

## Journals and proceedings:

1. "Three-dimensional image formation under single-photon ultra-short pulsed illumination", Arijit Kumar De, Debabrata Goswami, *Proceedings of SPIE: Scanning Microscopy 2009* (accepted, in preparation).
2. "Coherent control in multiphoton fluorescence imaging", Arijit Kumar De, Debabrata Goswami, *Proceedings of SPIE: Multiphoton Microscopy in the Biomedical Sciences IX 2009* (in press).
3. "Two-photon cross section measurements using an optical chopper: z-scan and two-photon fluorescence schemes", Amit Nag, Arijit Kumar De, Debabrata Goswami, *Journal of Physics B: Atomic, Molecular and Optical Physics* (in press).
4. "Exploring the Nature of Photo-Damage in Two-Photon Excitation by Fluorescence Intensity Modulation", Arijit Kumar De, Debabrata Goswami, *Journal of Fluorescence: Rapid Comm.* (in press, DOI: 10.1007/s10895-008-0405-3).
5. "Molecular structure-property correlations from optical nonlinearity and thermal-relaxation dynamics", Indrajit Bhattacharyya, Shekhar Priyadarshi and Debabrata Goswami, *Chemical Physics Letters*, **469**(1-3), 104-109 (2009).
6. "Adding new dimensions to laser-scanning fluorescence microscopy", Arijit Kumar De and Debabrata Goswami, *Journal of Microscopy*, **233**(2), 320-325 (2009).
7. "Acyclic donor-acceptor-donor chromophores for large enhancement of two-photon absorption cross section in presence of Mg(II), Ca(II) or Zn(II) ions", D. Ray, A. Nag, D. Goswami, P.K. Bharadwaj; *Journal of Luminescence*, **129**(3), 256-262 (2009).
8. "Coded Nano Scale Self Assembly", Prathyush Samineni and Debabrata Goswami, *Pramana-Journal of Physics*, **71**(6) 1345-1351 (2008).
9. "Attachment of Different Donor Groups to a Cryptand for Modulation of Two-Photon Absorption Cross-Section", Atanu Jana, So Young Jang, Jae-Yoon Shin, Arijit Kumar De, Debabrata Goswami, Dongho Kim, Parimal K. Bharadwaj, *Chemistry - A European Journal*, **14**(34):10628-38 (2008).
10. "Diaza-18-crown-6 based chromophores for modulation of two-photon absorption cross-section by metal ions", Atanu Jana, Arijit Kumar De, Amit Nag, Debabrata Goswami, Parimal Kumar Bharadwaj, *Journal of Organometallic Chemistry*, **693**(7), 1186-1194 (2008).
11. "A simple method for constructing and calibrating an optical tweezer", Arijit Kumar De, Debjit Roy, Bikram Saha, Debabrata Goswami, *Current Science*, **95**(6), Sept. 25 (2008).
12. "Propagation of complex shaped ultrafast pulses in highly optically dense samples", J.C. Davis, M.R. Fetterman, W.S. Warren and D. Goswami, *Journal of Chemical Physics*, **128**, 154312 (2008).
13. "A Sensitive Technique for Two-Photon Absorption Measurements: Towards Higher Resolution Microscopy", Amit Nag, Arijit Kumar De, Debabrata Goswami, *Journal of Physics: Conference Series*, **80**, 012034 (2007).
14. "Nonlinear optical properties of free standing films of Pbs quantum dots in the nonresonant femtosecond regime", P.A. Kurian, C. Vijayan, A. Nag and D. Goswami, *Proceedings of SPIE*, **6639** (2007).
15. "Probing Coherence Aspects of Adiabatic Quantum Computation and Control", Debabrata Goswami, *J. Chem. Phys.* **127** 124305 (2007).
16. "Metal induced enhancement of fluorescence and modulation of two-photon absorption cross-section with a donor-acceptor-acceptor-donor receptor", Sanjib Das, Amit Nag, Kalyan K. Sadhu, Debabrata Goswami, P. K. Bharadwaj, *Journal of Organometallic Chemistry* (2007).
17. "One-Pot Synthesis of Core-Modified Rubyrin, Octaphyrin, and Dodecaphyrin: Characterization and Nonlinear Optical Properties", Rajeev Kumar, Rajneesh Misra, Tavarekere K. Chandrashekar, Amit Nag, Debabrata Goswami, Eringathodi Suresh, Cherumuttathu H. Suresh, *European Journal of Organic Chemistry*, **27**, 4552-4562 (2007).
18. "Modulation of Cross-correlation traces by pulse-shaping with spatial mask", Arijit Kumar De, Udai Singh Pawar, S. K. Karthick Kumar and Debabrata Goswami, *Current Science*, **92**(10) 1346-1349 (2007).
19. "Ultrafast Pulse Shaping Developments for Quantum Computation", S.K. Karthick Kumar and Debabrata Goswami, *Current Topics in Atomic, Molecular and Optical Physics*, World Scientific Publishing Co. Pvt. Ltd. Singapore (2007) 133-142.
20. "On the practicality of Adiabatic Quantum Computing with Optical Schemes", Debabrata Goswami, *Int. Jour. of Quantum Information*, **5**(1-2) 179-188 (2007).

21. "Adiabatic Quantum Computation: Coherent Control Back Action", D. Goswami, *Quantum Computation Back Action 2006*, AIP Proceedings **864**, AIP Press, New York (2006) pp273-294.
22. "22 $\pi$  Smaragdyrin Molecular Conjugates with Aromatic Phenylacetylenes and Ferrocenes; Syntheses, Electrochemical and Photonic Properties", R. Misra, R. Kumar, T. K. Chandrashekar, C. H. Suresh, A. Nag and D. Goswami, *Journal of The American Chemical Society*, **128**(50) 16083-16091 (2006).
23. "Scalability in Ensemble Quantum Computing with Phase Modulated Laser Pulses", Debabrata Goswami, *Quantum Information, Computation and Communication* (ISBN: 81- 8424-064-3), Allied Publishers, New Delhi, 2006, pp 99-110.
24. "Structure property correlations in alcohols through two-photon absorption cross-section measurements", Amit Nag, Sherdeep Singh and Debabrata Goswami, *Chemical Physics Letters*, **430**(4-6), 420-423 (2006).
25. "Dependence of adiabatic population transfer on pulse profile", S. Dasgupta, T. Kushawaha, D. Goswami, *Pramana—Journal of Physics*, **66**(6) 999-1015 (2006).
26. "High sensitive measurements of absorption coefficient and optical nonlinearities", Debabrata Goswami, *Optics Communications*, **261**(1), 158-162 (2006).
  - "Erratum to "High sensitive measurements of absorption coefficient and optical nonlinearities", [Opt. Commun. 261 (2006) 158-162]", Debabrata Goswami, *Optics Communications*, **280**(1), 236 (2007).
27. "Modified (22 $\pi$ ) smaragdyrins with large two-photon absorption cross section: A structure function correlation", Rajneesh Misra, Rajeev Kumar, Tavarekere K. Chandrashekar, Amit Nag, and Debabrata Goswami, *Organic Letters* **8**(4), 629-631 (2006).
28. "Zinc(II)- and copper(I)-mediated large two-photon absorption cross sections in a bis-cinnamaldiminato Schiff base", Sanjib Das, Amit Nag, Debabrata Goswami and Parimal K. Bharadwaj, *Journal of the American Chemical Society*, **128**(2), 402-403 (2006).
29. "Aromatic core modified decaphyrins with the largest two-photon absorption cross-sections: Syntheses and characterization", H. Rath, V. Prabhuraja, T. K. Chandrashekar, A. Nag, D. Goswami, B. S. Joshi, *Organic Letters* **8**(11) 2325-2328 (2006).
30. "Quantum Computation with Ultrafast Laser Pulse Shaping", Debabrata Goswami, *Resonance* **10**(6), 8-14 (June 2005).
31. "Multiphoton coherent control in complex systems", Debabrata Goswami, *Journal of Optics B: Quantum and Semiclassical Optics*, **7**(10), S265-S269 (2005).
32. "Adiabatic quantum computing with phase modulated laser pulses", Debabrata Goswami, *Journal of Physics A: Mathematical and General* **38**(38), L615-L626 (2005).
33. "Core-modified expanded porphyrins with large third-order nonlinear optical response", Harapriya Rath, Jeyaraman Sankar, Viswanathan PrabhuRaja, Tavarekere K. Chandrashekar, Amit Nag and Debabrata Goswami, *Journal of the American Chemical Society*, **127**(33), 11608-11609 (2005).
34. "Polarization-induced modulation of a femtosecond nonlinear process", Alok Srivastava and Debabrata Goswami, *Physics Letters, Section A: General, Atomic and Solid State Physics*, **341**(5-6), 523-526 (June 2005).
35. "Ultrafast Pulse Shaping for All-Optical Switching & Adiabatic Quantum Computing", Debabrata Goswami, *Topical Conference on Atomic, Molecular and Optical Physics (TC-2005)*, IACS, Kolkata, India, Dec. 13-15 (2005).
36. "Ultrafast Pulse Shaping and its Applications", Debabrata Goswami, *Frontiers in Atomic, Molecular & Optical Physics*, **3**, 389 (2003).
37. "Optical Computing: 2. Research Trends", Debabrata Goswami, *Resonance* **8**(7), 8-21 (July 2003).
38. "Optical Computing: 1. Optical Components and Storage Systems", Debabrata Goswami, *Resonance* **8**(6), 56-71 (June 2003).
39. "Control of supercontinuum generation with polarization of incident laser pulses", Alok Srivastava and Debabrata Goswami, *Applied Physics B: Lasers and Optics*, **77**(2-3), 325-328 (2003).
40. "Optical pulse shaping approaches to coherent control", Debabrata Goswami, *Physics Reports*, **374**(6), 385-481 (February 2003).
41. "Decoherence Control in Quantum Computing with Simple Chirped Pulses", Debabrata Goswami, *Pramana—Journal of Physics*, **59**(2), 235-242 (August 2002).
42. "Ultrafast Photophysics and Photochemistry in Solution", D. Goswami and E.W. Castner, Jr., *Indian Journal of Chemistry A (Special Issue on Bioinorganic Chemistry)* **41**, 129 (2002).

43. "Laser phase modulation approaches towards ensemble quantum computing", Debabrata Goswami, *Physical Review Letters*, **88**(17), 177901/1—177901/4 (29 April 2002).  
"Erratum: Laser phase modulation approaches towards ensemble quantum computing", Debabrata Goswami, *Physical Review Letters*, **89**(27), 279901/1 (30 December 2002).
44. "Prospects of ultrafast pulse shaping", Alok Sharan and Debabrata Goswami, *Current Science*, **82**(1), 30-37 (2002).
45. "Fast-frequency-hopping modulation and detection demonstration", M.R. Fetterman, J.C. Davis, H.-S. Tang, W. Yang, D. Goswami, J.-K. Rhee and W.S. Warren, *Journal of the Optical Society of America B: Optical Physics*, **18**(9), 1372-1376 (2001).
46. "Coherent control of multiphoton transitions with femtosecond pulse shaping", S.A. Hosseini and Debabrata Goswami, *Physical Review A. Atomic, Molecular, and Optical Physics*, **64**(3), 033410/1—033410/7 (September 2001).
47. "High-ratio electro-optical data compression for massive accessing networks using AOM-based ultrafast pulse shaping", Weiguo Yang, Matthew R. Fetterman, Debabrata Goswami and Warren S. Warren, *Journal of Optical Communications* **22**(1), 15-18 (2001).
48. "Suppression of supercontinuum generation with circularly polarized light", Arvinder S. Sandhu, Sudeep Banerjee and Debabrata Goswami, *Optics Communications* **181**(1), 101-107 (2000).
49. "Driving wave packet recurrences with optimally modulated laser pulses", Boyd M. Goodson, Debabrata Goswami, Herschel Rabitz, and Warren S. Warren, *Journal of Chemical Physics*, **112**(11), 5081-5090 (2000).
50. "Real-time adaptive amplitude feedback in an AOM-based ultrafast optical pulse shaping system", Weiguo Yang, Feng Huang, Matthew R. Fetterman, Jennifer C. Davis, Debabrata Goswami and Warren S. Warren, *IEEE Photonics Technology Letters*, **11**(12), 1665-1667 (1999).
51. "Altering excitation dynamics in optically dense media using shaped ultrafast laser pulses", Jennifer C. Davis, Matthew R. Fetterman, Debabrata Goswami, Weiguo Yang, Dorine Keusters and Warren S. Warren, *IQEC, Intl. Quantum Electronics Proc. (CLEO)* 107-108 (1999).
52. "Propagation of complex laser pulses in optically dense media", M. Fetterman, J.C. Davis, D. Goswami, W. Yang and W. S. Warren, *Physical Review Letters* **82**(20), 3984-3987 (1999).
53. "Generation of amplified shaped pulses for highly adiabatic excitation", Matthew Fetterman, Debabrata Goswami, Dorine Keusters, June-Koo Rhee and Warren S. Warren, *Springer Series in Chemical Physics*, **63**, 24-26 (1998).
54. "Optical wavelength domain code-division multiplexing using an AOM-based ultrafast optical pulse shaping approach", Weiguo Yang, Jennifer Davis, Debabrata Goswami, Matthew Fetterman and Warren S. Warren, *Proceedings of SPIE* **3531**, 80-87 (1998).
55. "Rapid ultrafine-tunable optical delay line at the 1.55- $\mu\text{m}$  wavelength", Weiguo Yang, Dorine Keusters, Debabrata Goswami and Warren S. Warren, *Optics Letters*, **23**(23), 1843-1845 (1998).
56. "Ultrafast pulse shaping: amplification and characterization", M.R. Fetterman, D. Goswami, D. Keusters, W. Yang, J.-K. Rhee, W.S. Warren, *Optics Express*, **3**(10), 366-375 (1998).
57. "Laser enhanced NMR spectroscopy, revisited", Warren S. Warren, Debabrata Goswami, and Suzanne Mayr, *Molecular Physics*, **93**(3), 371-375 (1998).
58. "Effects of Pulses with Simple Phase and Amplitude Modulations", Debabrata Goswami and Warren S. Warren, *Phys. Rev A*, **50**, 5190 (1994).
59. "Adiabatic population transfer with frequency-swept laser pulses", J. S. Melinger, Suketu R. Gandhi, A. Hariharan, D. Goswami, and W. S. Warren, *Journal of Chemical Physics*, **101**(8), 6439-6454 (1994).  
"Erratum: Adiabatic population transfer with frequency-swept laser pulses", J. S. Melinger, S. R. Gandhi, A. Hariharan, D. Goswami, and W. S. Warren, *Journal of Chemical Physics*, **102**, 5574 (1995).
60. "Femtosecond laser pulse shaping by use of microsecond radio-frequency pulses", C. W. Hillegas, J. X. Tull, D. Goswami, D. Strickland and W. S. Warren, *Optics Letters*, **19**(10), 737-739 (1994).
61. "Control of Chemical Dynamics by Restricting Intramolecular Vibrational Relaxation", Debabrata Goswami and Warren S. Warren, *J. Chem. Phys.* **99**, 4509 (1993).
62. "Laser-enhanced NMR spectroscopy: Theoretical considerations", R. A. Harris, I. Tinoco, Jr., W. S. Warren, S. Mayr, D. Goswami and A. P. West, Jr., *Science* **259**(5096), 835-836 (1993).
63. "Laser-enhanced NMR spectroscopy", W. S. Warren, S. Mayr, D. Goswami and A. P. West, Jr., *Science* **255**(5052), 1683-1685 (1992).

64. "Fluorescence Quenching of few Aromatic-Amines by Chlorinated Methanes", D. Goswami, R. S. Sarpal, and S. K. Dogra, *Bull. Chem. Soc. Japan* **64**, 3137 (1991).

## Books and chapters:

1. "Nanocomputing, The power of computing", Vishal Sahni and Debabrata Goswami, ISBN-13: 9780070248922, McGraw-Hill India, New Delhi, 174 pages, July 2008.
2. "Control of Chemical Dynamics with Lasers", D. Goswami and W.S. Warren, *Lasers in Chemistry*, vol.2, Editor: Maximilian Lackner, Wiley-VCH, NY USA (2008), pp.42.
3. "Laser Enhanced Spectroscopy and Coherent Control", D. Goswami, *Lasers in Chemistry*, vol.1, Editor: Maximilian Lackner, Wiley-VCH, NY USA (2008), pp.18.
4. "Quantum Computation Back Action 2006", Editor: Debabrata Goswami, *AIP Proceedings* **864**, AIP Press, New York (2006).
5. "Single Experimental Setup for High Sensitive Absorption Coefficient and Optical Nonlinearities Measurements", Debabrata Goswami, *Lasers and Electro-optics Research at the Cutting Edge* (ISBN: 1-60021-194-1), Editor: S.B. Larkin, Nova Publishers, NY USA (2006) pp.43-61.
6. "Modern Perspective on Coherent Control", Debabrata Goswami and Arvinder S. Sandhu, *Advances in Multiphoton Processes and Spectroscopy*, **13**, 131 (S.H. Lin, A.A. Villaeys, and Y. Fujimura, editors, World-Scientific, Singapore, 2001).
7. "Generation of Shaped Femtosecond laser Pulses: New Approaches to Laser Selective Chemistry", D. Goswami, C. W. Hillegas, J. X. Tull, and W. S. Warren, *Femtosecond Reaction Dynamics*, p. **291** (Douwe A. Wiersma, editor, North-Holland, New York, 1994).

## Conferences, Symposia and Seminars:

1. "Coherent control in multiphoton fluorescence imaging", Arijit Kumar De, Debabrata Goswami, *Proceedings of SPIE: Multiphoton Microscopy in the Biomedical Sciences IX 2009*, San Jose, California, January 25-27, 2009.
2. "Control of Laser Induced Molecular Fragmentation of n-Propylbenzene Using Chirped Femtosecond Laser Pulses", Tapas Goswami, S. K. Karthick Kumar, Aveek Dutta and Debabrata Goswami, *National Laser Symposium 2008 (NLS-08)*, DRDO Complex, New Delhi, India, January 7-10, 2009.
3. "Stable optical trapping of nano-particles: towards trapping single molecules", A. K. De, D. Roy and D. Goswami, *Photonics-2008*, OSA Post-Deadline Paper, Habitat World Convention Center, New Delhi, INDIA, December 13-17, 2008.
4. "Nonlinear optical response of carbon nanotubes functionalized with a water soluble ink", Jyotsana Gupta, C. Vijayan, Sandeep Kumar Maurya and D. Goswami, *Photonics-2008*, Habitat World Convention Center, New Delhi, INDIA, December 13-17, 2008.
5. "Control of laser induced molecular fragmentation benzene using chirped femtosecond laser pulses", Tapas Goswami, S. Karthick Kumar, Aveek Dutta and Debabrata Goswami, *AISAMP8*, Perth, Australia, Nov. 24-27, 2008.
6. "Spectrally resolved femtosecond photon echo spectroscopy of metal-octaethyl porphyrins", S.K. Karthick Kumar, T. Goswami, A. Kumar, A. Nag and D. Goswami, *The 4<sup>th</sup> International Conference on Coherent Multidimensional Spectroscopy (CMDS 2008)*, Fukui Institute for Fundamental Chemistry, Kyoto University, Kyoto, Japan, Aug. 27-30, 2008.
7. "Probing ultrafast dynamics of IR-125 dye, from DCM bulk medium to DCM-water interface", Tapas Goswami and Debabrata Goswami, *10<sup>th</sup> CRSI Symposium in Chemistry*, IISc Bangalore, February 1-3, 2008.
8. "Simultaneous TDM, WDM and CDMA with a Femtosecond Laser: Decoding by Nondegenerate Optical Gating", I. Bhattacharyya, S. K. Maurya and D. Goswami, *5<sup>th</sup> Asian Conference on Ultrafast Phenomenon* held at NUS, Singapore, Jan.06 to Jan.09, (2008).
9. "Two-photon absorption Cross-section from a Simultaneous absorption and Emission Measurement", *5th Asian Conference on Ultrafast Phenomenon* held at NUS, Singapore, Jan.06 to Jan.09 (2008).

10. "Shedding some light on quantum computation", D. Goswami, India-UK Frontiers of Science" Symposium, Session: Quantum Computing, March 4-7 (2008).
11. "Probing coherence aspects of adiabatic quantum computation", Debabrata Goswami, International School and Conference on Quantum Information - 2008, IOP Bhubaneshwar, Mar. 4-12, 2008.
12. "Towards Spectroscopy of Trapped Macromolecules in Solution", A.K. De and D. Goswami, Spectroscopy and Dynamics of Molecules and Clusters (SDMC) Discussion Meeting' 08, Mahabalipuram, Tamil Nadu, February 22-24 (2008).
13. "Dynamics of Coherence in Femtosecond Induced Nonlinear Processes", Debabrata Goswami, Fifth Asian Conference on Ultrafast Phenomenon held at NUS, Singapore, Jan. 06 to Jan. 09 (2008).
14. "Femtosecond Laser Induced Optical Nonlinearity Studies in Liquids", Indrajit Bhattacharyya, Shekhar Priyadarshi and D. Goswami, , *First Asian Spectroscopy Conference*, Indian Institute of Science, Bangalore, Jan 29 – Feb 2 (2007).
15. "Enhancement of Two Photon Absorption Cross-sections by Optical and Chemical Methods", Amit Nag and D. Goswami, *First Asian Spectroscopy Conference*, Indian Institute of Science, Bangalore, Jan 29 – Feb 2 (2007).
16. "Towards Higher Resolution Microscopy through Sensitive Two-Photon Absorption Measurements", Debabrata Goswami, *First Asian Spectroscopy Conference*, Indian Institute of Science, Bangalore, Jan 29 – Feb 2 (2007).
17. "Implementing Adiabatic Quantum Computation", *Symposium on Quantum Information*, JNU, Delhi Mar. 16, 2007.
18. "Ultrafast Pulse Shaping: Applications in Microscopy, Molecular Control & Computing", Debabrata Goswami, *2007 Reach Symposium*, Hotel Timber Trail Heights, Parwanoo, HP, March 7-9 (2007).
19. "Femtosecond Pulse Characterization by Spectrally and Temporally Resolved Upconversion Technique (STRUT)", Amit Nag, Sumit Ashtekar and D. Goswami, *Spectroscopy and Dynamics of Molecules and Clusters*, Corbett National Park, Uttaranchal, 23-25 February (2007).
20. "Enhanced Fluorescence Intensity by Optical Chopping: Towards Better Live Cell Imaging", A.K. De and D. Goswami, *Spectroscopy and Dynamics of Molecules and Clusters*, Corbett National Park, Uttaranchal, 23-25 February (2007).
21. "On the Evolution of Coherence in Adiabatic Single-Pulse versus Phase-Locked Multi-Pulse Control", Debabrata Goswami, *Spectroscopy and Dynamics of Molecules and Clusters*, Corbett National Park, Uttaranchal, 23-25 February (2007).
22. "Shedding a little Light on the Vision of Quantum Computing", Debabrata Goswami, *Indo-US Shared Vision Workshop on Soft, Quantum and Nano Computing*, Dayalbag Educational Institute, Agra, February 22 (2007).
23. "Molecular Nonlinearities with low power femtosecond lasers", Amit Nag and Debabrata Goswami, *2<sup>nd</sup> Discussion meeting on Spectroscopy and Dynamics of Molecules & Clusters*, The International Centre, Dona Paula, Goa, India, Mar.30-Apr.1 (2006).
24. "Realistic Fallouts of Quantum Computing with Ultrafast Lasers", Debabrata Goswami, *2<sup>nd</sup> International Conference on Current Developments in Atomic, Molecular and Optical Physics with Applications (CDAMOP)*, K.M. College, Delhi University, India, March 21-23 (2006).
25. "Adiabatic QC & Femtosecond Induced Nonlinear Processes", Debabrata Goswami, *Fourth Singapore-India Collaborative and Cooperative Chemistry Symposium (SInCCCS<sub>4</sub>)*, National University of Singapore, Singapore, Feb.20-21 (2006).
26. "Adiabatic Quantum Computing with Optical Schemes", Debabrata Goswami, *Differential Geometry and Topology in the Perspective of Modern Trends (DGTPMT-2006)*, Dayalbagh Educational Institute, Agra, India, Feb. 18-19 (2006).
27. "Sensitive Measurement of Two-Photon Absorption and Fluorescence: Towards Higher Resolution Microscopy", Amit Nag, Arijit Kr. De and Debabrata Goswami, *IOP Conference Proceedings of the 7<sup>th</sup> Asian International Seminar on Atomic and Molecular Physics*, Indian Institute of Technology held in Chennai, 4–7 December (2006).
28. "Chirp Enhanced TPA Cross Section in Liquids: Towards Adiabatic Quantum Computing", Debabrata Goswami, *International Symposium on Quantum Optics*, Physical Research Labs, Ahmadabad, 24-27 July (2006).
29. "Molecular Nonlinearities with low power femtosecond lasers", Amit Nag and Debabrata Goswami, *2<sup>nd</sup> Discussion meeting on Spectroscopy and Dynamics of Molecules & Clusters*, The International Centre, Dona Paula, Goa, India, Mar.30-Apr.1 (2006).

30. "Adiabatic QC & its Back action to Solve Hard Problems", Debabrata Goswami, *International Conference on Quantum Computing: BackAction 2006*, IIT Kanpur, India, March 6-12 (2006).
31. "Ultrafast Pulse Shaping for All-Optical Switching & Adiabatic Quantum Computing", Debabrata Goswami, *Topical Conference on Atomic, Molecular and Optical Physics (TC-2005)*, IACS, Kolkata, India, Dec. 13-15 (2005).
32. "Interferometric Shaped Pulse Correlations", Debabrata Goswami, *Brijuni Conference on Laser Control and Molecular Switches*, Brijuni Islands, Croatia, Aug. 28 - Sept. 2, 2005.
33. "Ultrafast Laser Pulse Shaping for Quantum Computing Goals", David Joseph and Debabrata Goswami, *National Conference on Optics and Related Phenomena*, Kollam, Kerala, Aug. 29-30, 2005.
34. "Instrumentation", Debabrata Goswami, *Symposium on Digital Fabrication*, Hogskolen, Tromso Norway, Aug. 10-17, 2005.
35. "High Tech Research: Applications to Low Cost", Debabrata Goswami, *International Workshop on ICT as a development enabler:-S&T Interventions*, Department of Science and Technology, Govt. of India, TIFAC, New Delhi, February 21-22, 2005.
36. "Optical Approaches to Quantum Computing", Debabrata Goswami, *Workshop on Quantum Information, Computation and Communication (QICC 2005)*, IIT Kharagpur, Feb. 15-18 (2005).
37. "Polarization Induced Control of Nonlinear Processes", D. Goswami, *Condensed Matter Workshop (CMP 2005)*, Department of Physics, IIT, Kanpur, Feb. 5-6, 2005.
38. "Computing with Dancing Molecules", Debabrata Goswami, *Singapore-India Symposium*, IIT, Kanpur, Dec. 16-17, 2004.
39. "Quantum Computing", Debabrata Goswami, *Directions*, IIT Kanpur Technical Magazine, June 15 (2004).
40. "Logical Manufacturing", S.G. Dhande, D. Goswami and N. Gershenfeld, *Joint Indo-US Workshop on 'Advanced and Futuristic Manufacturing processes'*, Mar. 22-24, 2004.
41. "Ultrafast Pulse for Quantum Logic", SERC School on *Quantum Information and Quantum Optics*, Physical Research Laboratories, Ahmadabad, India, Feb. 9, 2004.
42. "Ultrafast Pulse Shaping Approaches to Quantum Computing", Debabrata Goswami, *INAE Conference on Nanotechnology (ICON-2003)*, Chandigarh, India, Dec. 22 - 23 (2003).
43. "Laser Polarization Induced Control of Highly Nonlinear Process", Debabrata Goswami, *International Workshop on Optimal Control of Quantum Dynamics: Theory & Experiment*, Ringberg Castle, Max-Planck-Institute fuer Quantenoptik, Garching, Germany, Dec. 7 - 10 (2003).
44. "Implementation of Quantum Computing Over Optical Communication Networks", Alok Srivastava, Alok Sharan, Debabrata Goswami, *International Conference on High Performance Computing*, Bangalore, India, Dec. 18-21 (2002).
45. "Ensemble CNOT gate with ultrafast pulse shaping", Debabrata Goswami, Session: Quantum Computing, *2002 OSA Annual Meeting/ILS-XVIII*, Hyatt Orlando, Orlando, Florida, September 29 - October 3 (2002).
46. "Novel Femtosecond Setup for High Sensitive Absorption Coefficient and Optical Nonlinearities Measurements", S.A. Hosseini, A. Sharan, and D. Goswami, Session: THz Generation and Material Probing, *2002 Nonlinear Optics*, Wailea, Maui, Hawaii, 29 July - 3 August (2002).
47. "Quantum Computing", Department of Physical Chemistry Seminar, Indian Association for the Cultivation of Science, Calcutta, India, May. 6, 2002.
48. "Optical approaches to quantum computing", Debabrata Goswami, *School on Quantum Information and Quantum Processing (QIQP-02)*, TIFR, Mumbai, India, 18 - 27 February (2002).
49. "Quantum Computing", Debabrata Goswami, *National Level Seminar on 100 years of Quantum Theory*, R.K. Mission Vidyamandira, Belur Math, Howrah, India, Jan. 14, 2002.
50. "Decoherence Control in Quantum Computing with Simple Chirped Pulses", Debabrata Goswami, *2<sup>nd</sup> Winter Institute on Foundations of Quantum Theory and Quantum Optics: Quantum Information Processes*, S.N. Bose Nation Centre for Basic Sciences, Kolkata, India, Jan. 2-11 (2002).
51. "Ensemble CNOT Gate with Ultrafast Pulse Shaping", Debabrata Goswami, *International Conference on Nanocomputing*, Session-III, Thanjavur, Tamil Nadu, India, December 16-18 (2001).
52. "Exploring Frontiers of Fiber Communication with Ultrafast Pulse Shaping Technology", Debabrata Goswami, *International Conference on Broad Band Optical Fiber Communication Technology (BBOFCT)*, North Maharashtra University, Jalgaon, India, December 5-7 (2001).

53. "Femtosecond z-scan spectra of water-some surprising results", S.A. Hosseini, A. Sharan and Debabrata Goswami, *2001 OSA Annual Meeting/ILS-XVII*, TuD, Long Beach Convention Center, Long Beach, CA, USA, October 14-18 (2001).
54. "Multiphoton control with ultrafast pulse shaping", Syed Abbas Hosseini and Debabrata Goswami, *International Conference on Quantum Information*, PA30, University of Rochester, June 13-16 (2001).
55. "Coherent Control of Multiphoton Transitions with Femtosecond pulse shaping", S.A. Hosseini and Debabrata Goswami, *National Laser Symposium 2000*, LASTEC, Metcalfe House, Delhi, India, December 13-15 (2000).
56. "Ultrafast Photophysics and Photochemistry in Solution", D. Goswami and E.W. Castner, Jr., *International Symposium on Advances in Bioinorganic Chemistry*, P51, TIFR, Mumbai, India, November 20-24 (2000).
57. "Femtosecond continuum: Polarization induced control", A.S. Sandhu, S. Banerjee, D. Goswami, *2000 OSA Annual Meeting/ILS-XVI*, TuAA, Rhode Island Convention Center, Providence, RI, USA, October 22-26 (2000).
58. "Current Perspective on Ultrafast Optical Pulse Shaping", Arvinder S. Sandhu and Debabrata Goswami, *Trombay Symposium on Radiation and Photochemistry (TSRP-2000)*, P68, BARC, Mumbai, India, January 12-17 (2000).
59. "Polarization Induced Effects in Femtosecond Supercontinuum Generation", Arvinder S. Sandhu, Sudeep Banerjee and Debabrata Goswami, *National Laser Symposium 1999*, Univ. of Hyderabad, Hyderabad, India, December 15-17 (1999).
60. "Towards Medical Applications of Femtosecond Lasers: Throughput enhancement in Optical Fibers with Pulse Shaping", Arvinder S. Sandhu, and Debabrata Goswami, *National Laser Symposium 1999*, Univ. of Hyderabad, Hyderabad, India, Dec. 15-17 (1999).
61. "Optical Pulse Shaping for throughput enhancement in Optical Fibers: Towards developing a better Delivery System for Medical Applications", Arvinder S. Sandhu and Debabrata Goswami, *Symposium on Recent Trends in Bio-Medical Research 1999*, P52, TIFR, Mumbai, India, September 27-29 (1999).
62. "Polarization Induced Efficiency Variations in Femtosecond Supercontinuum Generation", S. Banerjee, A. S. Sandhu, D. Goswami, *OSA Annual Meeting (Post Deadline Paper)*, SantaC lara, CA, USA, September 26-30 (1999).
63. "Demonstration of a communication protocol based on wavelength-time modulation and detection of ultrafast laser pulses", M.R. Fetterman, J.C. Davis, H.-S. Tan, W. Yang, D. Goswami, J.-K. Rhee, and W.S. Warren, *OSA Annual Meeting*, WLL140, Santa Clara, CA, USA, September 26-30 (1999).
64. "Altering excitation dynamics in optically dense media using shaped ultrafast laser pulses", Jennifer C. Davis, Matthew R. Fetterman, Debabrata Goswami, Weiguo Yang, Dorine Keusters and WarrenS. Warren, *CLEO/QELS'99*, QTuM7, Baltimore Convention Center, Maryland, USA, May 23-28 (1999).
65. "Optical Wavelength domain communications using acousto-optic pulse shaping with AOM approach", W. Yang, J.C. Davis, D. Goswami, M.R. Fetterman and W.S. Warren, *4<sup>th</sup> SPIE Conf. On All-Optical Networking*, Hynes Convention Center, Boston, U SA, Nov. 3-5 (1998).
66. "Adiabatic Passage using Ultrafast Pulse Shaping", Mathew Fetterman, Debabrata Goswami, Jennifer Davis, Dorine Keusters, Weiguo Yang, June-Koo Rhee, and W.S. Warren, *OSA Annual Meeting*, Thi5, Baltimore Convention Center, Maryland, USA, Oct. 4 -9 (1998).
67. "Fast Programmable Coherent Spectral Encoder for Femtosecond Optical Pulses", Weigo Yang, Debabrata Goswami, Mathew Fetterman and Warren S. Warren, *OSA Annual Meeting*, Th002, Baltimore Convention Center, Maryland, USA, Oct. 4-9 (1998).
68. "Ultrafast Laser Pulse Shaping: Why and How?" School of Optics Seminar, CREOL, Univ. of Southern Florida, Orlando, Florida, USA, Sept. 25, 1998.
69. "Ultrafast  $\lambda = 1.55 \mu\text{m}$  optical communications using acousto-optic pulse shaping", W. Wang, D. Goswami and W. S. Warren, *32nd Conf. on Information Sciences and Systems*, TP-4, USA, Mar. 18-20 (1998).
70. "Shaping, Amplification and Characterization of Ultrafast Pulses", M. Fetterman, D. Goswami, D. Keusters, W. S. Warren and X.-J. Zhang, *32nd Conf. on Information Sciences and Systems*; TP-2, USA, Mar. 18-20 (1998).
71. "Analyzing shaped femto- and picosecond pulses using the Spectrally and Temporally Resolved Upconversion Technique", D. Keusters, M. Fetterman, W. Yang, J.-K. Rhee, D. Goswami, and W. S. Warren, *CULA Kick-off Meeting*, Princeton University Center for Ultrafast Laser Applications/POEM, Frick Laboratories, Princeton, NJ 08544-1009, Dec. 15 (1997).

72. "Ultrafast  $\lambda = 1.55 \mu\text{m}$  optical communications using acousto-optic pulse shaping", W. Yang, D. Goswami and W. S. Warren, *CULA Kick-off Meeting*, Princeton University Center for Ultrafast Laser Applications/POEM, Frick Laboratories, Princeton, NJ 08544-1009, Dec. 15 (1997).
73. "Generation and Characterisation of Amplified Shaped Pulses at 800 nm", M. Fetterman, D. Goswami, D. Keusters, J.-K. Rhee, W. S. Warren and X.-J. Zhang, *CULA Kick-off Meeting*, Princeton University Center for Ultrafast Laser Applications/POEM, Frick Laboratories, Princeton, NJ 08544-1009, Dec. 15 (1997).
74. "Driving Wavepacket Propagation with Optically Modulated Laser Pulses: Implications for the Characterization of Molecular Potential Surfaces", D. Goswami, X.-J. Zhang, B. M. Goodson and W. S. Warren, *CULA Kick-off Meeting*, Princeton University Center for Ultrafast Laser Applications/POEM, Frick Laboratories, Princeton, NJ 08544-1009, Dec. 15 (1997).
75. "Fast and ultra-fine tunable optical delay line at  $\lambda = 1.55 \mu\text{m}$  wavelength", W. Yang, D. Keusters, D. Goswami and W. S. Warren, *CULA Kick-off Meeting*, Princeton University Center for Ultrafast Laser Applications/POEM, Frick Laboratories, Princeton, NJ 08544-1009, Dec. 15 (1997).
76. "Ultrafast Photophysics and Photochemistry in Solution", E.W. Castner, Jr. and., D. Goswami, *20<sup>th</sup> DOE Solar Photochemistry Research Conference*, French Lick, IN, June 9-12 (1996).
77. "Molecular Pulse Shaping", J. X. Tull, C. W. Hillegas, D. Goswami and W. S. Warren, *Ultrafast Phenomena IX, May 2-6, 1994, 1994 Technical Digest Series, Volume 7, ThD 28-1/553* (1994).
78. "Robust Pulse Shaping Techniques for Quantum Molecular Control", D. Goswami, C. W. Hillegas, W. S. Warren, J. X. Tull, *Annual Review of the Advanced Technology Center for Photonics and Optoelectronic Materials, Section 4: Systems and Applications*, Bowen Hall Auditorium, Princeton University, Sept. 23 (1993).
79. "The Prospects of Laser Selective Chemistry", W.S. Warren, D. Goswami, J.X. Tull, *New Jersey Commission on Science and Technology Poster Session*, Princeton University, Jan 27 (1993).
80. "Picosecond Adiabatic Passage and the Complications induced by Real Experiments", W.S. Warren, D. Goswami, J.S. Melinger, A. Hariharan, S.K. Gandhi, and J.X. Tull, *Control of Molecular Systems Workshop*, The Fields Institute for Research in Mathematical Sciences, Waterloo, Ontario, Canada, May 31-June 4 (1992).
81. "From C.W. NMR to F.T. NMR to V. W. NMR", D. Goswami, S. Mayr, Q. He, M. McCoy, W. S. Warren, *32nd Experimental Nuclear Magnetic Resonance Spectroscopy Conference (ENC)*, St. Louis, Missouri, Poster Session P264, April 7-11 (1991).

## Patents:

1. "Optical enhancement of two-photon absorption process", Patent Application No. 704/DEL/2008 Dated: 19-03-2008, Inventors Name: Dr. D. Goswami, Chemistry, and students Sumit Ashtekar, M.Sc. & Amit Nag, Graduate, Chemistry Dept. (submitted 2008).
2. "System and Method for Improved Coherent Pulsed Communication System having Spectrally Shaped Pulses", M. Sinha and D. Goswami, US Patent 20040208613 (2004).