2, 1986
- Sex : Male
- Nationality : Indian

EDUCATION

Ph.D. Physics, 2016
School of Physical Sciences,
Jawaharlal Nehru University,
New Delhi, India.

- Thesis Title: *Studies on photo-induced energy transfer in metal-based nanocomposite materials*
- Thesis Advisor: Dr. Tanuja Mohanty

M.Sc., Physics, 2007-2009
Department of Physics,
Banaras Hindu University,
Varanasi, India.

B.Sc., 2004-2007
S.G.R.R.P.G. College,
H. N. B. Garhwal University,
Srinagar Garhwal, Uttarakhand, India
Subjects: Physics, Mathematics and Chemistry.

RESEARCH EXPERIENCES

1. **Research Associate**- School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi
01.08.2016-till date.
2. **Research Assistant**- School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi
01.08.2015-31.07.2016.

RESEARCH INTERESTS

1. Nanomaterials for photocatalytic applications
2. Förster resonance energy transfer (FRET) in biomolecules and nanomaterials

3. Nanomaterials for fluorescence and Raman (SERS) spectroscopic based chemical sensing applications
4. Optical properties of 0D and 2D nanomaterials

PUBLICATIONS

1. A. Chakraborti, A. S. Patel, P. K. Kanaujia, P. Nath, G. V. Prakash, and D. Sanyal “Resonance Raman scattering and *ab initio* calculation of electron energy loss spectra of MoS₂ nanosheets” *Phys. Lett. A* (2016).
2. A. S. Patel, H. Sahoo, and T. Mohanty “Investigating the energy transfer from dye molecules to DNA stabilized Au nanoparticles” *Journal of Fluorescence* **26**, 1-7 (2016).
3. A. S. Patel, H. Sahoo, and T. Mohanty “Understanding the interactions involved in the formation of fluorescent silver nanoclusters” *J. Nanosci. Nanotechnol.* **16**, 8246-8251 (2016).
4. J. Shakya, A. S. Patel, F. Singh, and T. Mohanty “Composition dependent Fermi energy level shifting in Au-MoS₂ nanosheets” *Appl. Phys. Lett.* , **108**, 013103 (2016).
5. A. S. Patel, H. Sahoo, and T. Mohanty “Probing the Förster resonance energy transfer between fluorescent copper nanoclusters and cobalt complex” *Appl. Phys. Lett.* **105**, 063112 (2014).
6. A. S. Patel, M. Mishra, and T. Mohanty “Analysis of surface potential and photocatalytic activity of Au-graphene oxide nanocomposites” *AIP Conf. Proc.* **1591**, 442 (2014)
7. A. S. Patel, and T. Mohanty “Silver nanoclusters in BSA template: a selective sensor for hydrogen peroxide” *J. Mater. Sci.* **49**, 2136 (2014).
8. A. S. Patel, A. Kumar, and T. Mohanty “Photoreduction altered work function of Au-TiO₂ nanoparticles measured by scanning Kelvin probe microscopy” *J. Nanosci. Nanotechnol.* **13**, 8217 (2013).
9. A. Kumar, A. S. Patel, and T. Mohanty “Correlation of photodegradation efficiency with surface potential of silver-TiO₂ nanocomposite thin films” *J. Phys. Chem. C* **116**, 20404 (2012).

PUBLICATIONS UNDER REVIEW

1. A. S. Patel, S. Juneja, P. K. Kanaujia, G. V. Prakash, A. Chakraborti, and J. Bhattacharya “Gold nanoflowers as efficient hot-spots for surface enhanced Raman scattering” *arXiv* 1604.02793 .

MANUSCRIPTS UNDER PREPARATION

1. A. S. Patel, P. Mishra, S. N. Khan, S. Husain, and A. Chakraborti “Investigating bio-nano interactions between bovine serum albumin and van der Waals nanosheets”
2. A. S. Patel, P. K. Kanaujia, G. V. Prakash, D. Sanyal, and A. Chakraborti “Optical phonon trapping in heterostructure transition metal dichalcogenide nanosheets”
3. A. S. Patel, J. Bhattacharya, and A. Chakraborti “Fluorescent gold quantum dots for diagnosis of oral cancer”

RESEARCH SKILLS

Experimental Tools

Absorption spectrophotometer, fluorimeter, time correlated single photon

counting, circular dichroism spectrometer, FTIR and Raman spectrometer, XRD and Kelvin probe microscopy, EDXRF, MALDI-TOF mass spectrometry, SEM and TEM

Computational Programming

Matlab

RESEARCH PROJECTS

- **M.Sc. Research Project:** “*Calculation of temperature from the intensity of Raman bands*”, under the guidance of Prof. Ranjan K. Singh, Department of Physics, Banaras Hindu University, Varanasi.
- **Pre-Ph.D. Research Project:** “*Synthesis and characterization of cadmium sulfide thin films*”, under the guidance of Dr. Tanuja Mohanty, School of Physical Sciences, Jawaharlal Nehru University, New Delhi.
- **DBT CoE Project:** “*Interaction of biomolecules with 2D nanomaterials: theoretical and experimental aspects*”, at School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi.

CONFERENCES AND POSTERS

- **March-Meeting-2012**, School of Physical Sciences, Jawaharlal Nehru University New Delhi India, March 1-2, 2012.
- **International Conference on Nanoscience and Nanotechnology (ICNN-2013)**, School of Physical Sciences Babasaheb Bhimrao Ambedkar University Lucknow 226025 (U.P.) India, November 18-20, 2013.
- **58th Solid State Physics Symposium**, Thapar University, Patiala, Punjab, India, December 17-21, 2013.
- **NanoBio Interface 2016**, Jawaharlal Nehru University, New Delhi, India, March 18-20, 2016.
- **Science Day-2016**, Jawaharlal Nehru University, New Delhi, India, department of Science and Technology, Govt. of India, February 26, 2016

AWARDS & FELLOWSHIPS

- June 2009: CSIR-NET
- February 2011: Graduate Aptitude Test in Engineering (GATE)

REFERENCES

1. **Dr. Tanuja Mohanty**
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New Delhi, India
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2. **Dr. Sobhan Sen**
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3. **Dr. Harekrushna Sahoo**

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Rourkela, Odisha, India
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4. **Prof. Anirban Chakraborti**

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