Dr. GYANENDRA SINGH

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CURRENT EXPERIENCE

Dr. Gyanendra is currently working as **Assistant Professor** in Inter University Center for Teacher Educaion, BHU, Varanasi (Dec, 2022- Till Date)

PREVIOUS EXPERIENCE

Duration: November 2018 – December 2022

- Worked as **Assistant Professor** for Biomedical Enginnerring Department in Thapar Institute of Engineering & Technology, Patiala (Feb, 2021-Dec, 2022)
- Worked as Post-Doctoral Research fellow in Tel Aviv University, Israel, under supervision of Prof. Ori Cheshnovsky & Prof Natan Shaked (September 2016 – Feb 2021)
- Worked as Post-Doctoral Research fellow in University of Fukui, Fukui, Japan under supervision of Prof. Motoharu Fujigaki (Dec 2015 – May 2016)

POST-DOCTORAL RESEARCH

- Duration: September 2016 – August 2018

Label-Free Characterization of Cancer and its Progression in the Cellular Level Via Quantitative Optical Imaging and Fluroscence Microscopy

Supervisor: Prof. Natan Tzvi Shaked, Tel Aviv University, Israel

In this topic, we had developed new imaging modalities to achieve affordable label-free but still full quantitative measurements, which offer high-resolution morphological and mechanical mapping of dynamic cells. We worked on the C.elegans and Cancerous cells for the quantitative phase imaging combined with the Fluroscence Microscopy in single shot.

- Duration: December 2015 to May 2016

Deformation Measurement of the Large Structures Using the Phase Analysis

Supervisor: Prof. Motoharu Fujigaki, University of Fukui, Japan

Duration: December 2015 to May 2016

In this research, we had measured the displacement of large structures like's bridges and building based on the parallel beams on the structure. We had used the fringe analysis method for phase extraction for the displaced structures and then to find the displacement by interferometery.

- Duration: January 2015 – May 2015

Worked as Assistant Professor (Ad-hoc) in Department of Physics, Keshav Mahavidyalaya, University of Delhi.

THESIS / DISSERTATION

DOCTORAL THESIS: OPTICAL INTERFEROMETRIC AND SPECTROSCOPIC STUDIES OF FLEXIBLE PET SUBSTRATE AND ITS APPLICATIONS

Supervisor: Prof. D.S. Mehta, Department of Physics, IIT Delhi, New Delhi, India

Duration: July 2009 to August 2015.

In my Ph.D. research work, I had characterized the indium tin-coated polyethylene terephthalate substrate, which is used for the fabrication of flexible electronics and display devices. In the application part of the thesis, I had developed a flexible remote phosphor-based diffuser for converting the blue inorganic light into a white light for general lighting and display. The diffuser that, I had designed gives the illumination at an angle greater than 160^0 degrees, which is good for the large area display.

MASTER'S THESIS: DEVELOPMENT OF ORGANIC LIGHT EMITTING DIODE AND ITS ELECTROOPTICAL STUDIES

Supervisors: Prof. D.S. Mehta, IDDC, IIT Delhi, New Delhi, India & Dr. Kanchan Saxena, AIARS, Amity University, India

Duration: May 2008 to May 2009

I had worked on the light efficiency problem of Organic Light-Emitting Diodes (OLEDs). The optical design of OLED has received a great deal of attention as a means of tailoring its emission properties since almost 80% of the generated light of OLED is lost due to wave-guiding (50%) and total internal reflection (30%) in the glass substrates.

ORGANIZED FACULTY DEVELOPMENT PROGRAMS (FDP)/ TRAINING PROGRAM/CONSULTATIVE MEET

1.Coordinated a 5-days Faculty Development Program for Teachers in Higher Education in context of NEP 2020 held on 17th -23rd Feb 2023.

2. Conducted a "**Leadership and Capacity Development Program for the principals the Principals of UG Colleges of North Eastern and Northern Region**" held on 20th -23rd March 2023, as Co-coordinator.

3. Co-coordinated National workshop on "**NEP 2020: Model Curriculum & Content in English**," a collaborative initiative by IUCTE, BHU and Vidya Bharati Uchchaa Shiksha Sansthan.

4. Coordinated the two-day National Consultative Meet on "**Pedagogical Innovation for Science Learning in Higher Education**" 5th -6th March 2024.

RESOURCE PERSONS:

1. Delivered talk on the **"STEM & AI: A Symbiotic Relationship for Higher Education"** in Continuous Professional Development (CPD) of Faculty for Evidenced-Based Teaching Strategies in STEM organized by IUCTE from 10^{th} -14^{th} October, 2023.
2. Chaired the brainstorming session in **"Five-day Continuous Professional Development (CPD) of Faculty for Evidenced-Based Teaching Strategies in STEM"** held on 10^{th} -14^{th} October, 2023 at IUCTE (online mode)**.**
3. Delivered talk on the "**Research and Development: Sub Theme III: Assessment of the research potential, preparing proposal; and quality parameter of research**" in NEP Orientation & Sensitization Programme" held in IUCTE, BHU on 3^{rd} -12 th June, 2024.

MEMBER OF PROFESSIONAL BODIES:

1. **Life time member of Optical Society of India (OSI)**

PUBLICATIONS IN INTERNATIONAL JOURNALS: 18

1) Shrutika Sharma, Sanchita Pahuja, Vishal Gupta, **Gyanendra Singh**, Jaskaran Singh "3D printing for spine pathologies: a state-of-the-art review," **Biomedical Engineering Letters**, Vol. **13,** No. 4, 579-589 (2023). https://doi.org/10.1007/s13534-023-00302-x ISSN No. 2093-9868 (Impact Factor: 3.20).
2) Gyanendra Singh "Single shot polarimetric characterization of the polymer based flexible polyethylene terephthalate substrate" **Polymer Engineering & Science** Vol. **62**, No.11, 3746-3758 (2022). https://doi.org/10.1002/pen.26141, ISSN No. 0032-3888 (Impact Factor: 2.573).
3) Yoav N. Nygate, **Gyanendra Singh**, Itay Barnea, and Natan T. Shaked, "Simultaneous off-axis multiplexed holography and conventional on-axis fluorescence microscopy of biological cells" **Optics Letter** Vol. **43**, No. 11, 2587-2590 (2018). https://doi.org/10.1364/OL.43.002587 ISSN No. 1539-4794 (Impact Factor: 4.390)
4) Gili Dardikman, Yoav N. Nygate, Itay Barnea, Nir A. Turko, **Gyanendra Singh**, B. Javidi, and Natan T. Shaked, "Integral refractive index imaging of flowing cell nuclei using quantitative phase microscopy combined with fluorescence microscopy," **Biomedical Optics Express** Vol. **9**, No. 3, 1177-1189 (2018). https://doi.org/10.1364/BOE.9.001177 ISSN No. 2156-7085 (Impact Factor: 4.230)
5) **Gyanendra Singh,** Gili Dardikman, and Natan T. Shaked "Four-dimensional phase unwrapping of dynamic objects in digital holography" **Optics Express** Vol. **26**, No. 4, 3772-3778 (2018). https://doi.org/10.1364/OE.26.003772 ISSN No. 1094-4087 (Impact Factor: 3.950)
6) Azeem Ahmad, Vishesh Dubey, **Gyanendra Singh**, Veena Singh, and Dalip Singh Mehta "Quantitative phase imaging of biological cells using spatially low and temporally high coherent light source" **Optics Letter** Vol. **41**, No. 7, 1554-1557 (2016). http://dx.doi.org/10.1364/OL.41.001554 ISSN No.1539-4794 (Impact Factor: 4.390)

7) Vishesh Dubey, **Gyanendra Singh**, Veena Singh, Azeem Ahmad, and Dalip Singh Mehta "Multi-spectral quantitative phase imaging of human red blood cells using inexpensive narrow band muti-color LEDs," **Applied Optics** Vol. **55**, No. 10, 2521-2525 (2016).
http://dx.doi.org/10.1364/AO.55.002521 ISSN No. 1559-128X (Impact Factor: 2.180)
8) **Gyanendra Singh** and Dalip Singh Mehta "Residual and Induced Birefringence Measurement of ITO Coated PET Substrate by Interferometric Method**" IEEE/OSA Journal of Display Technology** Vol. **11**, 1035-1041(2015).
http://dx.doi.org/10.1109/JDT.2015.2420192 ISSN No.1551-319X (Impact Factor: 1.925)
9) **Gyanendra Singh**, Azeem Ahmad, Vishesh Dubey, and Dalip Singh Mehta "Dual Wavelength Interferometric Study of Induced Birefringence of Flexible Substrate Due to External Stress" **Journal of Japan Society for Experimental Mechanics** 15 (Special issue), Vol. **15**, s75-80, (2015). ISSN No. 1346-4930.
10) **Gyanendra Singh** and Dalip Singh Mehta "Effect of bending on the spectrum of backlight light transmitted through flexible ITO/PET substrate" **IEEE/OSA Journal of Display Technology** Vol. **10,** 666-671 (2014).
http://dx.doi.org/10.1109/JDT.2014.2312941 ISSN No. 1551-319X (Impact Factor: 1.925)
11) **Gyanendra Singh** and Dalip Singh Mehta "White light generation using remote phosphor-coated diffusing surface excited by the high brightness inorganic blue light-emitting diode" **Journal of Information Display** Vol. **15,** 91-98 (2014).
http://dx.doi.org/10.1080/15980316.2014.903211 ISSN No. 1598-0316 (Impact Factor: 3.70)
12) K. Saxena, **Gyanendra Singh**, B. Thallapaka, and D. S. Mehta "White Organic Light Emitting Diodes Based on Single Emissive Layer Using Electro-phosphorescent Dopants in Fluorescent host" **Journal of Information Display** Vol. **15,** 119-126 (2014).
http://dx.doi.org/10.1080/15980316.2014.933718 ISSN No. 1598-0316 (Impact Factor: 3.70)
13) **Gyanendra Singh** and Dalip Singh Mehta "Photoluminescence studies of organic phosphor coated diffusing surface using blue inorganic light emitting diode as excitation source" **IOP Journal of Optics** Vol. **15,** 025710 (1-8) (2013).
http://dx.doi.org/10.1088/2040-8978/15/2/025710 ISSN No. 2040-8986 (Impact Factor: 2.753)
14) **Gyanendra Singh** and Dalip Singh Mehta "Measurement of change in refractive index in polymeric flexible substrates using wide field interferometry and digital fringe analysis" **Applied Optics** Vol. **51**, No. 35, 8413-8422 (2012).
http://dx.doi.org/10.1364/AO.51.008413. ISSN No. 1559-128X (Impact Factor: 2.180)
15) Brijesh Kumar Singh, **Gyanendra Singh**, P. Senthilkumaran, and D. S. Mehta "Generation of optical vortex arrays using single-element reversed-wavefront folding interferometer" **International Journal of Optics** Vol. **2012**, 1-7 (2012).
http://dx.doi.org/10.1155/2012/689612 1687-9384 (Impact Factor: 0.42)
16) **G. Singh**, M. Inam, J. Prakash, A. M. Biradar and D. S. Mehta "Investigations of a wedge-shaped nematic liquid crystal cell using Mach–Zehnder interferometer" **Journal of Modern Optics** Vol. **58**, No. **17**, 1560–1565 (2011).
http://dx.doi.org/10.1080/09500340.2011.608911 ISSN No. 0950-0340 (Impact Factor: 1.657)

17) M. Inam, **G. Singh**, V. Srivastava, J. Prakash, T. Joshi, A. M. Biradar, and D. S. Mehta "Two-dimensional cell parameters measurement of nematic liquid crystal using optical interferometry and Fourier transform fringe analysis technique" **Optics Communications** Vol. **284,** 5448–5452 (2011). http://dx.doi.org/10.1016/j.optcom.2011.08.003 ISSN no. 00304018 (Impact Factor: 1.961)
18) M. Inam, **G. Singh**, A. M. Biradar, and D. S. Mehta "Effect of gold nano-particles on switch-on voltage and relaxation frequency of nematic liquid crystal cell" **AIP Advances** Vol. **1**, 042162-7 (2011). http://link.aip.org/link/doi/10.1063/1.3668125 ISSN No. 2158-3226 (Impact Factor: 1.579)

PAPERS PRESENTED / PUBLISHED IN INTERNATIONAL AND NATIONAL CONFERENCES, SYMPOSIUMS AND SEMINARS: 16

1. Paper presented in National Conference NCT^3-2024 to be held on 11 May 2024 organized by State Institute of Advanced Studies in Teacher Education, SCERT Haryana "**Navigating the Challenges: Implementing STEAM Education in Indian Universities**".
2. Integral refractive index imaging of flowing cell nuclei: G. Dardikman, Y. Nygate, I. Barnea, N. Turko, **Gyanendra Singh**, B. Javidi, and N. T. Shaked, OSA Imaging and Applied Optics Congress [Conference: Computational Optical Sensing and Imaging], Orlando, Florida, USA, June 25-28, 2018.
3. Single-exposure multiplexing of phase and fluorescence in biological samples: Y. N. Nygate, **Gyanendra Singh**, and N. T. Shaked, SPIE Photonics West, Biomedical Optics (BiOS) [Conference: Quantitative Phase Imaging IV], San Francisco, CA, USA, January 27, 2017 – February 1, 2018.
4. Polarization interferometric digital holographic microscope for quantitative phase imaging and coherent noise reduction: Veena Singh, **Gyanendra Singh**, Azeem Ahmad, Vishesh Dubey, Ankit Butola, Tilak Joshi, and Dalip Singh Mehta, Proc. SPIE 10414, Advances in Microscopic Imaging, 104140V, 28 July 2017.
5. A novel phase-shifting structured illumination microscopy: Veena Singh, Vishesh Dubey, Azeem Ahmad, **Gyanendra Singh** and Dalip Singh Mehta- Proc. SPIE 9713, Quantitative Phase Imaging II, 97131F, March 9, 2016.
6. White light phase-shifting interferometry and color fringe analysis for the detection of contaminants in water: Vishesh Dubey, Veena Singh, Azeem Ahmad, **Gyanendra Singh** and Dalip Singh Mehta- Proc. SPIE 9718, Quantitative Phase Imaging II, 97181F, March 9, 2016.
7. Dual Wavelength Interferometric Study of Induced Birefringence of Flexible Substrate Due to External Stress: **Gyanendra Singh**, Azeem Ahmad, Vishesh Dubey and Dalip Singh Mehta - 9th International Symposium on Advanced Science and Technology in Experimental Mechanics, 1-6 November 2014, New Delhi, India.
8. Effect of Birefringence of Flexible Substrate on the Polarization State of Backlight Source for Photonic Devices: **Gyanendra Singh** and Dalip Singh Mehta - Recent

Advances in Photonics (WRAP), International Conference, IIT Delhi, India, I*EEE Xplore*, pp. 1-2, 17th -18th December 2013.

9. Characterization of ITO coated PET film by spectral measurement: **Gyanendra Singh** and Dalip Singh Mehta - Proceedings of Optics & Photonics Taiwan, International Conference 2012, pp. OG-SA-BL5-(4)-2, Optics & Photonics Taiwan, International Conference 2012, Taipei, Taiwan, December 6th -8th, 2012.
10. Measurement of liquid crystal cell gap by single wavelength using Mach-Zehnder interferometer and Fourier transform fringe analysis: M. Inam, **Gyanendra Singh**, A. M. Biradar and D. S. Mehta - Proceedings of Optics & Photonics Taiwan, International Conference 2012, pp. OG-SA-BL5-(3)-2, Optics & Photonics Taiwan, International Conference 2012, Taipei, Taiwan, December 6th -8th, 2012.
11. Study of birefringence in polymeric flexible substrate used for display application by Mach-Zehnder interferometry and Fourier transform fringe analysis: **Gyanendra Singh** and D S Mehta - XXXVI Optical Society of India Symposium – Frontiers in optics and photonics, IIT Delhi, India, 3rd-5th December 2011.
12. Reduction in the spatial coherence of laser light transmitted through the wedge-shaped Liquid crystal (LC) cell with applied dc voltage: **Gyanendra Singh**, Md. Inam, J. P. Rana, V. Srivatava, T. Joshi, A. M. Biradar and D. S. Mehta - XXXV Optical Society of India Symposium - International Conference on Contemporary Trends in Optics and Optoelectronics, IIST Thiruvananthapuram, India, 17th-19th January 2011.
13. Measurement of the liquid-crystal cell parameters using optical interferometry and Fourier transform fringe analysis: Md. Inam, **Gyanendra Singh**, V. Srivastava, J. P. Rana, T. Joshi, A. M. Biradar and D. S. Mehta - XXXV Optical Society of India Symposium - International Conference on Contemporary Trends in Optics and Optoelectronics, IIST Thiruvananthapuram, India, 17th-19th January 2011.
14. White Organic Light Emitting Diode Based on Single Emissive Layer Using Electro-Phosphorescent Dopants: Kanchan Saxena, T. Balasaidulu, **Gyanendra Singh**, Dalip Singh Mehta and Vinod Kumar Jain, Proceeding of IWPSD 2011, December 19-22, IIT Kanpur, India, 2011.
15. Improved efficiency of organic light-emitting diodes by modified hole injection layer using gold nano- particles: Kanchan Saxena, **Gyanendra Singh**, Dalip Singh Mehta, and V. K. Jain, ICOP 2009-International Conference on Optics and Photonics, Chandigarh, India, 30 Oct 2009-1 Nov 2009.
16. Efficiency Enhancement in Organic Light Emitting Diodes using Nano-Particles and Nanostructures: Kanchan Saxena, **Gyanendra Singh**, Dalip Singh Mehta, and V. K. Jain, IWPSD 2009- International workshop on the physics of semiconductor devices, Jamia Milia University, New Delhi, 15th -19th December 2009.

HONOURS AND ACADEMIC ACHIEVEMENTS:

1. Cleared GATE (Graduate Aptitude Test in Engineering) exam held on February 11, 2007, with rank 239.

2. Cleared Joint CSIR-UGC Test for JRF (Junior Research Fellow) and Eligibility for Lectureship (NET) held on 17th June 2007.
3. Received travel grant from DST (Department of Science and Technology, India) for attending International conference "OPTIC 2012" on Optics and Photonics Taiwan, held in Taipei, Taiwan from 6^{th} -8^{th} December 2012.
4. Received NEDO fellowship for the Research Fellow from University of Fukui, Japan (Jan 2016 - May 2016)
5. Received ERC fellowship for the Post-Doctoral Research from Tel Aviv University, Israel (Sep 2016 - Aug 2018).

SKILLS AND KNOWLEDGE:

1. Computer Languages known: MATLAB
2. Software skills: Origin, IMAGE J
3. Data acquisition and image processing of medical images and Signal

EDUCATIONAL QUALIFICATIONS

Degree	Institute	CGPA / %	Year
Postdoctoral Research	Tel Aviv University, Israel		Sep 2016-Feb 2021
Postdoctoral Research	University of Fukui, Japan		Dec 2015-May 2016
Ph. D.	I.I.T Delhi, New Delhi	9.5 / 10	July 2009-Aug 2015
M. Tech (Applied Optics)	I.I.T Delhi, New Delhi	8.5 / 10	July 2007 – June 2009
M.Sc.(Physics)	University of Delhi, New Delhi	61.1%	July 2004 – June 2006
B.Sc.(Physics)	University of Delhi, New Delhi	68.4%	July 2001 – June 2004

PERSONAL DETAILS:

Date of Birth: 07 December 1983

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