



INVITED TALKS

1. Studies of laser plasma interaction and applications at CAT
P.D. Gupta, Workshop on "Laser plasma interaction and related phenomena" IPR, Gandhinagar, January 2003.
2. Generation of thermal x-ray radiation inside spherical gold cavities using a high power laser beam
A.S. Joshi, *ibid.*
3. Simulations and experiments on laser driven shocks
V.K. Senecha, *ibid.*
4. A set of three invited lectures on Laser Technology
A.S. Joshi, SERC School on 'Plasma based particle accelerator's at SINP, Kolkata, Feb. 3-21, 2003.
5. A set of two invited lectures on "Laser Plasma Interaction"
P.A. Naik, *ibid.*
6. Fluorescence based early detection of cancer
P.K. Gupta, CEP Course on Fluorescence techniques in biological research, INMAS, Delhi, Feb. 24-28, 2003.
7. The effect of Cr^{3+} ions on $LiNbO_3$ crystal lattice
K. S. Bartwal, "9th National Seminar on Crystal Growth", Anna Uni. Chennai, Feb. 24-26, 2003.
8. Laser induced breakdown spectroscopy and its application in elemental analysis
V.N. Rai, Plasma - 2003, BITS, Ranchi, Dec.8-11, 2003.
9. Lasers for Mankind
L. M. Kukreja, 7th Asian Regional Seminar on Peaceful Uses of Atomic Energy, New Delhi, Sept. 23-25, 2003.
10. Pulsed Laser Deposition of Nanostructured Semiconductors
L.M. Kukreja, National Symposium on Pulsed Laser Deposition of Thin Films Pune, Nov. 14-15, 2003.
11. Pulsed Laser Deposition of Semiconductor Quantum Structures
L.M.Kukreja, 12th International Workshop on the Physics of Semiconductor Devices (IWPSD-2003), IIT Chennai, Dec. 16-20, 2003.
12. Development of a table top terawatt Nd: glass laser system and ultra short pulse diagnostics
A.K. Sharma, DAE-BRNS National Laser Symposium, held at IIT, Kharagpur, Dec22-24, 2003.
13. Micromanipulation with Laser
S. K. Mohanty, *ibid.*
14. Lasers and Nanotechnology: Pulsed Laser Deposition of Semiconductor Quantum Structures,
L.M.Kukreja, *ibid.*

PATENT

1. Apparatus and method for transport of microscopic object(s)
S. K. Mohanty and P. K. Gupta, patent application no. PCT/INO3/00277 Date 20.08.2003.

JOURNALS

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3. Bajwa, N., Dharamvir, K., Jindal, V.K., Ingale, A., Awasthi, D.K., Kumar, R., Tripathi, A., Journal of Applied Physics vol. 94, no. 1, p. 326-32, 2003.
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5. Bajwa N., Ingale A., Avasthi D. K., Kumar R., Tripathi A., Dharamvir K., and Jindal V. K., Radiation Measurements, Vol 36, 1-6, P.737-740, 2003.
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15. Chatterjee, S., Prakash, O., Optics and Laser Tech. vol. 35, no. 2, p. 133-36, 2003.
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25. Dixit, V.K., Keerathi, K.S., Bera, P., Bhat, H.L., *J of Crystal Growth* vol. 241, no. 3, p. 171-76, 2003.
26. Dube, A., Bansal, H., Gupta, P.K., *Photochemical and Photobiological Sciences* vol. 2, p. 1-6, 2003
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39. Kukreja, L.M., Joshi, V.B., Bhagwat, A.M., Chatterjee, U.K., Bhawalkar, D.D., *Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms* vol. 28, p. 369-376, 2003.
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SEMINARS / CONFERENCES

1. Near stoichiometric LiNbO₃ crystal wafers by VTE process
Sujan Kar, Rajeev Bhatt, K.S. Bartwal and V.K. Wadhawan Proc. "9th National Seminar on Crystal Growth", Anna Uni. Chennai, Feb. 24-26, 2003.
2. Studies on TGS crystals doped with aniline
S. Satapathy, K.S. Bartwal and W.K. Wadhawan, *ibid.*
3. Polarization characterization of second harmonic generation in pure and doped LiNbO₃
S. Kotasthane, P.Sen, P.K. Sen, S.Kar, R. Bhatt, and K.S. Bartwal, *ibid.*
4. Development of crystal growth machine
R.Sridhar, M.Joshi, P.P.Deshpande, K.S.Bartwal, A.S.Raja Rao, A.G.Bhujle, and V.K.Wadhawan, *ibid.*
5. SHG efficiency of Ba-doped lead tetra borate crystals
Vijay Shukla, K.S. Bindra, S.M.Oak, Sujan Kar, R. Bhatt, and K.S. Bartwal, *ibid.*
6. Studies on nonlinear optical properties of ferroelectric MgO-LiNbO₃ single crystals
R. Bhatt, S. Kar, V. Shukla, P. Sen, P.K. Sen, K.S. Bartwal and V.K. Wadhawan, *ibid.*
7. Field test to assess durability of concrete
A Kameshwar Rao, G Parchani, S M Humad. 8th international conference of National Council of Cement & Building Materials New Delhi. Nov 2003.
8. Controlled laser assisted 3D rotation of microscopic objects
S. K. Mohanty, and P. K. Gupta, Proceedings of International Conference on Laser applications and Optical Metrology (ICLAOM-03), IIT Delhi, Delhi, Dec.1-4, 2003.
9. Optical tweezers assisted intra-cellular micro-fabrication and rotation
S. K. Mohanty, and P. K. Gupta, APHYS 2003-first International meeting on Applied Physics, Badajoz, Spain Oct.15.-18, 2003.
10. Three-dimensional orientation of microscopic objects using combined line and point optical tweezers
S. K. Mohanty, R. Dasgupta and P. K. Gupta, *ibid.*
11. Study of optical emission from laser-produced chromium plasma under the effect of two sequential laser pulses.
V. N. Rai, F. Y. Yueh and J. P. Singh 18th Symposium of Science and Technology of Plasma, BIT, Mesra, Ranchi Dec.8-11, 2003.
12. Low cost ethernet programmable nanosecond delay generator
Rajiv Jain, S.V. Nakhe, V.K. Dubey National Symposium on Instrumentation (NSI-28), Nov-2003.



13. Ethernet enabled control systems: A non-PC reality
Rajiv Jain, K.K. Sharangpani, *ibid.*
14. Electron accelerators for food preservation – where are we in India?
H.C.Soni, “5th International Food Convention” CFTRI, Mysore, Dec.5-8, 2003.
15. Comparative evaluation of stresses for bar-clip and ball-socket overdenture attachment design: a three dimensional finite element study
Sumeet Jain (college of dentistry, Indore), Abhay Kumar (CAT) and Deshraj Jain (College of Dentistry, Indore) “World Congress on Prosthodontics”, New Delhi, Nov.26-29, 2003.
16. Development of electron beam equipments for industrial applications at CAT
S.C.Bapna S.V.Venkateswaran, Pramod R., Pankaj Kumar, R.Banwari, A. Kasliwal and R.Sridhar “Indo-Bulgarian Workshop” on Electron Beam Technology and Applications, BARC, Mumbai, Nov.19-21, 2003.
17. Vacuum system for 750 keV DC accelerator - operational experience and present status
S.V. Venkateswaran, C.K. Ramachandran and S.C. Bapna National Symposium on Vacuum Science & Technology and Vacuum Metallurgy (IVSNS 2003), BARC, Mumbai, Oct. 15 - 17, 2003.
18. Textures and microstructures in lithium ferrite films sputtered onto Si(100)
Lakshmikanta Aditya, R. S. Shinde, J. Dash, I. Samajdar, N. Venkataramani and Shiva Prasad, Conference of Research Scholars in Materials Science and Engineering, CRSMSE-2003, IIT Kharagpur, Aug.30-31, 2003.
19. Passive techniques for compliance of single-phase rectifiers with IEC 1000-3-2 norms,
Mangesh Borage, Sunil Tiwari and S. Kotaiah, *ibid.*
20. Common-mode noise source and its passive cancellation in full-bridge resonant converter,
Mangesh Borage, Sunil Tiwari and S. Kotaiah, *ibid.*
21. Laser hardfacing of austenitic stainless steel with colmonoy 6
Rakesh Kaul, P.Ganesh, S. K. Albert, N. P. Lalla, A.Gupta, H. Kumar, O. P. Joshi, A. P. Paul and Pankaj Bhargava, International Conf. on Advances in Surface Treatment: Research & Applications - 2003, Nov. 3-6, Hyderabad, 2003.
22. Laser surface alloying of austenitic stainless steel with Cr and Ni for enhanced corrosion resistance,
Rakesh Kaul, U. Kamachi Mudali, P. Ganesh, R. Jagdeesh, A. K. Singh, M. K. Tiwari, V. S. Raju, H. S. Khatak and A. K. Nath, *ibid.*
23. Functionally graded silicon alloyed stainless steel coatings on AISI 304L stainless steel,
R. Jagdeesh, Rakesh Kaul, U. Kamachi Mudali, P. Ganesh, A. K. Nath, D.Sastikumar and H. S. Khatak, *ibid.*
24. Functionally graded surface modification for improving properties of stainless steel
U. Kamachi Mudali, Rakesh Kaul, A. K. Nath, H. S. Khatak and Baldev Raj, *ibid.*
25. Surface modification of AISI 316L stainless steel with Cr and SiC by laser Processing,
R. Jagdeesh, D. Sastikumar, M. J. M. Jaffer and A. K. Nath, *ibid.*
26. Laser-assisted dissimilar metal welding of austenitic and ferritic stainless steels
R. Kaul, P. Ganesh and A. K. Nath, National Seminar on Advances in Welding & Fabrication –2003, Bhopal, Nov.5-6, 2003,
27. SS 316L powder cladding on structural steel using continuous wave CO₂ laser
Ambrish Yadav, N. Arora, B. K. Gandhi, A. K. Nath, C. P. Paul. XIII National Conf. of Indian Society of Mechanical Engineers, IIT Roorkee, Dec.30-31, 2003.
28. Development of 5-axes manipulator for laser material processing,
P. Bhargava, C. P. Paul and A. K. Nath, *ibid.*
29. Laser rapid manufacturing using Co-axial powder feeding system
B. P. Paul, P. Bhargava, J. Negi, A. K. Nath, *ibid.*
30. Automated calibration of CAMAC interface time to digital converter using programmable delay generator
Shradha Palod, A. G. Bhujle, National Symposium on Instrumentation (NSI-28) by Instrument Society of India and G.B. Pant University for Agriculture and technology, Pantnagar Nov.3-5. 2003.
31. Automation of experiments on CAT reflectivity beamline of INDUS-1 accelerator
Shradha Palod, Viraj Bhanage, A. G. Bhujle, *ibid.*
32. A novel power supply for arc lamp pumped solid-state laser
Sajith Kumar, R.Arya, and T.P.S. Nathan, *ibid.*
33. Instrumentation for tunable diode laser
Jagriti Khanwalkar, R. Arya, and T.P.S. Nathan, *ibid.*
34. A compact high resolution two-channel isolated reference voltage generator for power supplies
Vijay Bhawsar, Ashutosh Sharma, R.Arya, and T.P.S. Nathan, *ibid.*
35. Design of 4-axes laser welding work-station (machine) for cardiac pacemaker
G. Mundra, A. Choube, M.R. Jathar, R. Arya, S. C. Vishwakarma & T. P. S. Nathan NWS-2002, National Welding Seminar, Jan.23-25, 2003.
36. Effect of linear betatron coupling on amplitude beta function in INDUS-2 electron storage ring
Pradeep Kumar, A.D.Ghodke and Gurnam Singh, Proceeding in DAE-BRNS symposium on Nuclear Physics pp 488-489 Vol 46 B (2003) BARC, Mumbai Dec.8-12, 2003.



37. A Simple and precise TXRF spectrometer: construction and its applications
M. K. Tiwari, K.J.S. Sawhney, B. Gowri Sankar, V. K. Raghuvanshi and R.V. Nandedkar, Presented in 10th International Conference on Total reflection X-ray Fluorescence Spectrometry (TXRF-2003) Japan, Sept. 14-19, 2003.
38. Cu²⁺ ion diffusion studies on lithium niobate crystals
S. Kar, Rajeev Bhatt and K. S. Bartwal Proc. DAE-BRNS Solid State Physics Symposium, Gwalior, Dec. 24-28, 2003.
39. Influence of analyte concentration on detection limit determination in x-ray fluorescence (XRF) spectrometry
M.K. Tiwari, A.K. Singh, K.J.S. Sawhney, *ibid.*
40. Effect of MgO doping on second order susceptibility of LiNbO₃ crystal
P. Sen, R. K. Choubey, M. Das, R. Bhatt, Kar and K. S. Bartwal Proc. "DAE-BRNS National Laser Symposium", IIT Kharagpur, Dec. 24-26, 2003.
41. Optic axis and optic sign determination of uniaxial LiNbO₃ crystal using polarizing optical microscope
S. Kar, Rajeev Bhatt, Gurvinderjit Singh, Gaurav Goel¹, and K. S. Bartwal, *ibid.*
42. Etching studies on non-linear optical PbB₄O₇ single crystal
Rajeev Bhatt, S. Kar, and K. S. Bartwal, *ibid.*
43. Development and characterization of an injection Q-switched Nd: phosphate glass regenerative amplifier for a CPA based Table Top Terawatt laser system
A.K. Sharma, M. Raghuramaiah, K.K. Mishra, P.A. Naik, S.R. Kumbhare and P.D. Gupta, *ibid.*
44. Simple and sensitive method for quantitative estimation of linear and higher order chirp in ultrashort laser pulses
A.K. Sharma, P.A. Naik and P.D. Gupta, *ibid.*
45. PROMISE for FROG
H.S. Vora, Rama Chari, M.R. Jathar, A.K. Sharma, M. Raghuramaiah, and S.M. Oak
46. Improvement in quality of Nd: doped phosphate laser glass using indigenous pure metaphosphate chemicals
A.S. Joshi, S. Jain, A.P. Kulkarni, and R. N. Dwivedi, *ibid.*
47. Design and performance of a cylindrical lens polishing machine,
L. Sudarsanam, A. M. Kher, and S. Chatterjee, *ibid.*
48. Generation of Silicon Nano Particles with Enhanced Photoluminescence in UV
D.K. Kohli, R.K. Khardekar, N. Ghosh and D.D. Bhawalkar, *ibid.*
49. Sol-gel Derived CaO-Na₂O-B₂O₃-SiO₂ glass starting materials for laser fusion targets
Arun Kumar, Rashmi Singh and R.K. Khardekar, *ibid.*
50. Development of thyatron based high repetition rate pulse generator for pulsed gas discharges
Praveen Agarwal & S.V. Nakhe, *ibid.*
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