# Curriculum Vitae

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## EDUCATION

- **Degree Awarded :** **Ph. D**. in Physics, **C**ity **U**niversity of **N**ew **Y**ork, Oct. **1991**
- **Supervisor :** ***Prof. Robert R. Alfano***
- **Thesis Title :** Fluorescence Spectroscopic Properties of Normal and Abnormal Biomedical Materials

## PERSONAL

- Date of Birth: January 16, 1960.
- Citizenship : Indian

## Publications:

## Refereed journals:

**1.** Fluorescence spectra from cancerous and normal human breast and lung tissues, R. R. Alfano, G. C. Tang, ***A. Pradhan***, W. Lam, D.S.J. Choy, E. Opher, **IEEE J. Quantum Electron.,** QE-23 (10), 1806, **1987.**

**2.** Steady state and time-resolved laser fluorescence from normal and tumor lung and breast tissues**, R.R.** Alfano, G. C. Tang**, A. Pradhan**, M. Bleich, D. S. J. Choy, E. Opher, **J. Tumor Marker Oncology,** 3, 165, **1988.**

**3**. Spectroscopic studies of human cancer and normal lung and breast tissues, G. C. Tang, **A. Pradhan**, R. R. Alfano, **Lasers in Surgery and Medicine**, 9, 290, **1989.**

**4.** Optical spectroscopic diagnosis of cancer and normal breast tissues, R. R. Alfano, **A. Pradhan**, G. C. Tang**, J. Opt. Soc. Am.** B, 6(5), 1015, **1988.**

**5.** Pulse and cw laser fluorescence spectroscopy from cancer and chemically treated normal breast and lung tissues, G. C. Tang, **A. Pradhan**, W. L. Sha, J. Chen, C. H. Liu, S. J. Wahl, R. R. Alfano, **Appl. Opt.** 28(12), 2337**, 1989.**

**6**. Effects of self absorption by hemoglobins on the fluorescence spectra from normal and cancerous tissues, C. H. Liu, G. C. Tang, **A. Pradhan**, W. L. Sha, R. R. Alfano, **Lasers in Life Sciences** 3(3), 167**, 1990.**

**7.** Investigation of optical spectroscopy of cancerous and normal human tissues, **A. Pradhan**, G. C. Tang, R. R. Alfano, in Photonics: Nonlinear Optics and Ultrafast Phenomena Ed. R.R. Alfano and L. Rothberg**, Nova Science Publishers, 1991.**

**8.** Time-resolved uv photoexcited fluorescence kinetics from cancerous and non-cancerous breast tissues, **A. Pradhan,** B. B. Das, K. M. Yoo, R. R. Alfano, E. Celmer, R. Prudente, J. Cleary, **Lasers in Life Sci.,** 4(4), 225, **1992.**

**9.** Spectral properties of metastatic and nonmetastatic cells from different species, **A.Pradhan**, P.Pal, G. Durocher, L. Villeneuve, L. Gaboury, **J. Photochem. Photobiol (Biol).,** 31, 101, **(1995).**

**10.** Disease diagnosis using Laser Spectroscopy: An Overview, **Asima Pradhan**, **published in Advanced Laser Spectroscopy and Applications, Allied Publishers, New Delhi 1996**, Proceedings of the Workshop on Advanced Laser Spectroscopy held in IIT Kanpur in Feb.'95.

**11.** Growth of diamond thin films ina cyclic.growth.etch oxy-acetylene flame process**,** R.Kapil, B.R.Mehta, V.D.Vankar, C.Roy, **A.Pradhan, Thin Solid Films,** 322 **(1998**) 74-84.

**12.** Fluorescence spectroscopic Investigations of Normal and Tumor Human Breast Tissues, R.N. Panda, A.Agarwal and **A.Pradhan, A. J. Phys**., 8( 2), 179-184, **1999.**

**13**. Raman Scattering, Photoluminescence and excitation spectroscopy in Natural and Synthetic Ruby, H.D. Bist, M.S. Navati, **A. Pradhan**, E. Zharikov, A. Misra and H. B. Tripathi, **A. J. Phys**., 8( 2), **1999.**

**14.** Laser Raman spectroscopic study of water in gelatine-surfactant solutions and gels, Saroj Maity, S. S. Jena, **A. Pradhan** and H. B. Bohidhar**, J. of Colloid Polym. Sci**.277: 666-67**, 1999.**

**15.** Characterisation of Si(100) Implanted with MeV Sb by Raman Scattering S.Dey, C.Roy, **A.Pradhan,** S.Varma, **J.Appl.Phys ,** 87,**(1999)** 1110.

**16**. Raman study of ion irradiated GeSe films, P.K.Dwivedi, S.K.Tripathi, **A.Pradhan**, V.N.Kulkarni, S.C.Agarwal, **J.Non-Crystal.Solids**, 266 (B), **(2000)** 924-928.

**17.** Damage studies of MeV Sb-implanted Si(100) by channeling and Raman spectroscopy, S.Dey, **A.Pradhan**, S.Varma, J.Vac.Sci.Technol.B 18(5), **(2000)** 2457-2462.

**18**. Microwave synthesis and characterization of doped ZnS based phosphor materials, S.Sundar Manoharan, S.Goyal, Manju Lata Rao, Maya S.Nair, **Asima Pradhan,** Mater. Res.Bull., 35, **2000,** 1039-1047.

**19**. Distinguishing Normal, Benign and Malignant Human Breast Tissues by Visible Polarized Fluorescence, B.V.Laxmi, R.N.Panda, M.S.Nair, A.Agarwal and **Asima Pradhan, Lasers in the Life Sci**., Vol 9, 229-243, No.4, **2001.**

**20.** Influence of the Fuel used in the microwave sysnthesis of Cr2O3, M.Cherian, M.S.Rao, S.Manoharan, **A.Pradhan, G.Deo, and Topics in Catalysis,** Vol.18, Nos 3-4, and Feb**.2002.**

**21**. Determination of optical parameters of human breast tissues from spatially resolved fluorescence-A diffusion theory model, Maya S. Nair, N.Ghosh, N.Sundar Raju, **Asima Pradhan, Applied Optics,** Vol.41, #16, **2002.**

**23.** Symmetry forbidden Raman scattering from porous silicon quantum dots,Md.Najrulislam, R.N. Panda, **A.Pradhan** and Satyendra Kumar, **PRB**, vol 65 (3), 033314-(1-4), **2002.**

**24.** Raman and photoluminescence studies on Cr- and Pr-doped Bi12SiO20 single crystals, R.N. Panda, **A. Pradhan, Materials Chemistry and Physics** 9493, 1–5, **2002.**

**25.** Wavelet Transform of Breast Tissue Fluorescence Spectra: A Technique for Diagnosis of Tumors, Nidhi Agarwal, Sharad Gupta, Bhawna, **Asima Pradhan** and K.Vishwanathan, Prasanta K.Panigrahi, to be published in **IEEE JSTQE, 2003.**

**26.** Recovery of turbidity free fluorescence from measured fluorescence an experimental approach, N.C. Biswal, Sharad Gupta, N. Ghosh and **A. Pradhan, Optics Express**, Vol.11, No. 24, pp. 3320-3331, Dec. **2003.**

**27**. Microstructure of N+ ion beam induced epitaxial crystallized Si, P.K. Sahoo, Sharad Gupta, **A. Pradhan** and V.N. Kulkarni**, Nucl. Instr. and Meth. B**, Vol.216, pp. 316, **2003.**

**28.** Experimental and theoretical investigation of fluorescence photobleaching and recovery in human breast tissues and tissue phantoms, Sharad Gupta, Bhawna, P. Goswami, **A. Pradhan** and A. Agarwal, **Applied Optics,** Vol. 43, No. 5, pp. 1044-1052, **2004.**

**29.** Nanoprecipitation in transport matrices using an energetic ion beam, T. Mohanty, **A. Pradhan,** S. Gupta and D. Kanjilal, **Nanotechnology 15**, 1620-1624, **2004.**

**30.** Depolarization of light in a multiply scattering medium:Effect of the refractive index of a scatterer, Nirmalya Ghosh, **Asima Pradhan**, Pradeep Kumar Gupta, Sharad Gupta, V. Jaiswal and R. P. Singh, **Physical Review E 70,** 066607, **2004.**

**31** Evaluation of laser Spectroscopy in Diagnostic of benign and malignant lesions of breast cytohistological correlation, Silpi Sikarwar, Asha Agarwal,S.N Singh, P.K Singh, Manvi Gupta, **Asima Pradhan** ,Ashish and Prashant Shukla, Indian Journal of Bioscience and Medical volume Oncology, Vol58#1, 7-10, Jan –June.

**32.** Effects of crystalline size distribution on the Raman-scattering profiles of silicon nanostructures, Md.Nazrul Islam, **Asima Pradhan**, Satyendra Kumar, **Journal of Applied Physics,** 98,1 **(2005)**

**33.** Wavelet based characterization of spectral fluctuations in normal, benign and cancerous human breast tissus, Sharad Gupta, N.C.Biswal, Nidhi Agarwal, Maya S. Nair, Asha Agarwal, P.K.Panigrahi, **Asima Pradhan, Journal of Biomedical** Optics Vol.10 (5), p-054012-1 to 9, **(2005).**

**34.** Nirmalya Ghosh,, Pradeep Kumar Gupta, **Asima Pradhan** ,S.K.Majumdar, *"Anomalous behaviour of depolarization of light in a turbid medium"* **Physics Letters** A, 354, 236-242 **(2006)**

**35.** Sharad Gupta, V. L. N Sridhar Raja and **Asima Pradhan,** *"Simultaneous Extraction of Optical Transport Parameters and Intrinsic Fluorescence of Tissue Mimicking Model Media Using Spatially Resolved Fluorescence Technique"* **Applied Optics ,** Vol.45, 28 **(2006)**

**36.** Dipak Paramanik, **Asima Pradhan** , Shikha Varma, *" Nanoscale defect formation on InP (111) surfaces after MeV Sb implantation",* **J. Appl. Phys**. 99, 014304 **(2006)**

**37.** Prashant Shukla, R.Sumathi, Sharad Gupta, **Asima Pradhan,** "Influence of size parameter and refractive index of scatterer on polarization gated optical imaging through turbid media" submitted to **JOSA A, (2006)**

**38.** Bhadra Mani, K. L. N. S. S. Sarma, C. R. Rao, P. A. Lakshmi**, A Pradhan** and P.K. Panigrahi, Wavelet Based Classification for Cancer Diagnosis, accepted for publication in Journal of Soft Computing.

**CONFERENCE PROCEEDINGS**

1. Time-resolved fluorescence of normal and atherosclerotic coronary arteries, **A. Pradhan**, B. B. Das, C. H. Liu, R. R. Alfano, K. M. O'Brien, M. L. Stetz, J. J. Scott, L. Deckelbaum, Proceedings of **SPIE** Conference: 1425: Diagnostic and Therapeutic Cardiovascular Interventions, 2-5, **(1992).**

2. Time-resolved fluorescence of benign and malignant breast tissues**, A. Pradhan**, B. B. Das, K. M. Yoo, R. R. Alfano, J. Cleary, R. Prudente, E. Celmer, Proc. **SPIE** Conference: 1599, Recent Advances in the Uses of Light in Physics Chemistry Engineering and Medicine, 81-84, **(1992).**

3. Optical spectroscopic diagnosis of cancer, R. R. Alfano, B. B. Das, W. S. Glassman**, A. Pradhan**, G. C. Tang, **SPIE** Conference: 1599, Recent Advances in the Uses of Physics Chemistry Engineering and Medicine, 284-289, **(1992).**

4. Low temperature emission from human tissues, **A. Pradhan**, G. C. Tang, R. R. Alfano, Abstract submitted to **Biomedical Engineering Society** Annual Meeting Memphis State University Tennessee, Oct. 21-24, **1993.**

5. Spatial Dependence of Fluorescence Human Breast Tissues, N. Ghosh, B. V. Laxmi, U. Das, A. Agarwal and **A. Pradhan**, Proc. **National Laser Symposium**, Ahmedabad, Dec 10-12, 288 **(1997).**

6. Laser Raman Spectroscopy (LRS) of Supported Rhenia Catalysts: Effect of Support, Loading and Additives, B. Mitra, **A. Pradhan**, I. E. Wachs and G. Deo, Proc. **National Laser Symposium**, Ahmedabad, Dec 10-12, 122 **(1997).**

7. Fluorescence Depolarization of Normal and Diseased Skin Human Tissue, **A. Pradhan**, S. S. Jena and A. Agarwal, Proc. Optical Biopsy II, 3250, 78, **SPIE** International Conference San Jose California **(1998).**

8. Gallstone Identification by Fluorescence Spectroscopy, **A. Pradhan**, P. K. Khulbe, S. S. Jena and H. D. Bist, Proc. Optical Biopsy II, 3250, 83, **SPIE** International Conference, San Jose California **(1998).**

9. Fluorescence light distribution in human breast and skin tissues, **Asima Pradhan**, Abstract in Proceedings of **National Symposium** on Recent Advances in Laser and Molecular Spectroscopy, **(1998)**, 96.

10. Micro-Raman Characterization of CuAs/Si with Atomic Laser Epitaxy Grown Predeposition Layers, P. S. Dobal, **A. Pradhan** and U. Das, Physics of SC Devices,Vol.I, Ed. V. Kumar and S. K. Agarwal, Narosa Publishing House, 301 (1997); Proc.**SPIE**, Vol.3316,Issue 1,**(1998)**, 301-303.

11. Propagation of Fluorescence in Human Skin Tissue, M. S. Nair, N. Ghosh, A. Agarwal and **A. Pradhan**, Proc. **National Laser Symposium**, I.I.T. Kanpur, Dec 14-16, 231 **(1998).**

12. Effect of Scattering on Fluorescence Depolarization of Normal and Tumor Breast Tissues, B. V. Laxmi, A. Agarwal and **A. Pradhan**, Proc**. National Laser Symposium**, I.I.T. Kanpur, Dec 14-16, 233 **(1998).**

13. Study of Ion Irradiation of GaSe Chalcogenide Thin Films Using Micro-Raman Spectroscopy, P. K. Dwivedi, S. K. Tripathi, **A. Pradhan**, V. N. Kulkarni and S. C. Agarwal, Proc. **National Laser Symposium**, I.I.T. Kanpur, Dec 14-16, 254 **(1998).**

14. Infrared Spectrum of 5-amino uracil, J. S. Singh, B. V. Laxmi, **A. Pradhan** and R. A. Yadav, Proc. **National Laser Symposium**, I.I.T. Kanpur, Dec 14-16, 98 **(1998).**

**15.** Diagnosis of Benign Breast Tumors by Fluorescence Depolarisation and Spectral Profile Analysis, R.N.Panda, B.V.Laxmi, M.S.Nair, A. Agarwal and **A. Pradhan**, Proc. **National Laser Symposium**, Hyderabad,Dec 15-17, 383, **(1999).**

**16.** In-situ micro-Raman investigation of dehydration mechanism in natural gypsum, P.S.R. Prasad, **A.Pradhan** and T.N. Gowd, Proc. **National Laser Symposium**, Hyderabad,Dec 15-17,335**(1999).**

**17.** Fluorescence study of Normal, Benign and malignant Human Breast Tissues, **A Pradhan**, R N Panda, M S Nair, B V Laxmi, A Agarwal and A Rastogi; Proc. **SPIE**, Vol.3917 **(2000)**, 240-243.

**18.** **A Pradhan**, M S Nair, N Ghosh and A Agarwal; Spatial variation of Fluorescence in Human Breast Tissues, Proc **SPIE**, Vol.3917, **(2000)**, 194-199.

**19.** Low temperature Raman Spectra of Pr- Doped $Bi_{12}SiO_{20}$ single crystals,B.K.Nayak, M.S.Nair, **A.Pradhan** and K.V.Rao, Proc. **National Laser Symposium**., New Delhi,Dec 13-15,**2000.**

**20.** Characterization of gallstones by Micro-Raman spectroscopy, Sharad Gupta and **Asima Pradhan**, Proc. **National Laser Symposium**, New Delhi, Dec 13-15**, 2000**.

**21.** Discriminating different benign breast tumors by their measured transport parameters, M.S. Nair, N. Ghosh,A. Agarwal and Asima Pradhan, Proc. Nat. Laser Symp., New Delhi,Dec 13-15,2000.

**22.** Diagnosis of human breast tumors with polarized fluorescence spectroscopy, M.S.Nair, Sharad Gupta and **Asima Pradhan**, submitted to **special issue on Laser Applications of Laser Horizon**.

**23.** Comparison of parallel and perpendicularly polarized fluorescence spectra of human breast tissues and tissue phantoms, Maya S. Nair, **Asima Pradhan**, A.Agarwal, Anurag Rastogi, Proc. **National Laser Symposium** .,CAT, Indore, Dec 19-21,**2001**.

**24.** Photobleaching and recovery of visible fluorescence from human breast tissues and tissue phantoms, Sharad Gupta, Bhawna, **Asima Pradhan**, S.Swain, Asha Agarwal, Proc. **National Laser Symposium**, CAT, Indore, Dec 19-21,**2001**.

.

**25.** Photoluminescence studies of doped $Bi_{12}SiO_{20}$ single crystals, R.N. Panda, B.K. Nayak, **Asima Pradhan**, D.Deva, K.V.Rao, Proc. **Intl. workshop** Prep. & Charact. Tech. Imp. Single Crystals, NPL, New Delhi, Feb 26-28,**2001**.

**26.** Molecular information from fluorescence spectroscopic investigations of breast tissues and tissue phantoms, Maya S. Nair, Sharad Gupta, Urvija Sinha, **Asima Pradhan**, Proc. **SPIE**, Vol.4613 **(2002)**, 71-76.

**27.** Fluorescence photobleaching and recovery of human breast tissues and tissue phantoms, pp.41-47 Sharad Gupta, Bhawna, **Asima Pradhan**, S.Swain, Asha Agarwal, Proc. **SPIE**, Vol.4613 **(2002)**, 41-47.

**28.** Photobleaching Effects in Spatially Resolved Fluorescence**,** Sharad Gupta, Bhawna, Ratul Sarkar and **Asima Pradhan**, Proc**. National Laser Symposium**. **2002**.

**29.** Mathematical Modeling of Fluorescence Photobleaching and Recovery of Human Breast Tissues and Tissue Phantoms, Sharad Gupta, Bhawna and **Asima Pradhan**, Proc. **National Laser Symposium 2002**.

**30.** Microstructure of N+ ion beam induced epitaxial crystallized Si, P. K. Sahoo, Sharad Gupta, **A. Pradhan**, and V. N. Kulkarni, **European Material Research Society** Strasbourg, France, June 10-13, **2003**.

**31.** Extraction of biochemical information from intrinsic fluorescence, N.C. Biswal, Sharad Gupta and **A. Pradhan**, Proc. **National Laser Symposium**, I.I.T. Kharagpur, Dec 22-24, **2003**.

**32.** Detection of milk adulteration using fluorescence spectroscopy" Sharad Gupta, N.C. Biswal, N. Ghosh and **A. Pradhan**, *Proc*. **National Laser Symposium**, I.I.T. Kharagpur, Dec 22- 24, **2003**.

**33.** Micro-Raman study in dynamically annealed Si by MeV N+ ions" P. K. Sahoo, Sharad Gupta, **A. Pradhan**, V. N. Kulkarni, Proc. **National Laser Symposium**, I.I.T. Kharagpur, Dec 22-24, **2003**.

**34.** Polarized fluorescence technique for tumor diagnosis, **Asima Pradhan**, **92nd Indian Science Congress**, *Invited Talk* in *Physical Sciences Section*, Jan 3-7, **2005**.

**35.** Simultaneous extraction of optical properties and intrinsic fluorescence from turbid media, Sharad Gupta, V.L.N.Sridhar Raja and **Asima Pradhan**, Proceedings of **National Laser Symposium**, Jan, **2005**.

**36.** V.L.N. Sridhar Raja, Sharad Gupta, **Asima Pradhan** "Recovery of intrinsic fluorescence of tissue mimicking model media and human breast tissues from spatially solved fluorescence and simultaneous evaluation of optical transport parameters" Proc. **SPIE** Vol.6091 p. 12-21, Optical Biopsy VI, (Feb **2006**)

**37.** V.L.N. Sridhar Raja, Kalpana Mandal and **Asima Pradhan "**Depth Resolved Fluorescence Measurements from Tissue Mimicking Model Media –A Spatially Resolved Fluorescence Technique**" National Laser Symposium**, held at Vellore, Jan. **2006**.

**38.** Prashant Shukla, R.Sumathi , Sangeeta Chakrabarti and **Asima Pradhan**, "A Study of the Dependence of Image Quality on Refractive Index of Scatterer in Polarimetric maging through Turbid Media**" National Laser Symposium**, held at Vellore, Jan.**2006**.

**39.** Prashant Shukla, Yashasvi Purwar, **Asima Pradhan**, " Dependence of Image Quality on State of Polarization in Polydisperse Turbid Media" **Photonics 2006**.

**40.** Rohit B. Patel, M. Anil Kumar, Prashant Shukla and **Asima Pradhan**, Spatially Resolved Fluorescence Technique for Depth Resolved Intrinsic Fluorescence Measurements from Two Layered Phantom", **National Laser Symposium**, **2006**.

**41.** Md. Ejaz A. Lodhi, Prashant Shukla,Anjali Saini, Meena Pal, Monika Mishra Nidhi Agarwal, Asha Agarwal and **Asima Pradhan**, "Monitoring Biochemical Changes in Normal and Cancerous Cervical Tissues Using Intrinsic Fluorescence", **National Laser Symposium**, **2006**.

## ARTICLES

1. Disease diagnosis using Laser Spectroscopy: An Overview, **Asima Pradhan**, published in Advanced Laser Spectroscopy and Applications, Allied Publishers, New Delihi 1996, Proceedings of the **Workshop on Advanced Laser Spectroscopy** held in IIT Kanpur in Feb. **95**.

2. Diagnosis of Breast Tumors with Polarized Fluorescence Spectroscopy, M.S.Nair, Sharad Gupta, A. Rastogi, Asha Agarwal and **Asima Pradhan, Laser Horizon** Vol. R (LASTEC), **2001**.

3. Diagnosis of Tumors by Fluorescence Spectroscopy, **Asima Pradhan**, in **ISRAPS Bulletin**, a publication of Indian Society for Radiation and Photochemical Sciences, March, **2003**.

4. Fluorescence Light Propagation in Turbid Tissue: Applications in Cancer Diagnosis, **Asima Pradhan**, to be published in magazine **Kiran** published by Indian Laser Association…

## PATENTS

"Method for determining if tissue is malignant as opposed to nonmalignant using time - resolved fluorescence spectroscopy", R.R.Alfano, A.Pradhan, G.C.Tang, L.Wang, Y.Bundansky and B.B.Das; U.S Patent Number 5,348,018 awarded September 20, 1994

## BOOKS

**1.** Optical Spectroscopy May Offer Diagnostic Approaches For Medical Profession, R. R. Alfano, A. Pradhan, G. C. Tang, B. B. Das, K. M. Yoo in Laser Nonsurgical Medical Technomic Publishing Inc. 1991.

**2.** Advanced Laser Spectroscopy and Applications, Editors H. D. Bist, R. K. Thareja, A. Pradhan and P. K. Khulbe, Allied Publishers, New Delhi 1996.

## RESEARCH EXPERIENCE

| Duration | Organization | Areas |
|---|---|---|
| 1. Dec.1993-present | IIT Kanpur | Biomedical applications of lasers |
| 2. March 1993-Nov.1993 | Univ. of Montreal | Biomedical applications of lasers |

Ph.D.: City University of New York, 1991, Fluorescence Spectroscopic Properties of Normal and Abnormal Biomedical Materials.

## TEACHING EXPERIENCE:

| Duration | Organization | Areas |
|---|---|---|
| 1993-present | IIT Kanpur | Physics |

## COURSES TAUGHT (at IITK)

| Duration | UG/PG |
|---|---|
| Dec. 1993-present | Phy102 Electromagnetic Theory<br>Phy101 1st Semester Physics Lab<br>Phy218 Optics Lab<br>Phy224 Optical Physics |

Phy641 Elements of Bio and Medical Physics
**developed and taught by me and Dr. V.A.Singh**
LT601 Introduction to Lasers
LT631 Introduction to Coherent and Laser Optics
LT616 Laser Applications
LT680 M.Tech Lab
**being taught and developed by me and Dr. Utpal Das**

## THESIS SUPERVISION:

### M.Tech in Laser Technology:

| Sl. No. | Name | Year of Completion | Title of Thesis |
|---|---|---|---|
| 1. | Nilratan Das | 1996 | 2-dimensional Model of Fluorescence in Human Tissue and Spectral Studies of Gallstones |
| 2. | Manish Purwar | 1997 | Studies of Fluorescence Depolarization and Spatial Dependence of Scattering using Optical Fibers in Human Tissues |
| 3. | Nirmalya Ghosh | 1998 | Spatial Variation of Fluorescence and Rayleigh Scattering in Human Breast and Skin Tissues |
| 4. | B.V.Lakshmi | 2000 | Polarized Fluorescence Spectral and Anisotrophy Studies in Human Breast Tissues |
| 5. | Amit Srivastava (Co-supervisor with Prof. D.C.Agarwal) | 2000 | Determination of degree of mixing of ceramic powders by Raman Scattering |
| 6. | B.K.Nayak (Co-supervisor with Dr. K.V.Rao) | 2001 | Raman and Photoluminescence Studies of Pure and Doped Bismuth Silicon Oxide Single Crystals |
| 7. | N. Sundar Raju | 2001 | Monte Carlo simulation of Fluorescence Light Propagation in Tissues |
| 8. | Bhawna | 2002 | Study of Fluorescence Photobleaching and Recovery of Human Breast Tissues and Tissue Phantoms |
| 9. | Nidhi Agarwal | 2003 | Breast Tumor Diagnosis Using Wavelet Analysis |
| 10. | N.C.Biswal | 2003 | Extraction of Intrinsic Fluorescence from Tissue Phantoms Using Polarization Technique |
| 11. | V.L.N.Sridhar Raja | 2004 | Evaluation of Optical Properties and Extraction of Intrinsic Fluorescence from Tissue Mimicking Model Media-A Spatially Resolved Fluorescence Technique |
| 12. | Pramod Kumar Pandey | 2004 | Monte Carlo simulation of Photobleaching and its phenomenon in various tissue phantoms |
| 13. | R. Sumathi | 2005 | Depolarization studies for Tumor Diagnosis by Polarization Gated Imaging Technique |
| 14. | Rohit B. Patel | 2007 | |
| 15. | Md. Ejaz E. Lodhi | 2007 | |

**Ph.D in Physics:**

| | | |
|---|---|---|
| **1.** Maya S. Nair | Kanpur University (2005) | Fluorescence Light Propagation in Human Breast Tissues and Tissue Phantoms |
| **2.** Sharad Gupta | IIT Kanpur (2005) | Extraction of Optical Properties and Intrinsic Fluorescence from Human Breast Tissues and Tissue Phantoms |
| **3.** Prashant Shukla | Continuing Ph.D (IITK) | Polarization Gated Imaging Technique |

- **Supervised M.S. (General Surgery) Theses from Shri Shahuji Maharaj Kanpur University in collaboration with G.S.V.M. Medical College, Kanpur:**

| | | |
|---|---|---|
| 1. Dr. Anurag Rastogi | 2000 M.S. | Evaluation of Various Diagnostic Modalities in Breast Lesions with Special Reference to Role of Laser Spectroscopy. |
| 2. Dr. Satish Kumar | 2003 M.S | Mammography versus laser Spectroscopic evaluation of palpable and impalpable breast lesions and its impact on surgerical management. |
| 3. Dr. Samir Swain | 2003 M.S. | Laser Spectroscopic Studies of Various Malignancies and its Assessment as a Diagnostic and Prognostic Marker. |
| 4. Dr. Amit Gupta | 2003 M.S | Raman and Fluorescence Spectroscopic Identification of Various Urinary Stones in Different Clinico-pathological Conditions of the Urinary Tract. |
| 5. Dr. Silipi Sikarwar | 2006 M.D | Evaluation of laser Spectroscopy in Diagnostic of benign and malignant lesions of breast cytohistological correlation. |
| 6. Dr. Manvi Gupta | 2006 M.S | Fluorescence Spectroscopy as a Diagnostic Modality for lesion for cervix and its histopathology correlation. |
| 7. Dr. Mittu Digra | 2007 M.D | Laser Spectroscopy in lesions of breast, its Diagnostic performance and implantation and correlation with histological diagnosis. |

| | | |
|---|---|---|
| 8. Dr. H.S Pandey | 2007 M.S | Laser Spectroscopy as diagnostic test in Oropharangeal and correlation with clinico histological Diagnosis. |
| 9. Dr. Nidhi Agarwal | 2007 M.S | Evaluation of early Cervical Neoplasm by Fluorescence Spectroscopy and its comparison with pap smear colposcopy and histology. |

**SPONSORED PROJECTS:**

| ***Period*** | ***Organiz-ation*** | ***Title of Project*** | ***Amount*** |
|---|---|---|---|
| ***1996-1999*** | DST | Optical Properties and Diagnosis of Tumors using Lasers | 3.00 Lakhs |
| ***2002-2005*** | CSIR | Propagation of Fluorescence Light in Human Breast Tissue | 4.00 Lakhs |
| ***2001*** | Institue Grants | Spectrofluorimeter for Fluorescence Based Analytical Research | 37.00 Lakhs |
| ***2002-2003*** | CARE (IITK) | Modernization of Raman System and Removal of Obsolete Data Acquisition System | 11.00 Lakhs |
| ***2003*** | MHRD | Modernization of Laser and Optics Laboratory Course | 15.00 Lakhs |
| ***2004*** | BRNS | Intrinsic Fluorescence of Tissues for Diagnosis of Cancer | 26.00Lakhs |
| ***2005*** | CARE (IITK) | Polarized Confocal Imaging of the Cervical Epithelial tissue for neoplasia early cancer) detection. | 15.7 Lakhs |

- **CONFERENCES:**

1. Invited talk on Fluorescence and Raman Spectroscopy and Applications in Diseased Diagnosis, Symposium and Recent Advances in Linear and Nonlinear Spectroscopy in Physics Section of Indian Science Congress, 85$^{th}$ Annual Session, Osmania Univ., Hyderabad, Jan 3-7 (1998).

2. Invited talk at National Conference on Lasers and Spectroscopy, Meerut, Feb. 25-28 (1999).

3. Invited talk in Visitor's Programmed at Delhi University, March 20 (1999).

4. Invited talk in National Laser Symposium held at University of Hyderabad, Dec. 15-17 (1999).

5. Oral, poster presentation and chaired a session in International Symposium on Biomedical Optics of SPIE at San Jose, CA, USA from Jan 22-28 (2000).

6. Invited talk in 5th National Symposium on Radiation and Photochemistry (NSRAP) held at IIT Kanpur in March (2003).

7. Invited Talk at Indian Science Congress held at Ahmedabad, January 2005.

- **OTHER ACTIVITIES:**
  DPGC, DUGC convenors, SLC representing LTP
  Warden of Girls' Hostel for 3 years and continuing with extension for another 3 years

**NAME AND ADDRESSES OF REFEREES:**

1. **Prof. Robert R. Alfano**
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