

СПИСОК ИСПОЛЬЗОВАННЫХ ИСТОЧНИКОВ

1. Smotrova E.I. Mathematical study of the two-dimensional lasing problem for the whispering-gallery modes in a circular dielectric microcavity / E.I. Smotrova, A.I. Nosich // Optical and Quantum Electronics. – 2004. - vol. 36, no 1-3. - P. 213-221.
2. Smotrova E.I. Cold-cavity thresholds of microdisks with uniform and non-uniform gain: quasi-3D modeling with accurate 2D analysis / E.I. Smotrova, A.I. Nosich, T.Benson, P. Sewell // IEEE J. Selected Topics in Quantum Electronics. – 2005. - vol. 11, no 5. - P. 1135-1142.
3. Smotrova E.I. Optical coupling of whispering gallery modes in two identical microdisks and its effect on the lasing spectra and thresholds / E.I. Smotrova, A.I. Nosich, T.Benson, P. Sewell // IEEE J. Selected Topics in Quantum Electronics. – 2006. - vol. 12, no 1. - P. 78-85.
4. Smotrova E.I. Threshold reduction in a cyclic photonic molecule laser composed of identical microdisks with whispering gallery modes / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // Optics Letters. – 2006. - vol. 31, no 7. - P. 921-923.
5. Smotrova E.I. Ultralow lasing thresholds of the pi-type supermodes in cyclic photonic molecules composed of sub-micron disks with monopole and dipole modes / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // IEEE Photonics Technology Letters. – 2006. - vol. 18, no 19. - P. 1993-1995.
6. Smotrova E.I. Lasing frequencies and thresholds of the dipole-type supermodes in an active microdisk concentrically coupled with a passive microring / E.I. Smotrova, J. Ctyroky, T.M. Benson, P. Sewell, A.I. Nosich // J. Optical Society America A. – 2008. - vol. 25, no 11. - P. 2884-2892.
7. Smotrova E.I. Optical fields of the lowest modes in a uniformly active thin sub-wavelength spiral microcavity / E.I. Smotrova, T.M. Benson, J. Ctyroky, R. Sauleau, A.I. Nosich // Optics Letters. – 2009. - vol. 34, no 24. - P. 3773-3775.

8. Nosich A.I. Trends in microdisk laser research and linear optical modelling / A.I. Nosich, E.I. Smotrova, S.V. Boriskina, T.M. Benson, P. Sewell // *Optical and Quantum Electronics*. – 2007. - vol. 39, no 15. - P. 1253-1272.
9. Smotrova E.I. Mathematical analysis of the lasing eigenvalue problem for the whispering gallery modes in a circular dielectric microcavity / E.I. Smotrova, A.I. Nosich // *Optical Waveguide Theory and Numerical Modeling: int. workshop, 8-9 April, 2003: workshop proc.* - Prague, 2003. - P. 138.
10. Smotrova E.I. Lasing spectra and thresholds of the whispering gallery modes in a circular dielectric microcavity / E.I. Smotrova, A.I. Nosich // *Transparent Optical Networks: int. conf., 29 June-3 July, 2003: conf. proc.* - Warsaw, 2003. - P. 315-318.
11. Smotrova E.I. Spectra and thresholds of the 2D modes in a ring microcavity laser / E.I. Smotrova, A.I. Nosich // *Laser and Fiber Network Modeling: int. workshop, 19-20 September, 2003: workshop proc.* - Alushta, 2003. - P. 62-64.
12. Smotrova E.I. Effective index dispersion account in the cold model of disk resonator with uniform gain / E.I. Smotrova, A.I. Nosich, S.V. Boriskina, T. Benson, P. Sewell // *Physics and Engineering of Microwaves, Millimetre and Sub- Millimetre Waves: int. symp., 21-26 June, 2004: symp. proc.* - Kharkov, 2004. - P. 338-340.
13. Smotrova E.I. Spectra and thresholds of the whispering gallery modes in a microdisk laser with radially non-uniform gain area / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // *Transparent Optical Networks: int. conf., 4-8 July, 2004: conf. proc.* - Warsaw, 2004 – P. 391-394.
14. Smotrova E.I. Whispering gallery modes in a microdisk laser with non-uniform gain / E.I. Smotrova, A.I. Nosich // *"Days on Diffraction": int. conf., 29 June-2 July, 2004: conf. proc.* – St.-Petersburg, 2004. - P. 88.
15. Smotrova E.I. Symmetry classes of lasing modes in two nanospaced microdisks / E.I. Smotrova, A.I. Nosich, S.V. Boriskina, T.M. Benson, P. Sewell // *Mathematical Methods in Electromagnetic Theory: int. conf., 14-17 September, 2004 – Dnepropetrovsk, 2004: conf. proc.* - P. 530-532.

16. Smotrova E.I. Improvement of directionality of light emission from two optically coupled microdisk lasers / E.I. Smotrova, A.I. Nosich, S.V. Boriskina, T.M. Benson, P. Sewell // Optical Waveguide Theory and Numerical Modeling: int. workshop, 8-9 April, 2005: workshop proc. – Grenoble, 2005. - P. 91.
17. Smotrova E.I. Cold-cavity lasing spectra and thresholds of two optically coupled resonators with whispering-gallery modes / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // Antennas and Electromagnetics: int. conf., 15-17 June, 2005: conf. proc. – Saint Malo, 2005. - P. 298-299.
18. Smotrova E.I. Selectively activated photonic molecule of two microdisks: cold-cavity lasing spectra and thresholds / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // Transparent Optical Networks: int. conf., 3-7 July, 2005: conf. proc. - Barcelona, 2005. - P. 139-142.
19. Nosich A.I. Trends in microdisk laser design and optical modeling / A.I. Nosich, E.I. Smotrova, S.V. Boriskina, T.M. Benson, P. Sewell // Transparent Optical Networks: int. conf., 3-7 July, 2005: conf. proc. - Barcelona, 2005 - P. 133-138.
20. Benson T.M. Microcavities: an inspiration for advanced modelling techniques / T.M. Benson, P. Sewell, S.V. Boriskina, V. Janyani, A. Al-Jarro, N. Sakhnenko, E.I. Smotrova, A.I. Nosich, A.G. Nerukh // Transparent Optical Networks: int. conf., 3-7 July, 2005: conf. proc. - Barcelona, 2005. - P. 272-275.
21. Nosich A.I. Analytical regularization and analytical preconditioning in computational electromagnetics / A.I. Nosich, A.V. Boriskin, E.I. Smotrova, M.V. Balaban // Microwave and Optical Technologies: int. symp., 22-25 August, 2005: symp. proc. - Fukuoka, 2005. - P. 307-310.
22. Benson T.M. Micro-resonators: simulation and application / T.M. Benson, S.V. Boriskina, P. Sewell, A. Vukovic, A.I. Nosich, V. Janyani, A. Al-Jarro, N. Sakhnenko, E.I. Smotrova, A.G. Nerukh // Advanced Optoelectronics and Lasers: int. conf., 15-17 September, 2005: conf. proc. - Yalta, 2005. – Vol. 1. - P. 6-11.
23. Nosich A.I. Tradeoffs between threshold and directionality in microdisk laser design / A.I. Nosich, E.I. Smotrova, S.V. Boriskina, T.M. Benson, P. Sewell //

Advanced Optoelectronics and Lasers: int. conf., 15-17 September, 2005: conf. proc. - Yalta, 2005. - vol. 1. - P. 31-36.

24. Smotrova E.I. Lasing of circular photonic molecules made of three and four microdisks / E.I. Smotrova, E.K. Semenova, A.I. Nosich, T.M. Benson, P. Sewell // Laser and Fiber-Optical Networks Modeling: int. conf., 15-17 September, 2005: conf. proc. - Yalta, 2005. - P. 46-49.

25. Smotrova E.I. Cold-cavity lasing spectra and thresholds of a twin disk photonic molecule with optically coupled whispering gallery modes / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell, // Numerical Simulation of Optoelectronic Devices: int. conf., 19-22 September, 2005: conf. proc. - Berlin, 2005. - P. 59-60.

26. Smotrova E.I. Reduction of lasing thresholds in circular photonic molecule microdisk lasers / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // Semiconductor Devices Research: int. symp., 7-9 December, 2005: conf. proc. - Bethesda, 2005. - P. 68-69.

27. Smotrova E.I. Account of the active region shape in the linear modelling of microcavity lasers / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // Optical Waveguide Theory and Numerical Modeling: int. workshop, 20-21 April 2006: workshop proc. - Varese, 2006. - P. 68.

28. Nosich A.I. Chaos-free mathematical framework for linear optical modeling of microcavities and microlasers / A.I. Nosich, E.I. Smotrova, S.V. Boriskina, T.M. Benson, P. Sewell // Transparent Optical Networks: int. conf., 18-22 June, 2006: conf. proc. - Nottingham, 2006. - Vol. 1. - P. 53-58.

29. Smotrova E.I. Linear threshold analysis of a photonic molecule laser formed by a cyclic array of submicron semiconductor disks with non-whispering-gallery modes / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // Transparent Optical Networks: int. conf., 18-22 June, 2006: conf. proc. - Nottingham, 2006. - Vol. 1. - P. 82-83.

30. Nosich A.I. Linear electromagnetic modelling of microcavity lasers with eigenvalue problems for active open resonators / A.I. Nosich, E.I. Smotrova,

S.V. Boriskina, T.M. Benson, P. Sewell, A. Altintas // Electromagnetic Wave Scattering: int. workshop, 18-22 September, 2006: workshop proc. - Gebze, 2006. - P. 2/37-2/42.

31. Benson T.M. Laser eigenvalue problems: The electromagnetic modelling of microlasers / T.M. Benson, A.I. Nosich, E.I. Smotrova, M.V. Balaban, P. Sewell // SPIE Photonics West: LASE 2007. Laser Resonators and Beam Control IX: int. conf., 20-25 January, 2007: conf. proc. - San Jose, 2007. – Vol. 6452 64520X. - P. 64520X-1 - 64520X-10.

32. Smotrova E.I. Optical analysis of a microcavity laser with an annular Bragg reflector / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // Optical Waveguide Theory and Numerical Modeling: int. workshop, 27-28 April, 2007: workshop proc. - Copenhagen, 2007. - P. 12.

33. Nosich A.I. Linear electromagnetic modelling of microcavity lasers using eigenvalue problems for active open resonators / A.I. Nosich, E.I. Smotrova, T.M. Benson, P. Sewell // Mediterranean Microwave Symposium: int. symp. 14-16 May, 2007: symp. proc. - Budapest, 2007. - P. 329-332.

34. Smotrova E.I. Lasing spectra and thresholds of a circular microcavity laser embedded in an annular Bragg reflector / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // “Days on Diffraction”: int. conf., 29 May - 1 June, 2007: conf. proc. - St. Petersburg, 2007. - P. 82.

35. Nosich A.I. Lasing in open microcavities with active regions as a linear electromagnetic eigenproblem / A.I. Nosich, E.I. Smotrova, T.M. Benson, P. Sewell // Transparent Optical Networks: int. conf., 1-5 July, 2007: conf. proc. - Rome, 2007. - Vol. 3. -P. 62-64.

36. Smotrova E.I. Linear optical analysis of microdisk lasers concentrically coupled with microrings E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // Transparent Optical Networks: int. conf., 1-5 July, 2007: conf. proc. - Rome, 2007. - Vol. 4. -P. 200 – 203.

37. Smotrova E.I. Optical modeling of a microdisk laser with an annual Bragg reflector / E.I. Smotrova, A.I. Nosich, T.M. Benson, P. Sewell // *Nanosystems, Nanostructures and Nanotechnologies: int. conf.*, 21-23 November 2007: conf. proc. - Kiev, 2007. - P. 531.
38. Smotrova E.I. Understanding thresholds of microcavity lasers through overlap coefficients / E.I. Smotrova, V.O. Byelobrov, P. Sewell, T.M. Benson, J. Ctyroky, A.I. Nosich // *Optical Waveguide Theory and Numerical Modeling: int. workshop*, 13-14 June, 2008: conf. proc. - Eindhoven, 2008. - P. 9.
39. Nosich A.I. Optical theorem helps understand thresholds of lasing in open semiconductor microcavities / A.I. Nosich, E.I. Smotrova, V.O. Byelobrov, P. Sewell, T.M. Benson, J. Ctyroky // *Transparent Optical Networks: int. conf.*, 22-26 June 2008: conf. proc. - Athens, 2008. - Vol. 4. - P. 10-13.
40. Smotrova E.I. Lasing spectra and thresholds of supermodes in an active microdisk assisted with a passive microring in view of the mode overlap coefficients / E.I. Smotrova, T.M. Benson, P. Sewell, J. Ctyroky, A.I. Nosich *Transparent Optical Networks: int. conf.*, 22-26 June 2008: conf. proc. - Athens, 2008. - Vol. 4. - P. 242-245.
41. Nosich A.I. Mathematical and numerical modelling of optical microcavities with active regions / A.I. Nosich, E.I. Smotrova, V.O. Byelobrov, T.M. Benson, P. Sewell, J. Ctyroky // *Photonics Prague: int. conf.*, 27-29 August, 2008: conf. abstracts. - Prague, 2008. - P. 58.
42. Nosich A.I. New aspects of the use of Optical Theorem in the analysis of microcavity lasers / A.I. Nosich, E.I. Smotrova, V.O. Byelobrov, P. Sewell, T.M. Benson, J. Ctyroky // *Advanced Optoelectronics and Lasers: int. conf.*, 29 September – 4 October 2008: conf. proc. - Alushta, 2008. - P. 101-103.
43. Smotrova E.I. Nystrom-type technique for numerical analysis of lasing spectra and thresholds of arbitrary-shaped active 2-D microcavities / E.I. Smotrova, T.M. Benson, P. Sewell, J. Ctyroky, A.I. Nosich // *Advanced Optoelectronics and*

Lasers: int. conf., 29 September – 4 October 2008: conf. proc. - Alushta, 2008. - P. 363-365.

44. Smotrova E.I. Nystrom-method analysis of active spiral sub-wavelength 2-D microresonator / E.I. Smotrova, T.M. Benson, P. Sewell, A.I. Nosich // Transparent Optical Networks: int. conf., 28 June – 2 July, 2009: conf. proc. - Ponta Delgada, 2009. - Tu.P.5.

45. Nosich A.I. Mathematical and numerical modelling of dielectric resonators, lens antennas, and lasers using boundary integral equations and eigenvalue problems / A.I. Nosich, E.I. Smotrova, A.V. Boriskin, R. Sauleau // Waves in Science and Engineering: int. conf. , 26-30 October, 2009: conf. proc. - Mexico City, 2009. - P. 12-13.

46. Смотров Е.И. Монопольные и дипольные моды в активном спиральном микрорезонаторе / Е.И. Смотров // Харьковская конференция молодых ученых по радиофизике и электронике: труды, 1-3 декабря 2009 г. – Харьков, 2009. - С. 118.

47. Fiedziuszko S.J. Dielectric resonators raise your high-Q / S.J. Fiedziuszko, S. Holme // IEEE Microwave Magazine. – 2001. - Vol. 2, no 3. - P. 50-60.

48. Faist J. Quantum cascade disk lasers / J. Faist, C. Gmachl, M. Striccoli, C. Sirtori, F. Capasso // Appl. Phys. Lett. – 1996. - Vol. 69, no 17. - P. 2456–2458.

49. Richtmyer R.D. Dielectric resonators / R.D. Richtmyer // J. Appl. Phys. – 1939. - Vol. 10. - P. 391-398.

50. Schlicke H.M. Quasi-degenerated modes in high-epsilon dielectric cavities / H.M. Schlicke // J. Appl. Phys. – 1953. - Vol. 24. - P. 187– 191.

51. Schlesinger S.P. On higher-order hybrid modes of dielectric cylinders / S.P. Schlesinger, P. Diamant, A. Vigants // IRE Trans. Microwave Theory Tech. – 1960. - Vol. M'fT-8. - P. 252– 253.

52. H.Y. Yee Natural resonant frequencies of microwave dielectric resonators / H.Y. Yee // IEEE Trans. Microwave Theory Tech. – 1965. - Vol. MTT- 13. - P. 256.

53. Van Bladel J. On the resonances of a dielectric resonator of very high permittivity / J. Van Bladel // IEEE Trans. Microwave Theory Tech. – 1975. - Vol. MTT-23, no 2. - P. 199-208.
54. Никольский В.В. Электродинамика и распространение радиоволн / В.В. Никольский, Т.И. Никольская. - М.: Наука. Гл. ред. физ.-мат. литературы, 1989. - 544 С.
55. Vahala K.J. Optical microcavities / K.J. Vahala // Nature. – 2003. - Vol. 424. - P. 839–846.
56. Диэлектрические резонаторы / под ред. М.Е. Ильченко - М.: Радио и связь, 1989. - 328 С.
57. Petosa A. Recent advances in dielectric-resonator antenna technology / A. Petosa, A. Ittipiboon, Y.M.M. Antar, D. Roscoe, M. Cuhaci // IEEE Antennas and Propagation Magazine. – 1998. - Vol. 49, no 3. - P. 35-48.
58. Kobayashi H. Receiving properties of extended hemispherical lens coupled slot antennas for 94 GHz millimeter wave radiation / H. Kobayashi, Y. Yasuoka // Electronics and Communications in Japan – 2001. - Part 1, vol. 84, n°6. - P. 32-40.
59. Ishihara O. A highly stabilized GaAs FET oscillator using a dielectric resonator feedback circuit in 9-14 GHz / O. Ishihara, T. Mori, M. Sawano, M. Nakatani // IEEE Trans. Microwave Theory Tech. – 1980. - Vol. MTT-28, no 8. - P. 817-824.
60. McCall S.L. Whispering-gallery mode microdisk lasers / S.L. McCall, A.F.J. Levi, R.E. Slusher, S.J. Pearson, R.A. Logan // Appl. Phys. Lett. – 1992. – Vol. 60, no. 3. – P. 289–29.
61. Hovinen M. Blue-green laser emission from ZnSe quantum well microresonators / M. Hovinen, J. Ding, A.V. Nurmikko, D.C. Grillo, J. Han, et al. // Appl. Phys. Lett. – 1993. – Vol. 63, no. 23. – P. 3128–3130.
62. Mohideen U. GaAs/AlGaAs microdisk lasers / U. Mohideen, W.S. Hobson, S.J. Pearton, F. Ren, R.E. Slusher // Appl. Phys. Lett.- 1994. – Vol.64, no.15. – P. 1911–1913.

63. Frateschi N.C. The spectrum of microdisk lasers / N.C. Frateschi, A.F.J. Levi // J. Appl. Physics. – 1996. - Vol. 80, no 2. – P. 644-653.
64. Baba T. Photonic Crystal and Microdisk Cavities based on GaInAsP-InP System / T. Baba // IEEE J. of Selected Topics in Quantum Electronics. – 1997. - Vol. 3, No. 3. - P. 808-830.
65. Gayral B. High-Q wet-etched GaAs microdisks containing InAs quantum boxes / B. Gayral, J.M. Gerard, A. Lemaitre, C. Dupuis, L. Mamin, J.L. Pelouard // Appl. Physics Lett. – 1999. - Vol. 75, no 13. - P. 1908- 1910.
66. Cao H. Optically pumped InAs quantum dot microdisk lasers / H. Cao, J.Y. Xu, W.H. Xiang, Y. Ma, S.-H. Chang, S.T. Ho // Appl. Phys. Lett. – 2000. - vol. 76, no 24. - P. 3519-3521.
67. Fasching G. Subwavelength microdisk and microring terahertz quantum-cascade lasers / G. Fasching, V. Tamosiunas, A. Benz, A.W. Andrews, K. Unterrainer, R. Zobl, T. Roch, W. Schrenk, G. Strasser // IEEE J. Quantum Electronics. – 2007. – Vol. 43, no. 8. – P. 687–697.
68. Matsko A.B. Optical resonators with whispering-gallery modes / A.B. Matsko, V.S. Ilchenko // Part 1, Basics and Part 2, Applications. IEEE J. Select. Top. Quantum Electron.- 2006 – Vol. 12, no. 1. – P. 3–32.
69. Lai C.-M. Single mode stimulated emission from prismlike gallium nitride submicron cavity / C.-M. Lai, H.-M. Wu, P.-C. Huang, S.-L. Wang, L.-H. Peng // Appl. Phys. Letts. – 2007. - Vol.90, no. 14. - P. 1106-1108.
70. Poon W. Multimode resonances in square-shaped optical microcavities / W. Poon, F. Courvoisier, R. K. Chang // Opt. Letts.- 2001. - Vol. 26, no. 9. - P. 632-634.
71. Lu C.-Y Optical characterization of GaN microcavity fabricated by wet etching / C.-Y. Lu, S.-L. Wang, H.-M. Wu, and L.-H. Peng // Phys. Stat. Sol. – 2006. - Vol. 3, no. 6. - P. 2019-2021.
72. Fujita M. Microgear laser / M. Fujita, T. Baba // Appl. Phys. Lett. – 2002. – Vol. 80, no. 12. – P. 2051–2053.

73. Gmachl C. High-power directional emission from microlasers with chaotic resonances / C. Gmachl, F. Cappasso, E.E. Narimanov, J.U. Nockel, A.D. Stone, J. Faist // *Science*. – 1998. – Vol. 280. – P. 1556–1564.
74. Kim S.-K. Highly directional emission from few-micron-size elliptical microdisks / S.-K. Kim, S.-H. Kim, G.-H. Kim, H.-G. Park, D.-J. Shin, Y.-H. Lee // *Appl. Phys. Lett.* – 2004. – Vol. 84, no. 6. – P. 861–863.
75. Kneissl M. Current-injection spiral shaped microcavity disk laser diodes with unidirectional emission / M. Kneissl, M. Teepe, N. Miyashita, N.M. Johnson, G.D. Chern, R.K. Chang // *Appl. Phys. Lett.* – 2004. – Vol. 84, no. 14. – P. 2485–2487.
76. Ben-Massaoud T. Unidirectional laser emission from polymer-based spiral microdisks / T. Ben-Massaoud, J. Zyss // *Appl. Phys. Lett.* – Vol. 86. – P. 241110.
77. Dubertrand R. Circular dielectric cavity and its deformations / R. Dubertrand, E. Bogomolny, N. Djellali, M. Lebental, C. Schmit // *Phys. Rev. A*. – 2008. – Vol. 77, no 1. – P. 013804(16).
78. Borcelli M. Beyond the Rayleigh scattering limit in high-Q silicon microdisks: theory and experiment / M. Borcelli, T.J. Johnson, O. Painter // *Opt. Express*. – Vol. 13, no. 5. – P. 515–1530.
79. Gorodetsky M.L. Ultimate Q of optical microsphere resonators / M.L. Gorodetsky, A.A. Savchenkov, V.S. Ilchenko // *Opt. Lett.* – 1996. – Vol. 21, no. 7. – P. 453–455.
80. Armani D.K. Ultra-high-Q toroid microcavity on a chip / D.K. Armani, T.J. Kippenberg, S.M. Spillane, K. Vahala // *Nature*. – 2003/ - Vol. 421. – P. 905–908.
81. Rex N.B. Threshold lowering in GaN micropillar lasers by means of spatially selective optical pumping / N.B. Rex, R.K. Chang, L.J. Guido // *IEEE Photonics Technol. Lett.* – 2001. – Vol. 13, no. 1 – P. 1–3.
82. Bhattacharya P. Quantum dot photonic crystal light sources / P. Bhattacharya, J. Sabarinathan, J. Topolancik, S. Chakravarty, P.-C. Yu, W. Zhou // *Proc. IEEE*. – 2005. – Vol. 93, no. 10. – P. 1825–1838.

83. Jebali A. Lasing in organic circular grating structures / A. Jebali, R.F. Mahrt, N. Moll, C. Bauer, G.L. Bona, W. Bachtold // J. Appl. Phys. – 2004. – Vol. 96, no. 6. – P. 3043–3049.
84. Scheuer J. Low-threshold 2-D annular Bragg lasers / J. Scheuer, W.M.J. Green, G.A. DeRose, A. Yariv // Opt. Lett. – 2004. – Vol. 29, no. 22. – P. 2241–2243.
85. Scheuer J. Lasing from a circular Bragg nanocavity with an ultrasmall modal volume / J. Scheuer, W.M.J. Green, G.A. DeRose, A. Yariv // Appl. Phys. Lett. – 2005. – Vol. 86. – P. 251101.
86. Scheuer J. InGaAsP annular Bragg lasers: theory, applications, and modal properties / J. Scheuer, W.M.J. Green, G.A. DeRose, A. Yariv // IEEE J. Select. Top. Quantum Electron. – 2005. – Vol. 11, no. 2. – P. 476–484.
87. Zwiller V. Quantum optics with single quantum dot devices / V. Zwiller, T. Aichele, O. Benson, // New J. Phys. – 2004. – Vol. 6. - P. 96.
88. Nakagawa A. Photonic molecule laser composed of GaInAsP microdisks / A. Nakagawa, S. Ishii, T. Baba, // Appl. Phys. Lett. – 2005. – Vol. 86. – P. 041112.
89. Evans P.W. Room temperature photopump laser operation of native-oxide-defined coupled GaAs-AlAs superlattice microrings / P.W. Evans, N. Jr. Holonyak // Appl. Phys. Lett. – 1996. – Vol. 69, no. 16. – P. 2391–2393.
90. Petter K. Fabrication of large periodic arrays of AlGaAs microdisks by laser-interference lithography and selective etching / K. Petter, T. Kipp, C. Heyn, D. Heitmann, C. Schuller, // Appl. Phys. Lett. – 2002. - Vol. 81, no 4. - P. 592-594.
91. Маркузе Д. Оптические волноводы / Д. Маркузе. – М.: Мир, 1974. – 576 С.
92. Bittner S. Experimental test of a 2-D approximation for dielectric microcavities / S. Bittner, B. Dietz, M. Miski-Oglu, P. Oria Iriarte, A. Richter // Physical Review A. – 2009. - Vol. 80, no 2. - P. 3825-3834.
93. Labilloy A. High-finesse disk microcavity based on a circular Bragg reflector / A. Labilloy, H. Benisty, C. Weisbuch, T.F. Krauss, C.J.M. Smith, R. Houdre, U. Oesterle // Appl. Phys. Lett. – 1998. – Vol. 73. – P. 1314–1316.

94. Kaliteevski M.A. Optical eigenmodes of a cylindrical microcavity / M.A. Kaliteevski, R.A. Abram, V.V. Nikolaev // J. Mod. Opt. – 2000. – Vol. 47. – P. 677–684.
95. Jebali A. Analytical calculation of the Q-factor for circular grating microcavities / A. Jebali, D. Erni, S. Gulde, R.F. Mahrt, W. Bachtold // J. Opt. Soc. Am. B – 2007. – Vol. 24, no. 4. – P. 906–915.
96. Noeckel J.U. Chaotic light: a theory of asymmetric resonant cavities / J.U. Noeckel, A.D. Stone // In: Optical Processes in Microcavities / Eds. R.K Chang, A.J. Campillo. - World Scientific, Singapore, 1996. - P. 389–426.
97. Noeckel J.U. 2-D microcavities: theory and experiments / J.U. Noeckel, R.K Chang, // In: Cavity-Enhanced Spectroscopies / Eds. R.D. van Zee, J.P. Looney. - Academic Press, San Diego, 2002. – P. 185-226.
98. Schwefel H.G.L. Progress in asymmetric resonant cavities; using shape as a design parameter in dielectric microcavity lasers / H.G.L. Schwefel, H.E. Tureci, A.D. Stone, R.K. Chang // In: Optical Microcavities / Ed. K. Vahala. - World Scientific, Singapore, 2004 - P. 415–496.
99. Tureci H.E. Gaussian-optical approach to stable periodic orbit resonances of partially chaotic dielectric microcavities / H.E. Tureci, H.G.L. Schwefel, A.D. Stone, E.E. Narimanov // Opt. Express – 2002. – Vol. 10, no. 6. – P. 752–776.
100. Li B.-J. Numerical analysis of the WG modes by the FDTD method / B.-J. Li, P.-L. Liu // IEEE J. Quantum Electron – 1996. – Vol. 32, no. 9. – P. 1583–1587.
101. Hagness S.G. FDTD microcavity simulations: design and experimental realization of waveguide-coupled single-mode ring and WG mode disk resonators / S.G. Hagness, D. Rafizadeh, S.T. Ho, A. Taflove // J. Lightwave Technol. – 1997. – Vol. 15, no. 11. – P. 2154–2165.
102. Huang Y.-Z. Analysis of mode characteristics for equilateral triangle semiconductor microlasers with imperfect boundaries / Y.-Z. Huang, Q.-Y. Lu, W.-H. Guo, L.-J. Yu // Proc. IEE Optoelectron. – 2004. – Vol. 151, no. 4. – P. 202–204.

103. Boriskin A.V. Test of the FDTD accuracy in the analysis of the scattering resonances associated with high-Q whispering-gallery modes of a circular cylinder / A.V. Boriskin, S.V. Boriskina, A. Rolland, R. Sauleau, A.I. Nosich, // J. Optical Society of America A – 2008. - Vol. 25, no 5. - P. 1169-1173.
104. Niegemann J. Simulation of optical resonators using DGTD and FDTD / J. Niegemann, W Pernice, K Busch // J. Optics A: Pure and Applied Optics – 2009. - Vol. 11, no 11. - P. 4015-4025.
105. Qiu S.-L. Q-factor instability and its explanation in the staircased FDTD simulation of high-Q circular cavity / S.-L. Qiu, Y.-P. Li // J. Opt. Soc. Am. B – 2009. - Vol. 26, no. 9. - P. 1664-1674.
106. Хижняк Н.А., Интегральные уравнения макроскопической электродинамики / Н.А. Хижняк. - Киев: «Наукова думка», 1986. - С. 280.
107. Колтон Д. Методы интегральных уравнений в теории рассеяния / Д. Колтон, Р.Кресс. - М.: «Мир», 1987. - С.311.
108. Kottmann J.P. Accurate solution of the volume integral equation for high-permittivity scatterers / J.P. Kottmann, O.J.F. Martin // IEEE Trans. Antennas Propagat. – 2000. – Vol. 48, no. 11. – P. 1719–1726.
109. Zhuck N.P. 2-D scattering from an inhomogeneous dielectric cylinder embedded in a stratified medium: case of TM-polarization / N.P. Zhuck, A.G. Yarovoy // IEEE Trans. Antennas Propagat. – 1994. – Vol. 42, no. 1. – P. 16–21.
110. Wiersig J. Formation of long-lived, scarlike modes near avoided resonance crossings in optical microcavities / J. Wiersig // Phys. Rev. Lett. – 2006. – Vol. 97. – P. 253901.
111. Wilton D. Review of current status and trends in the use of integral equations in computational electromagnetics / D. Wilton // Electromagnetics – 1992. – Vol. 12. – P. 287–341.
112. Wiersig J. Boundary element method for resonances in dielectric microcavities / J. Wiersig // J. Opt. A, Pure Appl. Opt. – 2003. – Vol. 5. – P. 53–60.

113. Wiersig J. Hexagonal dielectric resonators and microcrystal lasers / J. Wiersig // *Phys. Rev. A* – 2003. – Vol. 67. – P. 023807.
114. Lee S.-Y. Resonance patterns in a stadium-shaped microcavity / S.-Y. Lee, M.S. Kurdoglyan, S. Rim, C.-M. Kim // *Phys. Rev. A*. – 2004. – Vol. 70. – P. 023809.
115. Kurdoglyan M.S. Unidirectional lasing from a microcavity with a rounded isosceles triangle shape / M.S. Kurdoglyan, S.-Y. Lee, S. Rim, C.-M. Kim // *Opt. Lett.* – 2004. – Vol. 29, no. 23. – P. 2758–2760.
116. Wiersig J. Asymmetric scattering and nonorthogonal mode patterns in optical microspirals / J. Wiersig, M. Hentschel // *Phys. Rev. A* – 2006. – Vol. 73. – P. 031802
117. Rogobete L. Spontaneous emission in a subwavelength environment characterized by boundary integral equations / L. Rogobete, C. Henkel // *Phys. Rev. A* - 2004. – Vol. 70. – P. 063815.
118. Giannini V. Calculations of light scattering from isolated and interaction metallic nanowires of arbitrary cross section by means of Green's theorem and integral equations in parametric form / V. Giannini, J.A. Sanchez-Gil // *J. Optical Society of America A* – 2007. - Vol. 24, no 9. – P. 2822-2830.
119. Boriskina S.V. Effect of a layered environment on the complex natural frequencies of 2D WG-mode dielectric-ring resonators / S.V. Boriskina, T.M. Benson, P. Sewell, A.I. Nosich // *IEEE/OSA J. Lightwave Technol.* – 2002. – Vol. 20, no. 8. – P. 1563–1572.
120. Boriskina S.V. Tuning of elliptic whispering-gallery-mode microdisk waveguide filters / S.V. Boriskina, T.M. Benson, P. Sewell, A.I. Nosich // *IEEE/OSA J. Lightwave Technol.* – 2003. – Vol. 21, no. 9. – P. 1987–1995.
121. Muller C. Foundations of the Mathematical Theory of Electromagnetic Waves / C. Muller. - Berlin, Springer, 1969. – 345 P.
122. Rokhlin V. Rapid solution of integral equations of scattering theory in two dimensions / V. Rokhlin // *J. Comput. Phys.* – 1990. Vol. 86. – P. 414–439.

123. Boriskina S.V. Accurate simulation of 2-D optical microcavities with uniquely solvable boundary integral equations and trigonometric-Galerkin discretization / S.V. Boriskina, T.M. Benson, P. Sewell, A.I. Nosich // J. Opt. Soc. Am. A – 2004. – Vol.21, no. 3. – P. 393–402.
124. Wang L. Modal analysis of homogeneous optical waveguides by the boundary integral formulation and Nystrom method / L. Wang, J.A. Cox, A. Friedman // J. Opt. Soc. Am. A. – 1998. - Vol. 15, no. 1. - P. 92 – 100.
125. Colton D. Inverse Acoustic and Electromagnetic Scattering Theory / D. Colton, R. Kress. - Springer, Berlin: 1998. - C. 334.
126. Boriskina S.V. Spectral shift and Q-change of circular and square shaped optical microcavity modes due to periodical sidewall surface roughness/ S.V. Boriskina, T.M. Benson, P. Sewell, A.I. Nosich // J. Opt. Soc. Am. B – 2004. – Vol.21, no. 10.- P. 1792–1796.
127. Boriskina S.V. Q-factor and emission pattern control of the WG modes in notched microdisk resonators / S.V. Boriskina, T.M. Benson, P. Sewell, A.I. Nosich // IEEE J. Select. Top. Quantum Electron.- 2006. – Vol. 12, no. 1.- P. 66–70.
128. Boriskina S.V. Optical modes in imperfect 2D square and triangular microcavities / S.V. Boriskina, T.M. Benson, P. Sewell, A.I. Nosich // IEEE J. Quantum Electron. – 2005. – Vol. 41, no. 6. – P. 857–862.
129. Optoelectronic Devices: Advanced Simulation and Analysis / ed. J. Piprek. - Springer, Berlin, 2005. – P. 452.
130. Tureci H.E. Mode competition and output power in regular and chaotic dielectric cavity lasers / H.E. Tureci, A.D. Stone // Proc. SPIE – 2005. – Vol. 5708. – P. 255-270.
131. Steinberg S. Meromorphic families of compact operators / S. Steinberg // Arch. Rat. Mechanics Analysis – 1968. - Vol. 31, no 5. - P. 372-379.
132. Войтович Н.Н. Обобщенный метод собственных колебаний теории дифракции / Н.Н. Войтович, Б.З. Каценеленбаум, А.Н. Сивов. - М.: Наука, 1977. - С. 416.

133. Ripoll J. Optimal tuning of lasing modes through collective particle resonance / J. Ripoll, C.M. Soukoulis, E.N. Economou // J. Opt. Soc. Am. B – 2004. – Vol. 21, no. 1. – P. 141–149.
134. Kerker M. Resonances in electromagnetic scattering by objects with negative absorption / M. Kerker // Appl. Opt. – 1979. – Vol. 18, no. 8. – P. 1180–1189.
135. Власов А.Г. Краевая задача электродинамики для излучающего диэлектрического цилиндра с зеркалами на торцах / А.Г. Власов, О.П. Складов // Радиотехника и электроника – 1977. - №1 - С. 21-28.
136. Corzine S.W. Design of Fabry-Perot surface-emitting lasers with a periodic gain structure / S.W. Corzine, R.S. Geels, J.W. Scott, R.-H. Yan, L.A. Coldren // IEEE J. Quantum Electron. – 1989. – Vol. 25, no.6 – P. 1513-1524.
137. Klein B. Self-consistent Green's function approach to the analysis of dielectrically apertured VCSELs / B. Klein, L.F. Register, K. Hess, D.G. Deppe, Q. Deng // Appl. Physics Lett. – 1998. - Vol. 73, no 23. – P. 3324-3326.
138. Noble M.J. Analysis of microcavity VCSEL lasing modes using a full-vector weighted index method / M.J. Noble, J.P. Loehr, J.A. Lott // IEEE J. Quantum Electron. – 1998. – Vol. 34. – P. 1890–1903.
139. Campenhout J.V. Band-edge lasing in gold-clad photonic-crystal membranes / J.V. Campenhout, P. Bienstman, R. Baets // IEEE J. Select. Areas Commun. – 2005. – Vol. 25. – P. 1418–1423.
140. Chu S.-C. Numerical study for selective excitation of Inge-Gaussian modes in end-pumped solid-state lasers / S.-C. Chu, K. Otsuka // Opt. Express – 2007. – Vol.15, no. 25. – P. 16506–16519.
141. Manolatu C. Subwavelength nanopatch cavities for semiconductor plasmon lasers / C. Manolatu, F. Rana // IEEE J. Quantum Electron. – 2008. – Vol. 44, no. 5. – P. 435–447.
142. Slusher R.E. Threshold characteristics of semiconductor microdisk lasers / R.E. Slusher, A.F.J. Levi, U. Mohideen, S.L. McCall, S.J. Pearson, R.A. Logan // Appl. Physics Lett. – 1993. - Vol. 63, no 10. - P. 1310-1312.

143. Baba T. Lasing characteristics of GaInAsP-InP strained quantum-well microdisk injection lasers with diameter of 2-10 μm / T. Baba, M. Fujita, M. Kihara, R. Watanabe // IEEE Photonics Technol. Lett. – 1997. - Vol. 9, no 7. - P. 878-890.
144. Corbett B. Low-threshold lasing in novel microdisk geometries / B. Corbett, J. Justice, L. Considine, S. Walsh, W.M. Kelly // IEEE Photonics Technol. Lett. – 1996. - Vol. 8, no 7. - P. 855-857.
145. Chin M.K. Estimation of the spontaneous emission factor for microdisk lasers via the approximation of whispering gallery modes / M.K. Chin, D.Y. Chu, S.-T. Ho // J. Appl. Physics – 1994. - Vol. 75, no 7. - P. 3302-3307.
146. Frateschi N.C. Resonant modes and laser spectrum of microdisk lasers / N.C. Frateschi, A.F.J. Levi // Appl. Physics Lett. – 1995. - Vol. 66, no 22. – P. 2932-2934.
147. Мележик П.Н. Особенности спектральных характеристик двужеркального открытого резонатора / П.Н. Мележик, А.Е. Поединчук, Ю.А. Тучкин, В.П. Шестопапов // ДАН УССР, сер. А – 1978. - №8. – С. 53 – 56.
148. Сухинин С.В. О дискретности собственных частот открытых акустических резонаторов / С.В. Сухинин // В кн.: Динамика сплошной среды. – Новосибирск, 1981. - №49. – С. 157 – 163.
149. Сухинин С.В. Качественные вопросы теории рассеяния на периодических цилиндрических препятствиях / С.В. Сухинин // В кн.: Динамика сплошной среды. – Новосибирск, 1984. - №67. – С. 118 – 134.
150. Bittner S. Experimental test of a two-dimensional approximation for dielectric microcavities / S. Bittner, D. Dietz, M. Miski-Oglu, P. Oria Iriarte, A. Richter, F. Schafer // Phys. Rev. A – 2009. – Vol. 80, no.2. - P. 3825 – 3832.
151. Wang R.P. Theory of optical modes in semiconductor microdisk lasers / R.P. Wang, M.-M. Dumitrescu // J. Appl. Physics – 1997. - Vol. 81, no 8. - P. 3391-3397.

152. Wang R.P. Optical modes in semiconductor microdisk lasers / R.P. Wang, M.-M. Dumitrescu // IEEE J. Quantum Electronics – 1998. - Vol. 34, no. 10. - P. 1933-1937.
153. Рид М. Методы современной математической физики. Т.4. Анализ операторов / М. Рид, Б. Саймон. - М.: Мир, 1982. - С. 428.
154. Бахвалов Н.С. Численные методы / Н.С. Бахвалов, Н.П. Жидков, Г.М. Кобельков. - М.: Наука, 1987. – 598 С.
155. du Toit C.F. Evaluation of Some algorithms and Programmes for the Computation of Integer-Order Bessel Functions of the First and Second Kind with Complex Arguments / C.F. du Toit // IEEE Antennas Propagat. Mag. – 1993. - Vol. 35, no. 3. - P. 19 – 25.
156. Абрамовиц М. Справочник по специальным функциям / под ред. М. Абрамовиц, И. Стиган - М.: Наука, 1979. – 832 С.
157. Rex N.B. Threshold lowering in GaN micropillar lasers by means of spatially selective optical pumping / N.B. Rex, R.K. Chang, L.J. Guido // IEEE Photonics Techn. Lett. – 2001. - Vol. 13, no 1. - P. 1-3.
158. Kneissl M. Current-injection spiral-shaped microcavity disk laser diodes with unidirectional emission / M. Kneissl, M. Teepe, N. Miyashita, N.M. Johnson, G.D. Chern, R.K. Chang // Appl. Phys. Lett. – 2004. - Vol. 84, no 14. - P. 2485-2487.
159. Dutra S. M. Cavity Quantum Electrodynamics / S. M. Dutra. - Wiley-Interscience, 2005. - 389 С.
160. Градштейн И.С. Таблицы интегралов, сумм, рядов и произведений / И.С. Градштейн, И.М. Рыжик. - М.: Физматгиз, 1963. – 1100 С.
161. Bayer M. Optical modes in photonic molecules / M. Bayer, T. Gutbrod, J.P. Reithmaier, A. Forchel, T.L. Reinecke, P.A. Knipp, A.A. Dremin, V.D. Kulakovskii // Phys. Rev. Lett. – 1998. - Vol. 81, no 12. - P. 2582-2585.
162. Hara Y. Photonic molecule lasing / Y. Hara, T. Mukayama, K. Takeda, M. Kuwata // Optics Lett. – 2003. - Vol. 28, no 24. - P. 2437-2439.

163. Boriskina S.V. Theoretical prediction of a dramatic Q-factor enhancement and degeneracy removal of WG modes in symmetrical photonic molecules / S.V. Boriskina // Optics Lett. – 2006. - Vol. 31. – P. 338-340.
164. Иванов Е.А. Дифракция электромагнитных волн на двух телах / Е.А. Иванов. - Минск: Наука и техника, 1968. - 584 С.
165. McIsaac P.R. Symmetry-Induced Modal Characteristics of Uniform Waveguides – I: Summary of Results / P.R. McIsaac // IEEE Transactions on Microwave Theory and Techniques – 1975. - Vol. 23, no. 5. - P. 421 – 429.
166. Microwave Magnetrons / ed. G.B. Collins. - New York, McGraw-Hill Publ., 1948. – 806 P.
167. Tulek A. Unidirectional laser emission from π -conjugated polymer microcavities with broken symmetry / A. Tulek, Z.V. Vardeny // Appl. Phys. Letts. – 2007. – Vol. 90. – P. 161106.
168. Kim C.-M. Continuous wave operation of a spiral-shaped microcavity laser / C.-M. Kim, J. Cho, J. Lee, S. Rim, S.H. Lee, K.R. Oh, J.H. Kim // Appl. Physics. Lett. – 2008. – Vol. 92. – P. 131110.
169. Kwon T.-Y. Lasing modes in a spiral-shaped dielectric microcavity / T.-Y. Kwon, S.-Y. Lee, M.S. Kurdoglyan, S. Rim, C.-M. Kim, Y.-J. Park // Opt. Letts. – 2006. – Vol. 31. – P. 1250-1252.
170. Wiersig J. Asymmetric scattering and nonorthogonal mode patterns in optical microspirals / J. Wiersig, M. Hentschel // Phys. Rev. A – 2006. – Vol. 73. – P. 031802.
171. Hentschel M. Designing and understanding directional emission from spiral microlasers / M. Hentschel, T.-Y. Kwon // Opt. Letts. – 2009. – Vol. 34. – P. 163-165.
172. Галишникова Т.Н. Численные методы в задачах дифракции / Т.Н. Галишникова, А.С. Ильинский. - М.: Изд-во МГУ, 1987 – 208С.
173. Тихонов А.Н. Уравнения математической физики / А.Н. Тихонов, А.А. Самарский. - М.: Наука, 1966. - 724 С.

174. Погорелов А.В. Дифференциальная геометрия / А.В. Погорелов. - М.: «Наука», 1969. - 176 С.
175. Назарчук З.Т. Численное исследование дифракции волн на цилиндрических структурах / З.Т. Назарчук. - Киев: «Наукова думка», 1989. - 256 С.
176. Гандель Ю.В. Введение в методы вычисления сингулярных и гиперсингулярных интегралов / Ю.В. Гандель. – Харьков: Изд-во ХГУ, 2001. - 92 С.
177. Kouznetsov D. Efficiency of pump absorption in double-clad fiber amplifiers. II. Broken circular symmetry / D. Kouznetsov, J. Moloney // J. Opt. Soc. Am. B – 2002. – Vol. 19. – P. 1259-1263.