



INVITED TALKS

1. "Biomedical applications of lasers"
P.K. Gupta
89th Indian Science Congress, Lucknow, January 3-7, 2002.
2. Key note Address in the workshop "VUV Laser Spectroscopy and the Spectroscopic Studies with the Synchrotron Radiation Source"
D. D. Bhawalkar
Chandigarh, March 16-18, 2002.
3. "Laser Technology and its Applications in the Armed Forces"
D. D. Bhawalkar
The College of Combat, Mhow, March 22, 2002.
4. "X-ray emission from laser produced plasmas"
P.D. Gupta
International conference on "Current Developments in Atomic, Molecular and Chemical Physics with Applications", Delhi University, March 2002.
5. "Accelerator Control Systems: Some Thoughts Requirements, Experiences and Issues"
P. Fatnani
Workshop on Electronics For Experimental Data Acquisition & Computer Control, Nuclear Science Centre, Delhi, March 7-8, 2002.
6. "Photopyroelectric and surface photo voltage characterization of semiconductor wafers and nano structures"
Shailendra Kumar,
12th International conference on Photoacoustic and Photothermal Phenomenon, Toronto, June 21-24, 2002.
7. "Cr-doped LiNbO₃ Single Crystals for Tunable Laser"
K.S. Bartwal
INSA Local Chapter Invited Talk, Dept. of Physics, B.H.U. Varanasi, July 23, 2002.
8. "Science and Women: Challenges ahead"
L.M. Kukreja,
National Conference on Emerging Technologies and Women, SGSITS, Indore Oct.25-26, 2002.
9. "Role of Women in Science and Technology"
Beena Jain, *ibid.*
10. "India's First Synchrotron Source"
D. D. Bhawalkar
Kerala Academy of Sciences, Thiruvananthapuram, Nov. 14, 2002.
11. Key note Address "Lasers in Nuclear Research"
D. D. Bhawalkar
DAE-BRNS National Laser Symposium, Thiruvananthapuram, Nov. 14-16, 2002.
12. "The Laser Crystals and Ceramics Programme of CAT, Indore"
V.K. Wadhawan, *ibid.*
13. "Studies of laser plasma interaction in long and short pulses"
P.A.Naik, *ibid.*
14. "Diode Pumped Solid State Laser"
Jogy George, *ibid.*
15. "Laser- an emerging tool for the development of graded materials"
Rakesh Kaul, *ibid.*
16. "Construction Safety"
N.T. Merani,
19th Inter DAE Safety Meet, Kaiga, Nov. 26, 2002.
17. "Laser induced fluorescence spectroscopy for cancer diagnosis"
P.K. Gupta,

- Photonics 2002, Sixth Int. Conf. on Optoelectronics, Fiber Optics and Photonics, TIFR, Mumbai, Dec. 16-18, 2002.
18. "Advanced Fast Ignition Schemes for ICF"
V.K. Senecha
XVII National Symposium on Plasma Science and Technology, Plasma-2002, Coimbatore, Dec. 16-19, 2002.
 19. "XUV spectroscopic diagnostics for laser produced plasmas"
A. Chowdhury, *ibid.*

PUBLICATIONS

In book :

1. An alternative method to measure the figure-of-merit of solid state laser materials: application to Nd³⁺ doped YVO₄ crystal for ⁴F_{3/2}→⁴I_{11/2} transition
P. K. Mukhopadhyay.
Advances in Laser and Optics Research, Ed. W.T. Arkin, vol 2, pp.35-50. NOVA SCIENCE PUBLISHERS, USA, 2002.

International Journals

1. Magnetic response of Fe_{1-x}CoxSi alloys : A detailed study of magnetization and magnetoresistance
M. K. Chattopadhyay, S. B. Roy, Sujeet Chaudhary, Kanwal Jeet Singh and A. K. Nigam,
Phys. Rev B66 174421 (2002).
2. Interesting thermomagnetic history effects in the antiferromagnetic state of SmMn₂Ge₂,
S B Roy, S Chaudhary, M K Chattopadhyay, P. Chaddah and E V Sampathkumaran,
J Phys. Condens. Matter 14 9779 (2002).
3. Temperature dependent magnetic Compton scattering study of spin moments in Ce(Fe_{0.96}Ru_{0.04})₂,
B L Ahuja, T Ramesh, B K Sharma, P Chaddah, S B Roy, Y Kakutani, A Koizumi, N Hiraoka, M Toutani, N Sakai, Y Sakurai and M Itou,
Phys Rev B66 012411(2002).
4. Thermomagnetic history effects in SmMn₂Ge₂,
S Chaudhary, M K Chattopadhyay, K J Singh, S B Roy, P Chaddah and E V Sampathkumaran,
Phys. Rev. B66 014424 (2002).
5. Metamagnetic transition in Ce(Fe_{0.96}Al_{0.04})₂: a dc magnetisation study,
M A Manekar, S Chaudhary, M K Chattopadhyay, K J. Singh, S B Roy and P Chaddah,
J Phys. Condens. Matter 14, 4477 (2002).
6. Thermomagnetic irreversibility in rare earth neodymium,
Kanwal Jeet Singh, Sujeet Chaudhary, M. K. Chattopadhyay, and S. B. Roy, J. Mag. Mat. 246, 260 (2002).
7. First-order transition from ferromagnetism to antiferromagnetism in Ce(Fe_{0.96}Al_{0.04})₂ : A magnetotransport study,
K J Singh, S Chaudhary, M K Chattopadhyay, M A Manekar, S B Roy and P Chaddah.
Phys Rev B65 094419 (2002).
8. Interesting magnetic properties of Fe_{1-x}CoxSi,
M K Chattopadhyay, S B Roy and S Chaudhary,
Phys Rev B65 132409 (2002).
9. Anomalous magnetic transition and thermomagnetic



- irreversibility in polycrystalline neodymium,
Kanwal Jeet Singh, Sujeeet Chaudhary, M K Chattopadhyay
and S B Roy,
Solid State Commun. 121 543 (2002).
10. Observation of zincblend phase on InN thin films grown on sapphire by nitrogen plasma assisted pulsed laser deposition, P. Bhattacharya, T.K. Sharma, S Singh, A. Ingale and L. M. Kukreja, J. Crys. Growth, 236, 5 (2002).
 11. Pulsed Laser Deposition of TiO₂ for MTOS Gate Dielectric, R. Paily, A. Dasgupta, N. Dasgupta, P. Bhattacharya, P. Misra, T. Ganguli, L. M. Kukreja, A.K. Balamurugan, S. Rajagopalan, A. Tyagi, Appl. Surf. Sci., 187, 300 (2002).
 12. Surface Photovoltage Spectroscopy of Pulsed Laser Deposited Undoped ZnSe Films on n⁺ GaAs, T. Ganguli, S. Kumar, L. M. Kukreja and K.C. Rustagi, J. Phys.: Condens. Matter, 14, 1813 (2002).
 13. Matrix Assisted Laser Desorption / Ionization with Pulsed Infrared Lasers: Photoacoustic Analysis of Desorption Process, Rohlfiing, C. Menzel, L. M. Kukreja, K. Dreisewerd and F. Hillenkamp Proc. Intl. Conf. Laser Probing LAP-2002, July 7-12, 2002, (To be Published as an Edited Book) Leuven, Belgium.
 14. Long-trace profiler with cyclic optical configuration Sanjib Chatterjee and Y. Pawan Kumar, Applied Optics, 41(28), 5857-5859 (2002).
 15. Peculiarities of harmonics generated from interaction of 27ps laser radiation with solid aluminium targets R.A. Ganeev, J.A. Chakera, M. Raghuramaiah, A.K. Sharma, P. A. Naik, and P.D. Gupta Physica Scripta, 65, 155 (2002)
 16. Equation of state studies at CAT using laser driven shock wave propagation through layered foil targets H.C. Pant, M. Shukla, V.K. Senecha, S. Bandyopadhyay, V.N. Rai, P. Khare, R. Bhat, B. K Godwal and N.K. Gupta. Current Science 82, 149 (2002).
 17. Laser driven shock wave experiments for EOS studies at Mbar pressures H.C. Pant, M. Shukla, V.K. Senecha, S. Badyopadhyay, V.N. Rai, P. Khare, R.K. Bhat, N.K. Gupta and B.K. Godwal J of Physics: Condensed Matter, 14, 10787 (2002).
 18. Asymmetric Self-focusing of a laser pulse in plasma A. Upadhyay, V.K. Tripathi, A.K. Sharma and H.C. Pant J. Plasma Phys., 68, 75 (2002).
 19. A data acquisition and analysis system for on-line calibration and measurements of optical density by a scanning microdensitometer H. S. Vora, J. Upadhyay, P.A. Naik, C.P. Navathe, and P.D. Gupta IETE Technical Review, 19, 65 (2002).
 20. Effect of Hot Electrons on Stimulated Compton scattering of a Laser in a Self Sustained Plasma Channel A. Upadhyay, V. K. Tripathi and H. C. Pant, Physics of Plasmas, 9, 5 (2002).
 21. Weibel instability of relativistic electron flows in a laser produced plasma A. Upadhyay and V.K. Tripathi Plasma Phys. Contr. Fusion 44, 2357 (2002).
 22. Numerical simulation study of laser driven shock wave propagation in planar foil targets V.K. Senecha, J. Zhang, W. Wang, and H.C. Pant J of Physics: Condensed Matter 14, 10917 (2002).
 23. Numerical simulations of the conversion of thermal x-ray radiation from laser produced plasmas and radiation heatings W. Wang, J. Zhang and V.K. Senecha Acta Physica Sinica, 51, 590 (2002).
 24. An Alternative Approach to Determine Fractional Heat Load in Solid State Laser Materials: Application to Diode Pumped Nd:YVO₄ crystal P.K. Mukhopadhyay, Jogy George, K. Ranganathan, S.K. Sharma, and T.P.S. Nathan, Optics & Laser Technology, 34, 253 (2002).
 25. Effect of Absorbed Pump Power on the Quality of Output Beam from Monolithic Microchip Lasers", P.K. Mukhopadhyay, K. Ranganathan Jogy George, S.K. Sharma and T.P.S. Nathan, PRAMANA J of Phy. Vol.58 (4), 657-668 (2002).
 26. Effect of Nd³⁺ Concentration on CW and Pulsed Performance of Fiber - Coupled Diode Laser Pumped Nd:YVO₄ Laser at 1064 nm, Pranab K. Mukhopadhyay, K. Ranganathan, Jogy George, S.K. Sharma, and T.P.S. Nathan, PRAMANA J. of Phy. 59(1), P75-89 (2002).
 27. Beam Quality Considerations of High Power Nd:YAG Lasers", B.N. Upadhyaya, P. Misra, K. Ranganathan, S.C. Vishwakarma, H.N. Golghate, A. Choubey, N. Muthukumar, R.K. Jain, G. Mundra and T.P.S. Nathan, Optics & Laser Technology Vol 34, p193-197 (2002).
 28. Experimental Determination of Effective Stimulated Emission Cross-section in a Diode Pumped Nd : YVO₄ micro-laser at 1064nm with Various Doping Concentrations", Pranab K. Mukhopadhyay, Jogy George, S.K. Sharma, K. Ranganathan, and T.P.S. Nathan, Optics & Laser Techn. Vol 34, p357-362 (2002).
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38. Effect of Seed Orientation on the Growth of TGS Crystals with Large (010) Facets Needed for Detector Applications",
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39. In-situ Measurements of pH and Supersaturation-Dependent Growth Kinetics of Prismatic and Pyramidal Facets of KDP Crystals,
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40. Modelling of Relaxor -Ferroelectric Behaviour of PMN-PT and PMN-PZ Ceramics
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41. Novel seeding technique for growing KTiOPO₄ single crystals by TSSG method,
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43. Maximization of Yield of ¹³C Isotope by Multiphoton Dissociation of Freon-22 for Macroscopic Production of ¹³C Isotope using High Average Power TEA CO₂ laser,
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Proc. Indian Acad. Sci.(Chem. Sci.), 114, 659 (2002).
44. Laser power coupling efficiency in conduction & keyhole welding of Austenitic stainless steel,
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45. Laser assisted deposition of graded overlay of stellite 6 on austenitic stainless steel"
Rakesh Kaul, P. Ganesh, M K Tiwari, A K Singh, Pragya Tripathi, Ajay Gupta and A K Nath,
Lasers in Engineering, 12, No.3, 207 (2002).
46. Micro-structural Characterization of Dissimilar Weld of Alloy D9 and AISI 316M Stainless Steel Made with 2.5kW CW CO₂ Laser"
Rakesh Kaul, P. Ganesh, M+. O. Ittoop, A. K. Nath, Aniruddha Kumar, R. B. Bhatt, and Arun Kumar,
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50. Laser related activities at CAT
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51. End plug welding of PFBR Fuel Tubes with a 2.5 kW CO₂ Laser,
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58. Optical constants of silicon and silicon dioxide using soft x-ray reflectance measurements
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61. Development of a total reflection X-ray fluorescence spectrometer for ultra-trace element analysis
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R V Nandedkar, K J S Sawhney, G S Lodha, A Verma, V K Raghuvanshi, A K Sinha, M H Modi and M Nayak,
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63. Irradiation induced metastable phase formation and amorphization in an immisible Co/Ag multilayer
S Amritapandian, BK Panigrahi, AK Shrivastava, Ajay Gupta, KGM Nair, RV Nandedkar, A Naryanswamy
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65. Passive circuit limits inrush current, Sunil Tiwari and Mangesh Borage, Electronics Design News, 93-94, September 2002.
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- National/International Seminars/ Conferences**
1. Pulse shortening in a large-bore copper laser B Singh
 2. On the oscillator-amplifier performance of copper lasers. B Singh. *ibid*.
 3. Performance characteristics of discharge heated copper lasers - A comparative study on different tube diameters B Singh, VV Subramaniam, S V Nakhe. *ibid*.
 4. Discharge characterization of a large-bore copper laser system. B Singh, S V Nakhe, D V Ghodke, *ibid*.
 5. Measurement of pulse front tilt across a femtosecond laser beam M.Raghuramaiah, A.K.Sharma, P.A.Naik, and P.D.Gupta, *ibid*.
 6. Characterization of sonic and hypersonic nozzles for cluster formation in gas puff for laser plasma interaction studies. S.Sailaja, P.A.Naik, S.R.Kumbhare, and P.D.Gupta, *ibid*
 7. EMI shielding in high voltage electro-optic switching using metallic enclosures in an optical regenerative amplifier A.K.Sharma, K.K.Mishra, M.Raghuramaiah, P.A.Naik, M.S.Bhatia, and P.D.Gupta *ibid*
 8. Interferometric determination of gas density and measurement of cluster formation in gas puff of laser plasma interaction studies S.Sailaja, P.A.Naik, A.Moorti, H.R.Bundel, and P.D.Gupta *ibid*
 9. Detection and measurement of temporal drift in laser pulse repetition frequency of a CW mode locked femtosecond laser oscillator A.K.Sharma, M.Raghuramaiah, K.K.Mishra, P.A.Naik, and P.D.Gupta *ibid*
 10. Mode matching of sub-nanosecond oscillator for coupling to a high power Nd: glass laser chain M.P.Kamath, A.S. Joshi, P.K. Tripathi, A.P. Kulkarni *ibid*
 11. A PC based control system for multistage high power laser chain C.P. Navathe, M.S. Ansari, J. Upadhyay, S. Nigam and N. Sreedhar *ibid*
 12. Degree of stability and its measurements: Application to diode pumped solid state laser. Jogy george, K.Ranganathan, P. K. Mukhopadhyay S.K.Sharma, & T.P.S.Nathan, *ibid*
 13. 11.3 watts of CW IR power at 1064 nm from diode end-pumped Nd:YVO₄ laser, P. K. Mukhopadhyay, K. Ranganathan, N. Muthukumaran Jogy george, S.K.Sharma, P K Gupta and T. P. S. Nathan, *ibid*.
 14. Pump power induced thermal lensing and diffraction losses in Nd: CNGG crystal, P. K.Mukhopadhyay, K.Ranganathan, P K Gupta and T.P.S.Nathan, *ibid*.
 15. Experimental determination of thermo-optical coefficient of an a-axis cut Nd:GdVO₄ crystal, P.K. Mukhopadhyay, K.Ranganathan, N.Muthukumaran, Jogy george, S.K.Sharma, P K Gupta and T.P.S.Nathan, *ibid*.
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 17. Passive Q-switching of a-axis cut Nd:YVO₄ laser using Cr:YAG under high power CW diode laser pumping: Effect of initial transmission, P. K. Mukhopadhyay, K.Ranganathan, D.Kapda, Jogy george, S.K.Sharma, and T.P.S.Nathan, *ibid*.



18. Development of Multirod CW Nd:YAG Laser, K.Ranganathan, V.Bhawsar, B.N.Upadhyaya, P.Misra, S.C.Vishwakarma, N.Muthukumar, P.Choudhary and T.P.S.Nathan, *ibid.*
19. Power Scaling of Nd:YAG Lasers with Dual Cavity Resonator, B. N. Upadhyaya, P.Misra, K.Ranganathan, S. C.Vishwakarma, A.Choubey, and T.P.S.Nathan, *ibid.*
20. Measurement of Laser Head Parameters by Delay-Time Analysis, R. Sundar, B. N. Upadhyaya, K. Ranganathan and T. P. S. Nathan, *ibid.*
21. Hand-Operated Laser Manipulator for Coolant Channel to Feeder coupling Bolts Cutting (For PHWR) G. Mundra, B. N. Upadhyay, R. K. Jain & T. P. S. Nathan, *ibid.*
22. Irradiation Capsule Laser Welding Machine G. Mundra, B. N. Upadhyay, R. K. Jain, P. Mishra, Choube, S. C. Vishwakarma, V. Bhavsar, R. Arya, R. Kaul, K. Ranganathan and T. P. S. Nathan, *ibid.*
23. A compact, versatile power supply for low power CO₂ laser, R. Arya, Manoj Kumar, S.K. Sah and T.P.S. Nathan, *ibid.*
24. Non-invasive Intra-tissue Micromanipulation and 3D Sorting of Intracellular Organelles within Intact Living Higher Plants with Near Infrared Laser Traps, U. K. Tirlapur, S. K. Mohanty, B. Jain, Karsten König and P. K. Gupta, *ibid.*
25. Effect of Nitrogen Laser (337 nm) Irradiation on Clinical Isolates of Mycobacterium Tuberculosis, A Dube, L. Prabakaran, K. Jayasankar, V. Kumar and P.K. Gupta, *ibid.*
26. Enhancement of Photodynamic Action of Delta-Aminolaevulinic Acid Induced Protoporphyrins in Antibiotic Resistant Strain of Pseudomonas Aeruginosa by Glutathione", M. Sharma, H. Bansal and P. K. Gupta, *ibid.*
27. Fluorometric Estimation of Concentration of NADH from Human Blood Samples, A Uppal, N. Ghosh, A. Datta and P.K. Gupta, *ibid.*
28. Membrane Damage Kinetics of Cells Under Nd: YAG Laser Trapping, S.K.Mohanty, B. Jain, M. Sharma, A. Uppal, and P.K. Gupta, *ibid.*
29. Determination of Li/Nb ratio in LiNbO₃ crystals modified by vapour transport equilibration (VTE) method Rajeev Bhatt, Sujan Kar, and K.S. Bartwal, *ibid.*
30. Optical characterization and second harmonic generation in pure and doped LiNbO₃, P. Sen, S. Kotasthane, P. K. Sen, S. Kar, R. Bhatt and K.S. Bartwal, *ibid.*
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