Biographical Sketch

Niloy K. Dutta

Niloy K. Dutta received his MS and PhD in Physics from Cornell University in 1976 and 1978 respectively. He received his BSc (Honors) and MSc in Physics from St. Stephen's College, New Delhi in 1972 and 1974 respectively. Since 1997 he has been a Professor of Physics at the University of Connecticut. Prior to that from 1990 to 1997 he was Head of Optoelectronic Device Research Department at Bell Laboratories at Murray Hill, NJ.

In 1976 he conducted the first experiments on intracavity absorption spectroscopy using a tunable infrared laser. In 1978 he reported the first observation of resonant photoexcited charge transfer.

He joined Bell Laboratories in 1979 where he has made numerous contributions to the research and development of semiconductor lasers for lightwave transmission systems. His many significant research accomplishments include explanation of the high temperature performance of long wavelength semiconductor lasers, first InGaAsP quantum well laser, first tunable Bragg reflector laser, first 10 Gb/s lightwave transmission field experiment, first coherent transmission field experiment, and two-dimensional optical interconnection systems.

He joined the University of Connecticut in 1997 as Professor of Physics. His current research programs include high speed optical transmission, optical networks, photonic logic devices and circuits, fiber lasers and optical coherence tomography.

He has published over 400 papers, 20 review chapters and 7 patents on semiconductor lasers, optical amplifiers, coherent transmission systems, optoelectronic integration, device physics and lightwave telecommunication system experiments. He has co-authored books on "Long Wavelength Semiconductor Lasers "(1986), "Semiconductor Lasers" (1992), "Semiconductor Optical Amplifiers" (2006), and "Semiconductor Optical Amplifiers" 2nd. edition (2013), Fiber Amplifiers and Fiber Lasers (2014), Optoelectronic Devices (2018), Mode Locked Lasers (2025). He has edited: "Vertical Cavity Surface Emitting Lasers" (2000), "WDM Technologies – Active Optical Components" (2003), "WDM Technologies – Passive Optical Components" (2004), and "WDM Technologies – Optical Networks" (2005).

He is a Life Fellow of the Institute of Electrical Engineers (IEEE), a Fellow of the Optical Society of America, and a Fellow of the International Society of Optical Engineers (SPIE). He received the Photonics Society Distinguished Lecturer Award in 1995. He is a Fellow of Connecticut Academy of Science and Engineering.

CURRICULUM VITAE

Niloy K. Dutta

Business Address:

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Citizenship: US

EDUCATION :

St. Stephen's College, New Delhi, BSc Physics 1972
St. Stephen's College, New Delhi, MSc Physics 1974
Cornell University, Ithaca, N.Y, MS Physics 1976
Cornell University, Ithaca, N.Y, PhD Physics 1978

INDUSTRIAL AND ACADEMIC EXPERIENCES:

1997- Professor of Physics, University of Connecticut, Storrs, CT 06269
Associate Director, Photonics Research Center (1997-2003)
Co-Chair Engineering Physics Program, (2001- 2017)
Associate Head, Grad. Affairs, Physics, (2016- 2022)
Current research programs include high speed optical transmission, optical networks, optical logic devices, fiber lasers and optical coherence tomography

1990 - 1997 AT&T Bell Laboratories, Murray Hill, New Jersey (Retired)
Head, Optoelectronic Device Research Department
Research on optical interconnection circuits and systems technology for computing and ATM switching systems applications. Research on analog and digital fiber optic telecommunication systems using WDM technology. Research on surface emitting lasers, photoreceiver circuits, optical modulators and high-power lasers.

1989 - 1990 AT&T Bell Laboratories, Murray Hill, New Jersey
Head, Optical Materials Research Department
Research on synthesis and characterization of III-V and II-VI compound semiconductors, bulk crystal growth, strained layers and dielectrics.

1986 - 1989 AT&T Bell Laboratories, Murray Hill, New Jersey
Supervisor, Laser Design and Fabrication Group
Development of distributed feedback laser technology, transfer of that technology to manufacture and fabrication of novel photonic devices.
Taught courses in "Lightwave Source and Detector Technology " for MS

program for Bell Labs employees in 1985, 86 and 88

1979 - 1985 AT&T Bell Laboratories, Murray Hill, New Jersey
Member of Technical Staff in Laser Development Group
Design and fabrication of AlGaAs and InGaAsP semiconductor lasers for fiber communication system applications. Concentrated on laser device physics, laser structure design, and characterization from 1979 to 1983 and on growth and processing from 1984 to 1985

1977 - 1978 Cornell University, Ithaca, N. Y.
Research Associate, Laboratory of Atomic and Solid State Physics
Conducted research on new laser transitions in the vacuum ultraviolet region using charge transfer collisions between rare gas ions and alkali atoms. Developed the theory of nonlinear optics for nonmonochromatic light.

1975 - 1977 Cornell University, Ithaca, N. Y.
Research Assistant, Laboratory of Atomic and Solid State Physics
Constructed and operated a Spin- Flip Raman Laser Facility for Cornell`s Materials Science Center. The tunable laser was used for spectroscopic investigation of several molecules. The techniques of intracavity and optoacoustic spectroscopy was developed. This work was part of the PhD thesis - A Study of Stimulated Infrared Scattering with Applications to Infrared Spectroscopy.

SIGNIFICANT CONTRIBUTIONS:

1978 : First observation of resonant photoexcited charge transfer

1980 - 81 : Experimental and theoretical work on radiative and nonradiative recombination mechanisms in semiconductors which led to the first identification of high temperature threshold problem of InGaAsP lasers and improved understanding of sublinearity of LEDs.

1982 : First demonstration of InGaAsP laser operation to > 100 C

1983 : Investigation of optical reflections on the performance of single wavelength lasers for lightwave system applications.

1984 : First InGaAsP quantum well laser.

1985 : First InGaAsP high power laser array

1986 : First InGaAsP tunable distributed feedback and Bragg reflector laser.

1988 : Fabrication of ultra linear lasers and first application in CATV analog transmission systems

1989 : First demonstration of lightwave transmission of a Tera-Bit-Km system

1989 : First successful coherent system field trial
First tunable sub MHz linewidth DFB laser for coherent transmission

1990 : Investigation of strained layer quantum well lasers. First sub mA threshold InGaAsP laser
-91 First demonstration of a laser using monolayer thick superlattice structure

1992 : Fabrication of integrated optoelectronic circuit arrays and their implementation in
-93 optical interconnection system experiment

1994 : Fabrication of optical array devices and circuits and their application in large computing systems,
-95 ATM Switching systems, and multimedia transmission systems

1996 : Fabrication of high speed lasers, Subcarrier multiplexed transmission, Wavelength conversion for
-97 optical networks, WDM transmission

1998 : Demonstration of 100 Gb/s time division multiplexed transmission, Optical transmission using
-99 plastic fibers

2000 : Demonstration of stable sub ps pulses from a fiber laser, High power Nd doped fiber laser
-01 Demonstrated applications of optical coherence tomography for dental tissue imaging

2002 : Developed new techniques for optical clock recovery for high speed transmission, Demonstrated
- 03 femto-second pulse generation using high order solitons from fiber lasers, Demonstrated optical
add/drop at 100 Gb/s

2004 : Demonstration and study of photonic logic operations at high speed using semiconductor optical
- 06 amplifier based Mach-Zehnder interferometer devices

2007 : Demonstration and study of optical correlators using semiconductor optical amplifier based
circuits
- 09 and fiber lasers

2010 : Supercontinuum generation in nonlinear fibers and study of two-photon absorption in optical
-13 amplifiers

2014 : Study of Coherence in supercontinuum generation, and, study of optical encryption
-15

2016 : Study of fiber lasers and short pulse generation
-17
2018 : Study of high power fiber lasers and optical encryption circuits
-20
2021 : Study of Supercontinuum generation using high power fiber lasers and encryption circuits
-23 based on Semiconductor optical amplifiers
2024
-27 : Study of infrared Supercontinuum generation using high power lasers, phase conjugation
For optical transmission, Quantum dot amplifiers

PUBLICATIONS:

More than 400 reviewed publications, 20 review articles, and, 7 patents
Seven books co-authored and authored in the areas of semiconductor lasers, semiconductor optical amplifiers, fiber amplifiers and fiber lasers, and, optoelectronic devices and four books edited,

PROFESSIONAL SOCIETY HONORS AND AWARD:

Institute of Electrical and Electronic Engineers (IEEE), Life Fellow, 2018 -
Institute of Electrical and Electronic Engineers (IEEE), Fellow, 1990 -
Optical Society of America (OSA), Fellow, 1986 -
International Society of Optical Engineers (SPIE), Fellow, 1993 -
Lasers and Electro-Optics Society (LEOS) Distinguished Lecturer Award, 1995: "Optical Interconnection Technology for Large Computing and Switching Systems" - 1995
Lucent President's Award - 1998
Elected Fellow, Connecticut Academy of Science and Engineering, 1998-
Spotlight Award from Government Communications for "Inverse Multiplexing" - 2000
Airborne Fiber Optic Amplifier Award – 2002
Council Member and Chair of Broadband Committee – Connecticut Academy of Science and Engineering -2010 -

PROFESSIONAL ACTIVITIES:

Chair, Semiconductor Laser Workshop, 1982
Chair, High Speed Optoelectronics Conference, 1992
Co-Chair, Conference on Active and Passive Components for WDM Communication, 2001
Co-Chair, Conference on Testing and Reliability of Optoelectronic Devices, 2002
Co-Chair, ITCOM - Information Technologies and Communication Conference, 2002 - 2007
Subcommittee Chair and Program Committee member of LEOS meetings, OSA meetings, SPIE meetings, and CLEO meetings
Chapter Chair, IEEE Connecticut Photonics Society Chapter, 1998-2011
Group Chair, Optoelectronics Group, Optical Society of America, 1999-2001
Division Chair, Photonics Division, Optical Society of America, 2001- 2004
Co-Chair, Semiconductor Optical Amplifier Workshop, Optical Fiber Communication, 2006
Associate Editor: IEEE Journal of Quantum Electronics 1997- 2002
Associate Editor: IEEE Photonics Technology Letters, 2009-2014
Editor-in-Chief: IEEE Photonics Journal, 2015 - 2020

TEACHING:

Developed the Engineering Physics Program at the University of Connecticut which is jointly offered by the Physics Department and School of Engineering, Served as the Co-Chair of this program (2001 - 2015)

Introduced two new graduate level courses in Physics Department

- Semiconductor Optical Devices

- Semiconductor Physics

These courses are taken by both Physics and Electrical Engineering students.

PhD. GRADUATE STUDENTS:

Dr. H. Fan (1999), Dr. C. Wu (2000), Dr. M. Tayahi (2001) , Dr. N. Choudhuri (2000), Dr. K. Lu (2001), Dr. M. El-Aasser (2002), Dr. H. Chen (2002), Dr. D. Piao (2003), Dr. G. Zhu (2004), Dr. P. Dua (2004), Dr. Q. Wang (2005), Dr. H. Dong (2006), Dr. H. Sun (2008) , Dr. Z. Chen (2010) , Dr. A. Kotb (2011), Dr. S. Ma (2012), Dr. W. Li (2015), Dr. H. Hu (2016), Dr.X. Zhang (2018), Dr. S. Thapa (2022)

Current: A. Rahman, S. Fan

UNIVERSITY SCHOOL, COLLEGE, DEPARTMENT SERVICE:

Associate Department Head of Graduate Affairs, 2015 - 2022
Co-Director Engineering Physics Program, August 15, 2001 - 2021
Search Committee member, Member, AMO Search, 2016
Prelim exam committee, Member January 2015 – Present, also 2010-2014, 2002-2006
Course and Curriculum Committee, Member August 2011 – Present, also 2001-2005, 2006-2009
Graduate Affairs Committee, Member, August 2011 – Present, also 2005-2008
Undergraduate Affairs Committee, Member, 2001 – Present, Engineering Physics representative
School of Engineering Course and Curriculum Committee, Member, August 2001 - Present
Dept. representative to AAUP, September 1, 2015 - Present
Undergraduate Course transfer credit, September 2007 - August 2016
Physics department advisory Committee, Member August 2011 – Present, also 2000 – 2003, 2007-2010
Promotion, tenure, retention (PTR) Committee, Member, 2020-2023, 2015-2018, 2011 - 2013, also 2002-2005, 2006-2009 PTR Chair: 2004, 2007, 2020
University Wide Assessment Committee, Member, September 2005 - 2010
General Education Oversight Committee (GEOC), Member, September 2003 - September 2007

NILOY K. DUTTA - PUBLICATIONS

I. BOOKS:

1. Long Wavelength Semiconductor Lasers , G. P. Agrawal and N. K. Dutta, van Nostrand Reinhold Co. N. Y. 1986

2. Semiconductor Lasers, G. P. Agrawal and N. K. Dutta, van Nostrand Reinhold Co. N.Y. 1993

3. Vertical Cavity Surface Emitting Laser Technology, Ed. by J. Cheng and N. K. Dutta, Gordon and Breach Pub, Co. 1999

4. WDM Technologies: Active Optical Components, Ed. by A. K. Dutta, N. K. Dutta and M. Fujiwara , Academic Press, NY, June 2002

5. WDM Technologies: Passive Optical Components, Ed. by A. K. Dutta, N. K. Dutta and M. Fujiwara , Academic Press, NY, May 2003

6. WDM Technologies: Optical Networks, Ed. by A. K. Dutta, N. K. Dutta and M. Fujiwara , Academic Press, NY, October 2004

7. Semiconductor Optical Amplifier, World Scientific, Singapore, April, 2006, N. K. Dutta and Q. Wang, Second Edition, July 2013

8. Fiber Amplifiers and Fiber Lasers, World Scientific, Singapore, December, 2014, N. K. Dutta

9. Optoelectronic Devices, World Scientific, Singapore, October, 2018, N. K. Dutta and X. Zhang

10. Mode Locked Lasers, World Scientific, Singapore, March 2025, N. K. Dutta

II. REVIEW ARTICLES:

1. R. J. Nelson and N. K. Dutta " Review of InGaAsP-InP laser structures and comparison of their performance " Semiconductor and Semimetal vol. 22, part C, R. K. Willardson and A. C. Beer (Ed) W. T. Tsang (vol. Ed) Academic Press N. Y. 1985

2. N. K. Dutta " Optical Sources for Lightwave System Applications " Fiber Optics Technology ed. E. E. Basch , Howard Sams Co. 1986

3. N. K. Dutta " Physics of Quantum Well Lasers " in Heterojunctions: A Modern View of Band Discontinuities and Device Applications ed. F. Capasso and G. Margaritondo , North Holland Co, 1987

4. N. K. Dutta and C. L. Zipfel " Reliability of Lasers and LEDs " Optical Fiber Communications II ed S. Miller and I. P. Kaminow, Academic Press N.Y. 1988

5. N. K. Dutta " Basic Physics of Semiconductor Lasers " Optoelectronic Technology and Lightwave Communication Systems ed C. Lin, van Nostrand Reinhold Co. N.Y. 1989

6. N. K. Dutta and J. R. Simpson " Optical Amplifiers " Progress in Optics book series ed E. Wolf, North Holland, Amsterdam, 1992

7. N. K. Dutta " InGaAsP Quantum Well Lasers " InP and Related Materials - Processing, Technology and Devices " ed A. Katz, Artech House, N.Y 1991

8. N. K. Dutta " Radiative Transitions in GaAs and other III-V Compounds " Semiconductor and Semimetals ed by Willardson and Beer, Academic Press, N.Y. 1993

9. P. K. Bhattacharya and N. K. Dutta " Quantum Well Optical Devices and Materials " Annual Review of Materials Science vol. 23, Annual Reviews Inc., Palo Alto, CA, 1993

10. N. K. Dutta " InGaAs DH and Quantum Well Lasers " Properties of Lattice Matched and Strained InGaAs, IEE press, England ,1993

11. N. K. Dutta " Semiconductor Lasers and Optical Amplifiers " in " Fiber Optic Communications" World Scientific., N.Y. 1995

12. N. K. Dutta " Optical Sources " in " Communications Handbook " CRC Press, 1996

13. N. K. Dutta " Lattice matched GaAs and InP -based QW lasers " in " Properties of III-V superlattices and quantum wells " Institute of Electrical Engineers, UK

14. N. K. Dutta, B. F. Levine, D. Vakhshoori, K.Y. Tu " Optical data links and parallel optical interconnects " in " Optical Interconnection Technology " Gordon and Breach Pub. NY

15. N. K. Dutta " Lasers, amplifiers and modulators based on InP based materials " in " InP based materials and devices : Physics and Technology " edited by O. Wada and H. Hasegawa, John Wiley and Sons. 1999

16. N. K. Dutta " Long Wavelength Laser Source" in WDM Technologies: Active Optical Components, Academic Press, NY, 2002 , Ed. By A. K. Dutta, N. K. Dutta and M. Fujiwara

17. N. K. Dutta " Semiconductor Optical Amplifiers" in WDM Technologies: Passive Optical Components, Academic Press, NY, 2002 , Ed. By A. K. Dutta, N. K. Dutta and M. Fujiwara

18. N. K. Dutta and N. Choudhuri" Optical Sources For Telecommunication" Chapter 46, pp 46-1 to 46-30, in " Communications Handbook " CRC Press, 2002

19. N. K. Dutta and K. Lu " Optical Modulators" in Encyclopedia of Optical Engineering, pp1752-1762, Marcel Dekker Inc. , 2003

20. N. K. Dutta "Basic Principles of Laser Diodes " in "Handbook of Laser Technology and Applications", pp. 525-560, ed. C. Webb and J. Jones, Institute of Physics, 2004

21. P. Dua, K. Lu, N. K. Dutta and J. Jaques "Analog and digital transmission using high-power fiber amplifiers" Guided Wave Optical Components and Devices, Chapter 11, p173-180, Elsevier, 2005

22. N. K. Dutta, "Physics of Semiconductor Lasers" in "Laser Technology and Applications"

III. CONFERENCE PROCEEDINGS EDITED SINCE 2000:

1. Testing, Reliability, and Applications of Optoelectronic Devices Ed. by A. K. Chin, N. K. Dutta, K. J. Linden and S. C. Wang, 24-26, Jan 2001, San Jose, CA

2. Testing and Measurement Applications of Optoelectronic Devices Ed. by A. K. Chin, N. K. Dutta, R. W. Herrick, K. J. Linden and D. J. McGraw, 21-22 Jan. 2002, San Jose, CA

3. Active and Passive Optical Components for WDM Communication Ed. by A. K. Dutta, A.A. S. Awwal, N. K. Dutta and K. Okamoto, 21-24, Aug. 2001, Denver, CO

4. Active and Passive Optical Components for WDM Communication II Ed. by A. K. Dutta, A. Awwal, N. K. Dutta and K. Okamoto, 29 July to 1 Aug, 2002, Boston, MA

5. Active and Passive Optical Components for WDM Communication III Ed. by A. K. Dutta, A. Awwal, N. K. Dutta and K. Fujiura, 8-11 Sept. 2003, Orlando, FL

6. Active and Passive Optical Components for WDM Communication IV Ed. by A. K. Dutta, A. Awwal, N. K. Dutta and Y. Ohishi, 25-28 Oct. 2004, Philadelphia, PA
7. Active and Passive Optical Components for WDM Communication V Ed. by A. K. Dutta, Y. Ohishi, N. K. Dutta and J. Moerk, 24-26 Oct. 2005, Boston, MA

8. Active and Passive Optical Components for WDM Communication VI Ed. by A. K. Dutta, Y. Ohishi, N. K. Dutta and J. Moerk, 3-4, Oct. 2006, Philadelphia, PA

9. Active and Passive Optical Components for WDM Communication VII Ed. by A. K. Dutta, Y. Ohishi, N. K. Dutta and A. V. Lavrinenko, 10-12 Sept. 2007, Boston, MA

IV. ARTICLE PUBLICATION LIST

1. N. K. Dutta, R. T. Warner and G. J. Wolga, ``Sensitivity Enhancement of a Spin Flip Raman Laser Absorption Spectrometer Through Use of an Intracavity Absorption Cell,'' Opt. Lett. 1, 155 (1977).
2. N. K. Dutta, ``On Stimulated Recombination Radiation From n-InSb,'' Phys. Lett. A 67, 399 (1978).
3. N. K. Dutta, ``Theory of Coherent Two-Photon Absorption,'' Phys. Lett. A 69, 21 (1978). 69, 21 (1978).
4. N. K. Dutta and G. J. Wolga, ``On the Interaction of Stimulated Spin-Flip Raman Scattering and Simulated Recombination Radiation in n-InSb,'' Appl. Phys. Lett. 19, 185 (1979).
5. N. K. Dutta, R. Tkach, D. Frolich, C. L. Tang, H. Mahr and P. L. Hartman, ``Resonance Charge Transfer from a Photo-Excited donor State,'' Phys. Rev. Lett. 42, 175 (1979).
6. N. K. Dutta, ``Theory of An Intracavity Raman Laser,'' Opt. and Quant. Electronics 11, 1 (1979).
7. N. K. Dutta, ``Effect of Pump Fluctuations on Second Harmonic Generation and Parametric Amplification,'' Opt. and Quant. Electronics 11, 217 (1979).
8. N. K. Dutta, ``Theory of the Four-Photon Parametric Oscillator,'' Physica 97C, 89 (1979).
9. N. K. Dutta, ``Raman Induced Kerr Effect with Nonmonochromatic Waves,'' J. Appl. Phys. 51, 40 (1980).
10. N. K. Dutta, ``Two-Photon Resonant Four Wave Mixing with Nonmonochromatic Waves,'' J. Physics B 13, 411 (1980).
11. N. K. Dutta, ``Two-Photon Resonant Four Wave Parametric Amplification,'' J. Appl. Phys. 51, 84 (1980).
12. N. K. Dutta, R. J. Nelson and P. A. Barnes, ``Temperature Dependence of Threshold and Electrical Characteristics of InGaAsP-InP DH Lasers,'' Electron. Lett. 16, 653 (1980).
13. R. J. Nelson and N. K. Dutta, ``Self-Sustained Pulsations in InGaAsP (~ 1.3 um) Lasers: A Comparison of Nitride-Stripe and Buried-Waveguide Devices,'' Proceedings of the 7th IEEE Intern'l Semiconductor Laser Conf. Sept. 8-10, 1980, Brighton, Sussex, England.
14. N. K. Dutta and R. J. Nelson, ``Temperature Dependence of Threshold of InGaAsP DH lasers and Auger Recombination,'' Gallium Arsenide and Related Compounds, 1980, Vol. 56, Institute of Physics, London, p. 193.
15. N. K. Dutta and R. J. Nelson, ``Optical and Electrical Characteristics of Pulsating 1.3 μm InGaAsP Double Heterostructure Lasers,'' Proc. of Intern'l Electron Devices Mtg. Dec. 8-10, 1980, Washington, DC, p. 378.
16. N. K. Dutta, ``Laser Oscillator and Parametric Oscillator Under External Injection,'' J. Appl. Phys. 51, 5629 (1980).
17. R. J. Nelson and N. K. Dutta, ``Self-Sustained Pulsations and Negative Resistance Behavior in InGaAsP Double Heterostructure Lasers,'' Appl. Phys. Lett. 37, 769 (1980).
18. N. K. Dutta, ``Calculated Absorption, Emission and Gain in $In_{.72}Ga_{.28}As_{.6}P_{.4}$,'' J. Appl. Physics 51, 6095 (1980).
19. N. K. Dutta, ``Gain-Current Relation for $In_{.72}Ga_{.28}As_{.6}P_{.4}$ Lasers,'' J. Appl. Phys. 52, 55 (1981).
20. N. K. Dutta, ``Calculated Temperature Dependence of Threshold Current of GaAs-Al_xGa_{1-x} As Double Heterostructure Lasers,'' J. Appl. Phys. 52, 70 (1981).
21. R. J. Nelson, R. B. Wilson, P. D. Wright, P. A. Barnes and N. K. Dutta, ``CW Electro-optical Properties of InGaAsP (lambda = 1.3 μm) Buried Heterostructure Lasers,'' IEEE J. Quantum Electron. QE-17, 202 (1981).
22. N. K. Dutta and R. J. Nelson, ``Temperature Dependence of Threshold of InGaAsP-InP DH Lasers and Auger Recombination,'' Appl. Phys. Lett. 38, 407 (1981).
23. N. K. Dutta and R. J. Nelson, ``A Study of Pulsations, Superlinear Emission and Negative Resistance in 1.3 μm InGaAsP Double Heterostructure Lasers,'' IEEE J. Quantum Electron. QE-17, 804 (1981).
24. N. K. Dutta and R. J. Nelson, ``A Comparison of the Temperature Dependence of the Lasing Characteristics of 1.3 μm InGaAsP and GaAs DH Lasers,'' IEEE Trans. Electron Devices ED-28, 1222 (1981).

25. N. K. Dutta and R. J. Nelson, ``Auger Recombination in $In_{1-x} Ga_x As_y P_{1-y}$,'' Proc. of International Electron Devices Mtg. Dec 7-9, 1981, Washington, DC, p. 456.
26. N. K. Dutta and R. J. Nelson, ``Gain Measurements in 1.3 μm InGaAsP-InP Double Heterostructure Lasers,'' IEEE J. Quantum Electron. QE-18, 44 (1982).
27. N. K. Dutta and R. J. Nelson, ``The case for Auger Recombination in $In_{1-x} Ga_x As_y P_{1-y}$,'' J. Appl. Phys. 53 74 (1982).
28. N. K. Dutta and R. J. Nelson, ``Light Saturation of InGaAsP-InP LED's,'' IEEE J. Quantum Electron. QE-18, 375, (1982).
29. N. K. Dutta, ``Temperature Dependence of Threshold Current of GaAs Quantum Well Lasers,'' Electron. Lett. 18, 451 (1982).
30. N. K. Dutta and R. J. Nelson, ``Temperature Dependence of the Lasing Characteristics of the 1.3 μm InGaAsP-InP and GaAs-$Al_{0.36} Ga_{0.64} As$ DH Lasers,'' IEEE J. Quantum Electron. QE-18, 871 (1982).
31. N. K. Dutta, P. D. Wright, R. J. Nelson, R. B. Wilson and P. R. Besomi, ``InGaAsP Laser with High T_o,'' IEEE J. Quantum Electron. QE-18, 1414 (1982).
32. N. K. Dutta, ``Calculated Threshold Current of GaAs Quantum Well Lasers,'' J. Appl. Phys. 53, 7122 (1982).
33. B. Sermage, H. J. Eichler, J. P. Heritage, R. J. Nelson and N. K. Dutta, ``Photoexcited Carrier Lifetime and Auger Recombination in 1.3 μm InGaAsP,'' Appl. Phys. Lett. 42, 259 (1983).
34. N. K. Dutta, ``Calculation of Auger Rates in a Quantum Well Structure and Its Application to InGaAsP Quantum Well Lasers,'' J. Appl. Phys. 54, 1236 (1983).
35. N. K. Dutta, R. J. Nelson, P. D. Wright, P. Besomi and R. B. Wilson, ``Optical Properties of a 1.3 μm InGaAsP Superluminescent Diode,'' IEEE Trans. Electron Devices ED-30, 360 (1983).
36. N. K. Dutta and P. P. Deimel, ``Optical Properties of a GaAlAs Superluminescent Diode,'' IEEE J. Quantum Electron. QE-19, 496 (1983).
37. N. K. Dutta, ``Current Injection in Multiquantum Well Lasers,'' IEEE J. Quantum Electron. QE-19, 794 (1983).
38. R. J. Nelson and N. K. Dutta, ``Calculated Auger Rates and Temperature Dependence of Threshold for Semiconductor Lasers Emitting at 1.3 and 1.55 μm,'' J. Appl. Phys. 54, 2923 (1983).
39. N. K. Dutta, R. L. Hartman and W. T. Tsang, ``Gain and Carrier Lifetime Measurements in AlGaAs SQW Lasers,'' IEEE J. Quantum Electron. QE-19, 1243 (1983).
40. N. K. Dutta, R. L. Hartman and W. T. Tsang, ``Gain and Carrier Lifetime Measurements in AlGaAs Multiquantum Well Lasers,'' IEEE J. Quantum Electron. QE-19, 1613 (1983).
41. G. P. Agrawal and N. K. Dutta, ``Effect of Auger Recombination on the Threshold Characteristics of Gain-Guided InGaAsP Lasers,'' Electron. Lett. 19, 974 (1983). 1984
42. N. K. Dutta, G. P. Agrawal and M. W. Focht, ``Bistability in Coupled Cavity Semiconductor Lasers,'' Appl. Phys. Lett. 44, 30 (1984).
43. N. K. Dutta, ``Effect of Uniaxial Stress on Optical Gain in Semiconductors,'' J. Appl. Phys. 55, 285 (1984).
44. N. A. Olsson, N. K. Dutta and K-Y Liou, ``Dynamic Linewidth of Amplitude Modulated Single-Longitudinal-Mode Semiconductor Lasers Operating at 1.5 μm Wavelength,'' Electron. Lett. 20, 121 (1984).
45. N. K. Dutta, D. P. Wilt, P. Besomi, W. C. Dautremont-Smith, P. D. Wright and R. J. Nelson, ``Improved Linearity and Kink Criteria for 1.3 μm InGaAsP-InP Channelled Substrate Buried Heterostructure Lasers,'' Appl. Phys. Lett. 44, 483 (1984).
46. O. E. Martinez, J. P. Heritage, B. I. Miller, N. K. Dutta and R. J. Nelson, ``Threshold Temperature Dependence of Subnanosecond Optically Excited 1.3 μm InGaAsP Lasers,'' Appl. Phys, Lett. 44, 578 (1984).
47. N. A. Olsson, N. K. Dutta, W. T. Tsang and R. A. Logan, ``Threshold Current Characteristics of GaAs Lasers Under Short Pulse Excitation,'' Electron. Lett. 20, 63, (1984).
48. N. K. Dutta, R. J. Nelson, P. D. Wright and D. C. Craft, ``Criterion for Improved Linearity of 1.3 μm InGaAsP-InP Buried Heterostructure Lasers,'' IEEE J. of Lightwave Technology, LT-2, 160 (1984).
49. D. C. Craft, N. K. Dutta and W. R. Wagner, `` and G. J. Zydzik, Characteristics of 1.3 μm InGaAsP Buried Heterostructure Lasers,'' Appl. Phys. Lett. 44, 823 (1984).

50. N. A. Olsson and N. K. Dutta, ``Effect of External Optical Feedback on the Spectral Properties of Cleaved-Coupled-Cavity Semiconductor Lasers,'' Appl. Phys. Lett. 44, 840 (1984).
51. N. K. Dutta, N. A. Olsson, J. P. Heritage and P. L. Liu, ``Temperature Dependence of Threshold Current of Injections Lasers for Short Pulse Excitation,'' Appl. Phys. Lett. 44, 943 (1984).
52. N. K. Dutta, D. P. Wilt and R. J. Nelson, ``Analysis of Leakage Currents in 1.3 μm InGaAsP Real-Index Guided Lasers,'' J. of Lightwave Technology LT-2, 201 (1984).
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