Dr. Sana Zafar

M.Sc. (Phys), Ph.D (Phys)

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Personal Details

Marital Status	**: Married**
Gender	**: Female**
Nationality	**: Indian**

Academic Profile

Year	Qualification	Board/University	Division
2015	**Ph. D. (Physics)**	**J**amia Millia Islamia (Central University), New Delhi	**Awarded**
2008	**M.Sc. (Physics)**	Jamia Millia Islamia (Central University), New Delhi	**First**
2006	**B.Ed.**	Jamia Millia Islamia (Central University), New Delhi	**First**
2005	**B.Sc. (Hons.) Physics**	Jamia Millia Islamia (Central University), New Delhi	**First**
2001	**12th**	CBSE	**First**
1999	**10th**	CBSE	**First**

Research Profile

Research Interest:	Quantum Chemical Calculations (DFT), Optoelectronic studies of nanomaterials, Nonlinear optical studies, Nanocomposite materials, Energy storage device and material.
Title of Thesis:	"**Structural, Electronic and Spectroscopic studies of Non-Linear Optical Conjugated Molecules and Organic Dyes**"
Under the supervision:	Dr. Mohd. Shahid Khan and Prof. Zahid Hussain Khan
Department/ University:	Department of Physics, Jamia Millia Islamia (Central University), New Dehli-110025

Teaching Experience

Name of the institute	Position	Responsibilities	from	To
Department of Applied Sciences and Humanities, Jamia Millia Islamia (Central University), New Delhi	Assistant Professor, Physics (Contractual)	Engineering Physics, B.Tech Semester I and II; Physics Theory and Lab.	September 2022	Till date
Department of Applied Sciences and Humanities, Jamia Millia Islamia (Central University), New Delhi	Lecturer (Guest) (Applied Physics)	Engineering Physics, B.Tech Semester I and II; Physics Theory and Lab.	August2018	May 2023
University of Polytechnic, Jamia Millia Islamia (Central University), New Delhi	Lecturer (Guest) (Applied Physics)	Applied Physics; Physics Theory and Lab.	September 2017	April 2018
Department of Applied Sciences and Humanities, Jamia Millia Islamia (Central University), New Delhi	Lecturer (Guest) (Applied Physics)	Engineering Physics, B.Tech Semester I and II; Physics Theory and Lab.	March 2015	May 2016
Department of Physics, Jamia Millia Islamia (Central University), New Delhi	Lecturer (Guest) (Physics)	B.Sc.; Physics Theory and Lab	August 2008	February 2009

Key Responsibilities

- Taking academic syllabus of Engineering Physics, B.Tech Semester I and II.
- Conducting Physics practical laboratory sessions for B.Tech semester I and II.
- Invigilator during semester examination and evaluating answer sheets and assignments.
- Preparing the question papers for sessional exams. Two sessional tests for each semester being conducted and proper feedback provided to students.
- Conducted classes on the digital platforms like Google meet, Google classroom and zoom.
- Invigilation as well as evaluation of students using Google classroom.
- Developed the digital content for Engineering Physics laboratory sessions and theory classes.
- Member of Physics committee to audit the report for NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL (NAAC).

Research Publications

Google Scholar Link

1. Nonlinear optical response of hydroxy substituted anthraquinone/PMMA thin films using Z-scan technique,
   Sana Zafar, Zahid H. Khan, Mohd. Shahid Khan,
   Advanced Science Letter, 21, 2772 (2015) Impact Factor: 1.25, ISSN: 1936-7317

2. Study of nonlinear optical properties of amino substituted organic dye by Z- Scan technique using CW laser and DFT calculations
   Sana Zafar, Md. Shahzad Khan, Zahid H. Khan and Mohd Shahid Khan,
   Advanced Science Letters, 21, 2734 (2015) Impact Factor: 1.25,ISSN: 1936-7317

3. Study of self-defocusing, reverse saturable absorption and photoluminescence in anthraquinone PMMA nanocomposite film
   Sana Zafar, Zahid H. Khan, Mohd. Shahid Khan,

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, **118** (2014), 852-856 **(ISSN:** 1386-1425) **Impact Factor:**
3.232http://www.sciencedirect.com/science/article/pii/S1386142513011268

4. Experimental and Theoretical Investigations of Nonlinear Optical Properties of 1, 4-Diamino-9, 10-Anthraquionone
Sana Zafar, Zahid H. Khan, Mohd. Shahid Khan,
Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy,**114** (2013), 164-169 **(ISSN:** 1386-1425) **Impact Factor:**
3.232http://www.sciencedirect.com/science/article/pii/S1386142513004824

5. Linear and Non-Linear Optical Properties of Electron Donor and Acceptor Pyridine moity: A Study by ab initio and DFT Methods
Sana Zafar, Zahid H. Khan and Mohd. Shahid Khan,
Canadian Journal of Pure &Applied Sciences6 (1), 1827-1835 (2012).
ISSN: 1715-9997 (Print); 1920-3853 (Online); PDF-Feb2012 Index Copernicus (2012): 2.657

6. Progress in optoelectronic applications of ionic liquids, **Sana Zafar** and Mohd. Imran in AdvancedApplications of Ionic Liquids (Elsevier): pp. 391- 413 (2023); ISBN: 978-0-323-99921-2 https://doi.org/10.1016/B978-0-323-99921-2.00018-5.

7. Nonlinear Optical Properties of Organic Dyes and Organic Dye-Polymer Nanocomposites, **Sana Zafar** and Mohd. Shahid Khan, in ***Emerging Trends in Nanotechnology (Springer***) Edited by Z.H. Khan, pp. 359-382 (2021): **ISBN 978-981-15-9903-3; ISBN 978-981-15-9904-0 (eBook)**https://doi.org/10.1007/978-981-15-9904-0_13.

8. Theoretical Study of Electronic Structure and NonLinear Optical Properties of Donor-Acceptor Molecule by Density Functional Theory
Sana Zafar, Zahid H. Khan, and Mohd. Shahid Khan, **in Crystal Growth and Computational Material Science, (Proceedings of International Conference on Advanced Materials (ICAM-2011) held at PSG College of Technology, Coimbatore, India during December 12-16, 2011** (**Macmillan**) **Edited by S. Jaya Kumar, P. Ravindaran, R. Arun Kumar and C. Sudarshan**, pp. 282-287 (2011).**: ISBN: 978-935-059-048-5**)

Publications in Proceedings of Conferences

1. Investigation of Optical limiting effect in Anthraquinone dyes at different concentration.
Sana Zafar, Zahid H. Khan, and Mohd. Shahid Khan at***International Conference On Materials Science And Technology (ICMST- 2012)***

2. Optical Limiting and Thermal Induced Diffraction behaviour of 1,4-Diamino-9,10-Anthraquinone
Sana Zafar and Mohd. Shahid Khan**, Proceedings of DAE-BRNS National Laser Symposium (NLS-20), Jan. 9-12, 2012,** Anna University, Chennai**;** Paper No. CP-02-067; pp 434-436.

3. Study of Optical Gain of 1,4-diamino-9,10-Anthraquinone by Laser Induced Fluorescence Technique
Darakhshan Qaiser, Mohd. Shahid Khan**,Sana Zafar**, R.D. Singh, Zahid H. Khan**, Proceedings of DAE-BRNS National Laser Symposium (NLS-19)**; RRCAT, Indore; December 1-4, 2010; Paper No. 5.14-manu3225; pp1-4.

4. Laser Induced Fluorescence Spectra of 5,8-Dihydroxy-1,4-Naphthoquinone in different solvents and Determination of its Excited state Dipole moment from Solvent Effect

Sana Zafar, Darakhshan Qaiser, Ziaul Raza Khan, Zahid H. Khan**,** Mohd. Shahid Khan**, Proceedings of DAE-BRNS National Laser Symposium (NLS-19)**; RRCAT, Indore; December 1-4, 2010; Paper No. 5.15-manu3006; pp1-4.

5. Laser Induced Fluorescence Spectra of 1,4-Diamino-9,10-Anthraquinone in different solvents and Determination of Excited state Dipole moment from Solvent Effect

Sana Zafar, Darakhshan Qaiser, Ziaul Raza Khan, Zahid H. Khan**,** Mohd. Shahid Khan**, Proceedings of Ninth DAE-BRNS National Laser Symposium (NLS-09)**; BARC, Mumbai; Jan 13-16, 2010; Paper No. CP-11-04; pp1-5.

6. Laser Induced Fluorescence Spectra of Fullerene C70-Quinizarine complex and its FRET Study

Darakhshan Qaiser, **Sana Zafar,**Mohd. Shahid Khan**,** R.D. Singh, Zahid H. Khan, Bionano Frontier, Sp Issue: **International Conference on Lasers and Advanced Materials (ICLAM), pp. 11-13 (2010). (**BionaoFrontiers :**ISSN: 0974-0678)**

Conference/Winter School/Workshop Participated

1. Poster Presentation entitled:Nonlinear Optical Properties of Diamino substituted Anthraquinone using Z-scan Technique, **Sana Zafar** in National Conference On "Advance in Material Sciences & IOT for Smart Environmental Monitoring and Sustainability" (AMSISEMS-2018) at Lingaya`sViyapeeth, Faridabad, India.
2. Poster Presentation at **International Conference On Materials Science And Technology (ICMST- 2012)** at Department of Physics, St. Thomas College Pala, Kottayam, Kerala, India, during 10-14 June 2012**.**
3. **Winter School Attended:** Winter School on Recent Trends in Physics of Atoms, Molecules and Lasers" (Under UGC Networking Programme)- **WSRTPAML-2011,** Department of Physics, Banaras Hindu University, Varanasi-221005 during the period of January 09-31, 2011.
4. Oral Talk at International **Conference on Advanced Materials (ICAM-2011)** at PSG College of Technology, Coimbatore, India, from December 12th to 16th 2011.
5. Poster Presentation at**DAE-BRNS National Laser Symposium (NLS-19)** at Raja Ramanna Centre for Advanced Technology (RRCAT), Indore during December 1-4, 2010.
6. Poster Presentation at **Ninth DAE-BRNS National Laser Symposium (NLS-09**) at Bhabha Atomic Research Centre, Mumbai during January 13-16, 2010.
7. Workshop attended: Two Day National workshop on "**Fibre Optics and Applications**", Department of Electronic Science, University of Delhi, South Campus, November 28-29, 2009.

Expertise and Skills

- Knowledge of Computer Fundamentals (MS Office-MS Word, Power Point), Origin.
- Introductory knowledge of Linux. FORTRAN 90/95, C++.
- **Gaussian 03 and Hyperchem** software program package for **quantum chemical computation.**
- **Experience in taking Online teaching platforms like Zoom, Google meet and Google classroom.**