

List of Publication by Dr. Sanjeev Kumar Raghuwanshi

➤ Journal Papers (National/International):

1. S. K. Raghuwanshi and S. Talabattula, "Analysis of mode cut-off conditions in double clad single mode step index fibers having depressed versus raised inner cladding", *World Journal of Science and Technology*, vol. 1, no. 8, pp. 79-83, 2011.
2. S. K. Raghuwanshi and S. Talabattula, "Dispersion and peak reflectivity analysis in a non-uniform FBG based sensors due to arbitrary refractive index profile", *Progress in Electromagnetic Research B*. Vol. 36, pp. 249-265, 2012.
3. S. K. Raghuwanshi, V. Kumar and R.R. Pandey, "Derivation of Eigen value Equation by using Equivalent Transmission Line method for the case of Symmetric/Asymmetric Planar slab Waveguide Structure", *Journal of International Academy of Physical Sciences*, Vol. 15 No.1, pp. 1-14, 2011
4. S. K. Raghuwanshi, V. Kumar and R.R. Pandey, "Guided and Leaky modes of a multilayer planar slab waveguide," *I-managers J. on Electronics engineering* (in press).
5. S. K. Raghuwanshi, "Ray paths in an Elliptic parabolic refractive index profile fiber ", *World Journal of Science and Technology*, vol. 1, no. 8, pp. 74-78, 2011.
6. S. K. Raghuwanshi and S. Talabattula, "Asymmetric pulse distortion due to pulse walk-off phenomena in wide-band DWDM Raman amplification systems", *International J. of Engg. Research and Industrial Appls. (IJERIA)*, Vol. 1, No. 3, pp. 209-223, 2008.
7. S. K. Raghuwanshi, V. Gupta, V. K. Dinesh and Srinivas Talabattula, "Bidirectional optical fiber transmission scheme through Raman amplification: Effect of pump depletion", *J. Indian Inst. Sci.*, Vol. 86, No. 6, pp. 655-665, Nov.-Dec. 2006.
8. S. K. Raghuwanshi, S. Talabattula and A. Selvarajan, "Fourier decomposition of the transverse field for analyzing optical waveguides using Beam Propagation method", *J. Indian Inst. Sci.*, Vol. 86, No. 6, pp. 667-680, Nov.-Dec. 2006.
9. S. K. Raghuwanshi and S. Talabattula, "Analytical method to estimate the bandwidth of an uniform FBG based instrument", *J. Instrum. Soc. India*, Vol. 37, No. 4, pp. 297-308, 15 Dec. 2007.
10. S. K. Raghuwanshi, P. K. Pattnaik, S. Talabattula and Papannareddy R., "Analysis of pulse propagation through a Nonlinear Directional Coupler ", *J. of Optics*, Vol. 35, No. 3, pp. 155-163, July-Sept. 2006.
11. S. K. Raghuwanshi and S. Talabattula, "Applications of degenerate/non-degenerate modes coupling in an optical waveguide ", *Indian J. Phys.* Vol. 82, No. 10, pp. 1373-1383, 2008.
12. S. K. Raghuwanshi and S. Talabattula, "Asymmetric dispersion and pulse distortion in an uniform fiber Bragg gratings", *Indian J. Phys.*, Vol. 82, No. 12, pp. 1-7, Dec. 2008.
13. S. K. Raghuwanshi and S. Talabattula, "Analytical approximation solutions for 3-D optical waveguides: Review", *Indian J. Phys.* Vol. 83, No. 2, 2009.
14. *S. K. Raghuwanshi, "Comparative study of asymmetric versus symmetric planar slab dielectric optical waveguides" *Indian J of Phys*, Vol. 84, No. 7, pp. 831-846, 2010.

15. *S. K. Raghuwanshi, R. R. Pandey and V. Kumar, "Calculation of mode-coupling coefficient using symmetric/asymmetric Waveguide Grating Structures" *I-managers J. on Electronics Engineering*, vol. 1, no. 1, pp. 52-58, Sept-Nov. 2010.
16. *S. K. Raghuwanshi, R. R. Pandey and V. Kumar, "Optimization of substrate-radiation/substrate-cove radiation modes in planar slab optical waveguide structure", *International Nano Lett.*, vol. 1, no. 2, pp. 91-96, July 2011.
17. S. K. Raghuwanshi, V. Kumar, Devendra Chack and R. R. Pandey "Dispersion study of even mode thin planar slab dielectric waveguide without computing $\frac{d^2\beta}{dk^2}$ numerically", **Elsevier Procedia-Computer Science Journal** (ISSN: 1877-0509), 2011.

- **Communicated Journal Papers**

18. S. K. Raghuwanshi, V. Kumar and R.R. Pandey, "Step discontinuity analysis in an asymmetric single mode planar slab taper optical waveguide," *I-managers J. on Electronics Engineering (submitted for publication)*.
19. S. K. Raghuwanshi, V. Kumar and D. Chack, "Dispersion Study of an Asymmetric Thin Planar Slab Dielectric Waveguide without Computing $\frac{d^2\beta}{dk^2}$ Numerically" *International Nano Lett (submitted for publication)*.

- **Conference Papers (National/International):**

1. S. K. Raghuwanshi, "An algorithm to design the optimal flat gain fiber Raman amplifier", *National Conf. on Microwave and Optoelectronics (NCMO)*, Aurangabad Dec. 2004.
2. S. K. Raghuwanshi, P. Jain and S. Talabattula, "Pulse distortion due to Pulse walk-off in wide band WDM Raman amplification systems", *Proceedings of International conference on Optics & Optoelectronics (ICOL-2005)*, 12-15 Dec. 2005, IRDE, Dehradun, India (PP-FIO-47).
3. P. Jain, S. K. Raghuwanshi and S. Talabattula, "A novel approach to analyze Z-varying integrated optical waveguides", *Proceedings of International conference on Optics & Optoelectronics*, 12-15 Dec. 2005, IRDE, Dehradun, India (PP-FIO-22).
4. S. K. Raghuwanshi and S. Talabattula, "Fiber design to achieve flat gain amplification for fiber Raman amplifier" *Proc. of 3rd National conference on Advances in Electronic Communications (ADELCO-2006)*, pp. 55-60, 6 April 2006, Kovilpatti, Tamilnadu, India.
5. S. K. Raghuwanshi and S. Talabattula, "Low dispersion Management by using Graded index waveguide", *Proc. of National conference on Recent Trends in Electrical, Electronics, Computer Science & IT Engineering (TECHNO FLASH-06)*, pp. 1, 7-8 Sept. 2006, Chennai, India.
6. S. K. Raghuwanshi and S. Talabattula, "Analysis of square shape planar slab waveguide with periodic rectangular strip of dielectric layers for dispersion management in optical fiber communication links" *National conference on Recent Advancements in Microwave Techniques & Applications*, pp. 355-359, 6-8 Oct. 2006, Jaipur, India.
7. S. K. Raghuwanshi, S. Talabattula and A. Selvarajan, "Analysis of hexagonal shape holey optical fiber having arbitrary refractive index profile by using 2-D FEM method" *National conference on Recent Advancements in Microwave Techniques & Applications*, pp. 140-145, 6-8 Oct. 2006, Jaipur, India.
8. S. K. Raghuwanshi and S. Talabattula, "FDM method to solve nonlinear Schrodinger equation: A Solitions formation", *3rd International conference on Computers and Devices*

9. S. K. Raghuwanshi, P. K. Pattnaik, B. Bathula, Bh. Vijayaaditya, S. Talabattula and Papannareddy R., "Crank-Nicholson scheme for analysis of pulse propagation problem through a nonlinear Directional Coupler", *Proceedings of Eighth International conference on Optoelectronics, Fiber Optics and Photonics-2006*, UH, INDIA NLO 52.
10. S. K. Raghuwanshi, Raghunath K. and S. Talabattula, "Fiber Bragg grating technology: Applications for telecommunication engineering as a WDM component", *International conference on Advances in Electronics and Communications (icon ADELCO-2007)*, Kovilpatti, Tamilnadu, pp. 179-188, 1-3 Feb. 2007, India.
11. S. K. Raghuwanshi and S. Talabattula, "Contra-directional/co-directional coupling between modes in a fiber Bragg grating" *Proceedings of XXXII Optical Society of India (OSI) Symposium on Contemporary Optics & Applications*, pp. 41-42, 1-3 March 2007, Vadodara, India.
12. S. K. Raghuwanshi and S. Talabattula, "Degenerate/non-degenerate modes coupling in an optical waveguide" *Proceedings of XXXII Optical Society of India (OSI) Symposium on Contemporary Optics & Applications*, pp. 50-51, 1-3 March 2007, Vadodara, India.
13. S. K. Raghuwanshi, M. Mittal and S. Talabattula, "Dispersion in an uniform long period grating: Transmission spectra" *National Conference on Recent Trends in Optoelectronics & Laser technology NCOL-2007*, pp. 50-51, 9-11 April 2007, Thiruvananthapuram, Kerala, India.
14. S. K. Raghuwanshi and S. Talabattula, "Electromagnetic analysis of the planar slab waveguide" *International conference on Microwaves & Optoelectronics (ICMO-2007)*, pp. 3-11, 17-20 Dec. 2007, Aurangabad, India.
15. S. K. Raghuwanshi and S. Talabattula, "Mode identification in step-index circular waveguides", *International conference on Microwaves & Optoelectronics (ICMO-2007)*, pp. 67-74, 17-20 Dec. 2007, Aurangabad, India.
16. S. K. Raghuwanshi and S. Talabattula, "Multilayer thin-film filters" *Proceedings of second Interantional Conference on Resource Utilization & Intelligent Systems (INCRUIS-2008)*, pp. 699-703, 3-5 Jan. 2008, Perundurai, Erode, T.N., India.
17. S. K. Raghuwanshi and S. Talabattula, "Asymmetric group-velocity dispersion due to pulse walk-off effect in wide band WDM Raman amplification systems" *Proceedings of second Interantional Conference on Resource Utilization & Intelligent Systems (INCRUIS-2008)*, pp. 465-469, 3-5 Jan. 2008, Perundurai, Erode, T.N., India.
18. S. K. Raghuwanshi and S. Talabattula, "A numerical technique to generate data points for electric field lines and equipotential lines for arbitrary configuration of point sources" *MCDES-IISc, Centenary Conference on Managing Complexity in a Distributed World*, Paper I.D.-30, 27-30 May 2008.
19. S. K. Raghuwanshi, "Analysis of Integrated Optical Micro-Ring Resonator", *National conference on Information and Communication Technology, NCICT – 2009*, Mumbai.
20. S. K. Raghuwanshi, "Basics of MEMS/MOEMS Technology", *National conference on Information and Communication Technology, NCICT – 2009*, Mumbai.

21. S. K. Raghuwashi, "Study of 1-D photonic crystal fiber by using plane wave expansion method", *National workshop on Quantum confined systems and nano-scale devices*, Kerala, 3-5, Dec. 2009.
22. S. K. Raghuwashi, "Low dispersion due to square law medium profile", *Annual University Magazine of Sir Padampat Singhania university* 2009.
23. S. K. Raghuwashi and V. Kumar, "Analysis of Double Clad Single-Mode Step-Index fibers having depressed versus raised inner Cladding", *International conf. in comm., comput. control and nano-tech. (ICN 2010)*, 29-30 Nov. 2010, Bhalki India.
24. S. K. Raghuwashi, "Ray paths in an Elliptic parabolic refractive index profile fiber", *International conf. in comm., compute. Control. and nano-tech. (ICN 2010)*, 29-30 Nov. 2010, Bhalki India.
25. S. K. Raghuwashi, A. Tiwari and R. Pandey, "Study of Mode Cut-off Condition of Single Mode Planar Slab Optical Waveguide" , *12th International Conference of International Academy of Physical Sciences (CONIAPS XII)*, 22-24 Dec. 2010, Jaipur (Oral-presentation).
26. S. K. Raghuwashi, V. Kumar and R.R. Pandey, "Performance study of Exponential varying Refractive index Planar Slab Optical waveguide" *Proceeding of IEEE International conference on computer, communication & Electrical technology (ICCCET)*, Tirunelveli, Tamilnadu, India, pp. 16-20, 18 and 19 March 2011
27. R. R. Pandey and S. K. Raghuwashi, "Analysis of linear tapered dielectric optical waveguides using matrix approach" *13th International Conference of International Academy of Physical Sciences (CONIAPS-XIII)*, June 14-16, 2011, Dehradun, India .
28. S.K. Raghuwashi, V. Kumar and R. R. Pandey, "Dispersion study of cylindrical dielectric waveguide without computing $\frac{d^2\beta}{dk^2}$ numerically" *13th International Conference of International Academy of Physical Sciences (CONIAPS-XIII)*, June 14-16, 2011, Dehradun, India.
29. S. K. Raghuwashi, V. Kumar and D. Chack, "Analysis of Step Discontinuity in a Single Mode Planar Slab Taper Optical Waveguide" *Proceeding of IEEE International Conference on Computational Intelligence and Communication Networks (CICN-2011)*, pp. 192-196, 2011, Gwalior India.
30. S. K. Raghuwashi, Devendra Chack, "Dispersion Study of an In-homogenous Dielectric Planar Slab Optical Waveguide", and National Seminar on frontiers in Electronics, Communication, Instrumentation and Information Technology (FECIT-2011), pp. 37, paper ID PTS-10, Indian School of Mines Dhanbad, Nov. 3-4, 2011.
31. Santosh Kumar and S. K. Raghuwashi, "Derivation of Eigen Value equation for Double Clad/Double Core Planar Slab Optical Waveguides", National Seminar on frontiers in Electronics, Communication, Instrumentation and Information Technology (FECIT-2011), pp. 38, paper ID PTS-11, Indian School of Mines Dhanbad, Nov. 3-4, 2011.

Enclosures:**Annexure-I**

**List of different courses developed & taught during Nov. 2008 to till
now:**

Sl. No.	Title of course taught	Postgraduate/ Undergraduate	Sole instructor or with others	Year
1.	Digital Image Processing	Undergraduate (B. Tech)	Sole instructor in all the course	2008
2.	Digital Signal Processing	Undergraduate		2009
3.	Electromagnetic Wave	(B. Tech)		2008
4.	Network Theory	Undergraduate (B. Tech)		2009
5.	Electronic Measurement & Instrumentation	Undergraduate (B. Tech)		2009
6.	Microprocessor and its application	Undergraduate		2010
7.	Embedded System design	(B. Tech)		2010
8.	Optical Fiber Communication	Postgraduate		
9.	Basic Electronics	(MCA)		
10.	Control System Engineering.	Undergraduate (M. Tech)		
11.		Undergraduate (B. Tech)		
12.		Undergraduate (B. Tech)		2011

(Dr. S. K. Raghuwanshi)

Publication of Technical Report

My one chapter on topic “**Optical Networking: Current Issue and Review**” has been accepted for publication in the book title, *Technologies and Protocols for Future Internet Design: Reinventing the Web*”

Book published by

IGI Global

701 E. Chocolate Avenues, Suite 200 • Hershey PA 17033-1240, USA

Tel: 717.533.8845



Note: Book is expected to be published

Detail of Monographs Publication

Monographs has been Published by International VDM publisher Germany

Book Details:

Title	Numerical Study of Propagation in Optical Waveguides and Devices
Subtitle	Analytical and Numerical Study of Propagation in Optical Waveguides and Devices in Linear and Nonlinear Domain
ISBN	978-3-639-22167-1
Publisher	<u>International VDM publisher Germany</u>
Date of issue	2009-11-27 00:00:00
Monographs Cost (after pre-tax)	68 Euro (100 US)
Author	<u>Sanjeev Kumar Raghuvanshi,</u>
Co-author	Srinivas Talabattula (Associate prof. IISc Bangalore)

Detail of Book Publication

Book is being published by “AXIOE” Books, India, A Division of Agrawal Publication

Book Details:

Title:	Contemporary Optical Fiber Technology
Publisher:	<u>“AXIOE” Books, India (A division of Agrawal publication)</u>
Author:	<u>Sanjeev Kumar Raghuwanshi</u>
Date of Publication	Book is expected to be published by Sept 2011

Awards and Recognitions

Research Achievements/ Awards:

- MHRD Scholarship received during M Tech and PhD programs. All India GATE -1999 Rank-93 in Instrumentation paper.
- Nominated: Who's Who in the World published by America since 1899 upcoming 2010 Edition which had been scheduled for publication in November 2009. *
<http://www.marquiswhoswho.com> *
- Honorarium award of Rs. 3000 received from *Indian J. Physics* on 12-03-2010 for the review articles on Frontier topics.
- Awarded by “**Shiksha Rattan Puraskar**” and “**certificate of excellence**” by India International Friendship Society New Delhi for the year of 2011.
- “**Best Citizen Award**” for the year 2011 by best citizen publishing house New Delhi.

All India Selection

- Graduate Aptitude Test In Engineering-1999
Percentile 90.93
Instrumentation Engineering Paper
- Graduate Aptitude Test In Engineering-2004
Percentile 91.79
Electronics & Comm. Engineering Paper
 - BSNL (Junior Telecom Officer)-2002
Electronics & Telecommunication Engineering Post
- Graduate Aptitude Test In Engineering-2007
Percentile 92.79
Electronics & Comm. Engineering Paper
- Graduate Aptitude Test In Engineering-2008
Percentile 94.51
Electronics & Comm. Engineering Paper
- UPSC Indian Engineering Services Exam-2000
Written Qualified
Electronics & Comm. Engineering Paper
- UPSC Indian Engineering Services Exam-2008
Written Qualified
Electronics & Comm. Engineering Paper

Other Academic and Corporate Activities

- a. Potential reviewers of manuscript to be published in *Journal of Electromagnetic waves and applications* (JEMWA) and *progress in Electromagnetic research* (PIERS) letters being published by Cambridge USA.
- b. Review of some chapters of Book published by Tata McGraw Hill on Electromagnetic wave subject.
- c. Expert panel member of selection committee, interview being conducted by *Central Institute of Mining & Fuel Research* Dhanbad for position of project assistant Level-II under CSIR sponsored project.
- d. Academic council member of SPSU university Udaipur Rajasthan
- e. Faculty in charge of Department of Electronics Engineering of Indian School of Mines Dhanbad.
- f. Being organized the short term course and national conference on photonics and integrated optics in Indian School of Mines, Dhanbad.
- g. Canteen secretary and council member of Hostel-1 of IIT Bombay during 2004-2005.
- h. Participated as a session chair and advisor committee member of some international conferences including IEEE.
- i. Nominated as a faculty advisor for ECE dept. to monitor the academic activities of all SC/ST students

(Dr. S. K. Raghuwanshi)

Abstract of my Ph.D. work

Dense wavelength division multiplexing (DWDM) systems have the potential to meet the demands of emerging needs of information technology. The main objective of my Ph D thesis was to examine the role of linear and nonlinear optical effects in DWDM optical communication systems with emphasis on pulse propagation characteristics. These effects are important and critically influence the performance of DWDM optical systems. The main contribution has been made to three main aspects of the problem:

- Accurate analysis of uniform/non-uniform optical waveguides with an arbitrary refractive index profiles
- Pulse propagation and distortion in DWDM Raman amplification systems
- Use of non uniform fiber Bragg grating to compensate for pulse distortion in DWDM systems.

Thesis contains the analytical and numerical methods to analysis of optical waveguide and devices.

Teaching/Research plan for next five to ten years

My Doctoral research work was focus on inhomogeneous and nonlinear optical effects in DWDM (dense wavelength division multiplexing) optical communication systems. I require fabricating of various DWDM optical components and want to be tested at high optical power level to estimate the effect of nonlinearity as well as in-homogeneities of waveguide structures. Pulse propagation through various types of waveguide structure need to study theoretically as well as experimentally. I am willing to set-up a fiber optic research lab in IIT Mandi for the purpose to study on various types of MEMS (micro-electro-mechanical switch), FBG (fiber Bragg grating), PCF (photonic crystal fiber) and integrated ring resonator based optical components for DWDM applications.

My aim is to perform an effective teaching and quality research in field of Electronics and Communication Engineering. Also I will develop new courses in UG/PG/Ph D levels. Following some of the new courses I would like to Introduce in IIT Mandi:

1. MOEMS/MEMS Technology
2. NANOTECHNOLOGY
3. WAVELETS
4. EMBEDDED SYSTEMS