Invited Talks/Seminars

1. **S. Venugopal Rao,** "Proton beam writing and its applications in photonics," **Invited talk at** NANO-05, Indo-German workshop on **Synthesis and Modification of Nanostructured Materials by Energetic Ion Beams,** Nuclear Science Centre, New Delhi, February 20-24, 2005.
2. **S. Venugopal Rao,** "Nonlinear optical properties and applications of organic materials and polymers," **Invited one-hour lecture** at **QIP short term course** on **"Semiconducting organics as future generation electro-optical materials,"** at IIT Guwahati, June 20-24, 2005.
3. **S. Venugopal Rao,** "Femtosecond laser direct writing," **Invited Lectures** at **SERC School on Ultrafast studies** held at University of Hyderabad, Hyderabad, July 10-29, 2006 **(Three Hours of Lectures)**
4. **S. Venugopal Rao**, "Fabrication of micro-photonic components in SU8 and PMMA using proton beam writing," **Invited talk at Photonics 2006,** University of Hyderabad, Hyderabad, December 13-16, 2006.
5. **S. Venugopal Rao,** "Femtosecond laser direct writing: Fundamentals and applications in photonics," **Invited talk** at **Workshop on coherent control of optical phenomena,** IIT Kanpur, July 9-10, 2007.
6. **S. Venugopal Rao,** "Transient intermediates in the decomposition of energetic materials: Spectroscopic characterization techniques" **Lectures** delivered at two-day workshop on the **Physics of High Energy Materials,** ACRHEM, School of Physics, University of Hyderabad, Hyderabad from 22 to 23 August 2007.
7. **S. Venugopal Rao,** "Nanophotonics: Principles and Applications," 90-minute **Invited lecture** at UGC-Academic Staff College **Refresher Course in Physics**, September 29-October 17, University of Hyderabad, Hyderabad. (Delivered on 15th October 2007).
8. **S. Venugopal Rao**, "Proton Beam Writing: Applications in photonics," **Invited Lecture** delivered at School of Physics, UoH Optics Seminar Series, Hyderabad, 17 March, 2008.
9. **S. Venugopal Rao**, "Nanophotonics using femtosecond pulses," **Invited Talk** at National workshop entitled, **"Synthesis, Characterization, and Applications of Nanostructured Materials,"** Sri Satya Sai University, Prashanthi Nilayam, Puttaparthi, A.P., 27-28 February 2009. **Also chaired a session.**
10. **S. Venugopal Rao,** "Understanding high energy materials: The role of lasers," **Invited talk** at National Conference on Advanced Materials (NCAM-2009), PSN College of Engineering and Technology, Tirunelveli, 27-29 August 2009. **Also chaired a session at the conference.**
11. **S. Venugopal Rao,** "Ultrafast spectroscopic studies at ACRHEM for understanding high energy materials," **Invited Lecture,** one-day workshop on **Time and Spatially Resolved Spectral Analyses under extreme conditions**, held at ACRHEM, 14 November, 2009.
12. **S. Venugopal Rao,** "Femtosecond Laser Processing of Polymers for Photonic and Microfluidic Applications," **Invited talk at Second International Conference on Polymer Processing and Characterization (ICPPC 2010)**, January 15-17, 2010, M.G. University, Kottayam, Kerala, India.
13. **S. Venugopal Rao, "Intense laser pulse interaction with materials: Towards applications in photonics and defence" Invited talk at** DST meeting on **"Intense Laser Fields and Applications"** held at TIFR, Mumbai on 15-16 April 2010. **Also chaired a session at the meeting.**
14. **S. Venugopal Rao,** "Photonic and microfluidic structures in glasses and polymers achieved using femtosecond laser pulses," **Invited talk** at **National Conference on Advanced Materials** (NCAM-2010), held at Tirunelveli, 25-27 August 2010.
15. **S. Venugopal Rao,** "Laser Induced Breakdown Spectroscopy with nanosecond, picosecond, and femtosecond pulses: Studies on high energy materials," **Invited talk at** *Meghnad Saha Memorial International Symposium-cum-workshop on* **Laser Induced Breakdown Spectroscopy**, Allahabad University, December 21-23, 2010.
16. **S. Venugopal Rao, "**Nanoparticles and Nanostructures for photonics using ultrashort laser pulses," **Invited talk at International workshop on recent trends in Nanophotonics**, IIT Delhi, New Delhi, 30 September -01 October 2011.
17. **S. Venugopal Rao,** "Porphyrins, Phthalocyanines, and Porphycenes: Nonlinear optical properties and excited state dynamics," **Invited talk at National Symposium on the Functional Applications of Colorants,** Institute of Chemical Technology, Mumbai, 14-15 October 2011.
18. **S. Venugopal Rao**, "Ultrashort pulses interaction with molecules and solids: Physics and applications," **Invited talk at Topical Conference of the ISAMP - TC2012,** "Laser Interaction with Atoms, Molecules & Clusters," University of Hyderabad, Hyderabad, January 9-12, 2012.
19. **S. Venugopal Rao,** "Ultrashort pulses interaction with solids: Physics and applications," **Invited talk at ASHULA** (**AS**ian core program for **H**igh intensity science **U**sing strong **LA**ser photons) India meeting organized by TIFR, Mumbai and held at Taj Residency, Aurangabad, 18-20 January, 2012.

20. **S. Venugopal Rao,** "Ultrafast excited state dynamics and optical nonlinearities in Porphycenes and Corroles studied using Z-scan and pump probe techniques," **Invited talk, Singapore Joint Physics Symposium** (ISJPS 2012), IIT Delhi, February 20-22, 2012.
21. **S. Venugopal Rao**, "Laser matter interaction: What's in for high energy materials?," **Invited talk, Symposium on Atomic, Molecular and Optical Physics,** Biennial meeting of Atomic, Molecular and Optical Physics Society of India (ISAMP), Kolkata, December 14-17, 2012.
22. **S. Venugopal Rao,** "Ultrashort laser pulse matter interaction: Implications for high energy materials" **Invited talk,** DAE-BRNS National Laser Symposium (NLS-21), BARC, Mumbai, February 6-9, 2013.
23. **S. Venugopal Rao,** "Ultrashort laser pulse matter interaction: Implications for high energy materials" **Invited Seminar** at Geophysical Laboratory, Carnegie Institute of Washington, Washington DC, USA, 02 May 2013.
24. **S. Venugopal Rao,** "Ultrashort laser pulse-matter interaction: What is in for high energy materials" **Invited Seminar** at G.R. Harrison Spectroscopy Laboratory, Massachusetts Institute of Technology, Cambridge, USA on 07 May 2013.
25. **S. Venugopal Rao,** "Laser-matter Interaction: Laser Direct Writing and Laser Induced Breakdown Spectroscopic Studies" **Invited Seminar** at University of Massachusetts, Boston, USA on 08 May 2013.
26. **S. Venugopal Rao,** "Ultrashort laser pulse-matter interaction: Implications for HEMs" **Invited Seminar** at National University of Singapore, Singapore on 05 July 2013.
27. **S. Venugopal Rao**, "Exploring High Energy Materials Using Ultrashort Laser Pulses," **Invited Talk** at DAE-BRNS Theme Meeting on Ultrafast Science (UFS2013), 24-26 October, 2013, IIT Kharagpur, India.
28. **S. Venugopal Rao,** "Ultrafast ablation, LIBS, and pump-probe techniques for studying high energy materials," **Invited Seminar** at Radiation and Photo-Chemistry Division, BARC, 18th December 2013.
29. **S. Venugopal Rao,** "Applications of Nanostructures and Nanomaterials Achieved by Ultrafast Laser Ablation in Liquids," **Invited talk** at International conference on "Nano, Bio and Material Sciences," at Hotel Katriya, Hyderabad, organized by Nizam College, Hyderabad, India, January 08-10, 2014.
30. **S. Venugopal Rao,** "Laser-surface Interactions: Physics and Applications," **Invited talk** at Theme meeting on *Recent Advances in Materials Characterization by Surface Analytical Techniques* February 20-22, 2014, National Centre for Compositional Characterization of Materials, Hyderabad.
31. **S. Venugopal Rao,** "Laser-based and computational studies of high energy materials at ACRHEM," **Invited Seminar** at Defence Institute of Advanced Technology (DIAT), Girinagar, Pune, 28 May 2014.
32. **S. Venugopal Rao,** "Ultrafast lasers based studies for understanding high energy materials," delivered **2 hour lectures** for a CEP course, "**Photonics Diagnostic Techniques for Armament Evaluation and Explosive Study,"** at Terminal Ballistic Research Laboratory, Chandigarh, October 27-31, 2014.
33. **S. Venugopal Rao,** "Ultrafast laser ablation in liquids: Physics and Applications," **Invited talk** at Theme meeting on **Ultrafast Science** organized by Manipal University, Manipal and Indian Society for Radiation and Photochemical Sciences Mumbai (ISRAPS), 30 October – 01 November 2014.
34. **S. Venugopal Rao,** "Plasmonic nanostructured substrates for explosives detection prepared with ultrashort laser pulses," **Invited talk**, 2nd International conference on Frontiers in Nanoscience, Technology and Applications **(FINSTAA),** December 20-22, 2014, Sri Sathya Sai Institute of Higher Learning, Prasanthinilayam, A.P., India.
35. **S. Venugopal Rao,** "Integrated Photonics: Recent Progress and Challenges," **Invited talk at SPIE workshop on Integrated Photonics Technology,** 10th Oct. 2015, Physics Department, NIT Warangal, India.
36. **S. Venugopal Rao,** "Throwing light on explosives detection," **Plenary talk** **S**outh **A**sian **W**orkshop on **O**ptics & **P**hotonics, **"SAWOP-2015" organized by UNESCO** during November 17–18, 2015, IIT Guwahati, Guwahati.
37. **S. Venugopal Rao,** "Ultrashort Laser Pulses and Explosives Detection: Recent Advances," **Invited talk**, DAE-BRNS Theme Meeting on Ultrafast Science **(UFS-2015),** 19-21 November, S.N. Bose National Centre for Basic Science and ISRAPS, Kolkata, 2015.
38. **S. Venugopal Rao,** "Laser based explosives detection techniques: Present status and challenges," **Invited talk, HEMCE-2016,** 10th International High Energy Materials Conference and Exhibit, 11-13 February 2016, Mak Club and Resort, Hyderabad, Telangana, India.
39. **S. Venugopal Rao,** "Nanomaterials for explosives detection: SERS studies," **Invited talk,** International conference on materials research and applications (ICMRA-2016), 11-13 March 2016, CMR Technical Campus, Medchal, Hyderabad, India.
40. **S. Venugopal Rao,** "Raman spectroscopy and explosives detection," **Invited Seminar** on 13 June, 2016 at Raman Research Institute, Bengaluru, India.
41. **S. Venugopal Rao,** "LIBS and explosives detection: Challenges and Scope," **Invited Seminar** on 14 June, 2016 at LEOS (ISRO), Bengaluru, India.

42. **S. Venugopal Rao,** "Nonlinear Optics: Basics of $\chi^{(2)}$ and $\chi^{(3)}$," **Invited Lectures (4.0 hours) for** 'Light Matters 2016'- Introductory Tutorial workshop on Nonlinear Optics on **26 August 2016,** at Physics department, Sri Satya Sai Institute of Higher Learning, Prashanthi Nilayam, Puttaparthi, A.P., India.
43. **S. Venugopal Rao,** "Laser based explosives detection: Present status and challenges Part I and II," **Invited two hour, two lectures** at CEP course on *Laser Spectroscopy and Applications in Defense* held at LASTEC, DRDO, New Delhi, September 12-16, 2016.
44. **S. Venugopal Rao,** "Intense laser pulses for explosives detection: Scope and challenges," **Invited Talk at 9th Asian Symposium on Intense Laser Science (ASILS-9),** 6-10 Nov. 2016, Ninh Binh City, Vietnam.
45. **S. Venugopal Rao,** "Femtomolar detection of explosive molecules using laser ablated targets and SERS," **Invited talk at International Conference on Fiber Optics and Photonics, Photonics 2016,** IIT Kanpur, December 04-08, 2016.
46. **S. Venugopal Rao,** "Nanomaterials for explosives detection," **Invited talk at SCICON'16,** International conference on Advanced Materials, Amrita University, Coimbatore, December 18-21, 2016. **Also chaired an ORAL and one POSTER session at the conferences.**
47. **S. Venugopal Rao,** "Excited State Dynamics and Third-order Nonlinearities in Corroles, Porphycenes and Phthalocyanines," **Invited Talk**, National Conference on Luminescence and Applications, [NCLA-17], 9-11 January, 2017, CSIR-Indian Institute of Chemical Technology [IICT] Hyderabad, Hyderabad, India.
48. **S. Venugopal Rao,** "Laser assisted synthesis of nanomaterials and nanostructures," **Invited lecture (1.5 hrs)** during short term course on **Development and Formulation of Nanoparticles** Organized by School of Engineering Sciences and Technology, under the aegis of HRDC, University of Hyderabad, Hyderabad, India from 20/3/2017 – 25/3/2017.
49. **S. Venugopal Rao,** "Laser spectroscopy for explosives detection," **Invited Talk**, organized by **SPIE students' chapter** at Vidya Jyoti Institute of Technology, Hyderabad, Telangana, India on **May 06, 2017.**
50. **S. Venugopal Rao,** "Nanomaterials prepared using ultrafast laser pulses and applications," **Invited Talk (2 hrs)** at **Refresher Course on on Materials Science** Organized by UGC-HRDC, University of Hyderabad, 04-24 August, 2017.
51. **S. Venugopal Rao,** "Femtosecond Laser Pulses for Explosives Detection: Challenges and Scope," **Invited Talk**, **One-day theme meeting on Photonics and Bio-photonics,** 27 November 2017, Manipal University, Karnataka.
52. **S. Venugopal Rao,** "Explosives Detection: Feasible solutions using ultrafast lasers?" **Invited Talk**, Workshop on Recent Advances in Photonics 2017 **(WRAP-2017),** Ecole Mahindra Centrale, Hyderabad, December 18-19, 2017.
53. **S. Venugopal Rao,** "Standoff detection of explosives using femtosecond LIBS," **Invited Talk** at Meghnad Saha Memorial International Symposium-cum-workshop on "Laser Induced Breakdown Spectroscopy" **[MMISLIBS-II],** February19-21, 2018, University of Allahabad, India.
54. **S. Venugopal Rao,** "Surface Enhanced Raman Spectroscopy and Explosives Detection: Progress and Bottlenecks," **Invited Talk** at **"90 Years of Raman Effect: Current Status and Future Directions"** Indian Institute of Science, Bangalore, 27th February - 2nd March, 2018
55. **S. Venugopal Rao,** "New paradigms in explosives detection: The role of femtosecond laser pulses," **Invited talk** at **10th Asian Symposium on Intense Laser Science (ASILS10),** American University of Sharjah (AUS), Sharjah, UAE during March 10-13, 2018.
56. **S. Venugopal Rao,** "Explosives Detection Using Femtosecond Laser Prepared SERS Targets," **Invited talk** at international **Light Conference 2018,** July 16-18, 2018, The Academic Communication Center of CIOMP, Changchun; Organized by Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), Chinese Academy of Sciences (CAS), China.
57. **S. Venugopal Rao,** "Recent Developments in Explosives Detection Based on Femtosecond Laser Fabricated SERS Substrates," **Invited talk** at SCOP, **(Student Conference on Optics and Photonics – 2018),** PRL, Ahmedabad, October 04-06, 2018.
58. **S. Venugopal Rao,** "Femtosecond Laser Processing and Applications: New Avenues," **Invited talk** at **UFS-2018,** Theme meeting on Ultrafast Science, RRCAT, Indore, October 22-24, 2018.
59. **S. Venugopal Rao,** "Ultrafast laser material processing and spectroscopy for explosives detection," **Invited talk** at Department of Physics, Sikkim University, Sikkim, India, **01 November 2018.**
60. **S. Venugopal Rao,** "Femtosecond Laser Pulses and Explosives Detection", **Invited talk** at One-day theme meeting on **Optical Tweezers and Ultrashort Optical Pulses: The Nobel Prize in Physics 2018,** Organized by IPA Hyderabad chapter in association with School of Physics and UGC-SAP, University of Hyderabad, Hyderabad, India on **12 November 2018.**
61. **S. Venugopal Rao,** "Photonics for explosives detection: Recent developments and challenges," **Invited talk** at **Photonics 2018,** The International Conference on Fiber Optics and Photonics12th to 15th December 2018, Indian Institute of Technology Delhi, New Delhi, India.

62. **S. Venugopal Rao,** "Ultrafast lasers and spectroscopy for explosives detection," **Invited talk** at National Workshop on Explosives Detection, HEMRL, Pune, India during December 14-15, 2018.
63. **S. Venugopal Rao,** "Ultrafast laser induced nanoparticles, nanostructures and their applications," **Invited talk,** Refresher course on Materials Science, January 19-31, 2019, Univ. of Hyderabad, Hyderabad, India.
64. **S. Venugopal Rao,** "Femtosecond LIBS and LDW studies for HEMs: Developments at ACRHEM," **Invited talk,** Workshop on **Photonics for Detonics**, TBRL, Chandigarh, 01-02 March 2019.
65. **S. Venugopal Rao,** "Ultrafast Laser Pulses for Defence Applications," **Invited Seminar** at the Physics department, IIT Delhi, New Delhi, 02 July 2019.
66. **S. Venugopal Rao,** "Femtosecond Laser Materials Processing for Defense Applications: Recent Advances," **Plenary Talk,** International Conference on Ultrafast Optical Science, **UltrafastLight-2019,** September 30–October 4, 2019, P. N. Lebedev Physical Institute of the Russian Academy of Science (LPI RAS), Russia.
67. **S. Venugopal Rao,** "Nanomaterials prepared using ultrashort lasers and applications," **90 minutes Invited Lecture, Refresher Course in Experimental Physics** October 24, 2019 to November 6, 2019, University of Hyderabad, Hyderabad, India.
68. **S. Venugopal Rao,** "Novel, Practical SERS Substrates for Explosives Detection: Recent Advances," **Invited talk,** Workshop on Recent Advances in Photonics **(WRAP-2019)**, 13-14 December, 2019, IIT Guwahati, India.
69. **S. Venugopal Rao,** "Femtosecond Laser Materials Processing and Applications in Defence," **Invited talk, SCICON-2019,** 2nd International Conference on Advanced Materials, Amrita Vishwa Vidyapeetham, Coimbatore, India, December 15-17, 2019.
70. **S. Venugopal Rao,** "Recent Advances in Laser Spectroscopic Techniques for Trace Explosives Detection," **Invited talk,** DAE-BRNS National Laser Symposium **(NLS-28),** Vellore Institute of Technology, Chennai 600127, January 08-11, 2020.
71. **S. Venugopal Rao,** "Laser spectroscopy for explosives detection: Recent developments at ACRHEM," **Invited Colloquium,** Department of Physics, KIIT, Bhubaneswar, 21 January 2020.
72. **S. Venugopal Rao,** "Development of Robust, Versatile SERS Substrates for Trace Detection of Explosives, Pesticides Using a Portable Raman Spectrometer," **Invited talk at VIII International Conference on Perspectives in Vibrational Spectroscopy (**8th ICOPVS-2020), Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore 560064 India, Feb 24-29, 2020.
73. **S. Venugopal Rao,** "Standoff and Trace Explosives Detection Using LIBS and SERS," **Invited Talk** at 2nd National Workshop on Explosives Detection (NWED), March 01-02, 2020, HEMRL, Pune, India.
74. **S. Venugopal Rao,** "Nanomaterials Prepared Using Femtosecond Pulses for Defense Applications," **Invited Talk** at International Virtual Conference on Recent Trends in Nanomaterials Synthesis and Applications, July 16-18, 2020, Madanapalle Institute of Technology and Science, Madanapalle, Andhra Pradesh, India.
75. **S. Venugopal Rao,** "Nonlinear Optics: Basics, Applications and Recent Advances," **Invited Talk** International Faculty Development Program on "Advances in Optics and Photonics" 4th - 8th August 2020, MLR Institute of Technology, Hyderabad, Telangana, India.
76. **S. Venugopal Rao,** "Nanomaterials in Defence Applications," **Invited Talk,** 20th November 2020, Centre for Nanotechnology, University of Hyderabad, Hyderabad, India.
77. **S. Venugopal Rao,** "Nanomaterials in Defence and Sensing Applications," **Invited Talks (2 talks of 1.5 hours each on 04 Dec 2020 and 5 Dec 2020)**, UGC-Sponsored **Refresher Course in Nano Science,** 25 November 2020 to 08 December 2020, Bharathidasan University, India.