

IGAL BRENER

Nanophotonics and Optical Nanomaterials - Thrust Leader

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Education

B. A. in Physics Technion, Haifa, Israel, 1983

B. Sc. In Electrical Engineering Technion, Haifa, Israel, 1983

D. Sc. in Physics Technion, Haifa, Israel, 1991

Appointments

Center for Integrated Nanotechnologies, Nanophotonics Thrust Leader (2008-present)

Sandia National Laboratories, Principal Member of the Technical Staff (2004-present)

Amersham Biosciences/GE Healthcare, Senior Scientist (2003-2004)

Tellium Inc., Senior Member of Technical (2000-2002)

Bell Laboratories, Lucent Technologies & AT&T, Member of Technical Staff, (1993–2000)

Bell Laboratories, Postdoctoral Member of Technical Staff (1991-1993)

National Semiconductor, Senior Electronic Engineer in VLSI MOS and Head of NS32332 microprocessor testing group (1983-1987)

Publications

1. "A spatial light modulator for terahertz beams", Wai Lam Chan, Hou-Tong Chen, Antoinette J. Taylor, Igal Brener, Michael J. Cich, and Daniel M. Mittleman, *Appl. Phys. Lett.* 94, 213511 (2009)
2. Large-area metamaterials on thin membranes for multilayer and curved applications at terahertz and higher frequencies, X. G. Peralta, M.C. Wanke, C.L. Arrington, J.D. Williams, I. Brener, A. Strikwerda, R.D. Averitt, W.J. Padilla, E. Smirnova, A.J. Taylor, and J. F. O'Hara, *Appl. Phys. Lett.* 94, 161113 (2009)
3. Metamaterials for THz polarimetric devices, Peralta, Xomalin G; Smirnova, Evgenya I; Azad, Abul K, et al. *Opt. Express* 17,773-83 (2009).
4. G. Subramania, Y.J. Lee, B.A. Hernandez-Sanchez, A.J. Fischer, T.S. Luk, I. Brener, P.G. Clem, and T.J. Boyle, "CdSe infiltrated TiO₂ based omnidirectional photonic crystals for visible light control," *Photonics and Nanostructures: Fundamentals and Applications* 6, 12 (2008).
5. S. K. Ravula, D.W. Branch, C.D. James, R.J. Townsend, M. Hill, G. Kaduchak, M. Ward, and I. Brener, "A microfluidic system combining acoustic and dielectrophoretic particle preconcentration and focusing," *Sensors and Actuators B: Chemical*, vol. 130, pp. 645-652, 2008.
6. S.K. Ravula, D.W. Branch, J. Sigman, P.G. Clem, and I. Brener, "Integration of microfluidics and microacoustics components for miniature flow cytometry systems," *Sensors and Transducers*, Special Issue, pp. 93-100, 2007.
7. Thin-film sensing with planar terahertz metamaterials: sensitivity and limitations, O'Hara, JF; Singh, R; Brener, I, et al., *OPTICS EXPRESS* 16 (1786-1795), 2008
8. Nano-lithographically fabricated titanium dioxide based visible frequency three dimensional gap photonic crystal, Subramania, G; Lee, YJ; Brener, I, et al., *OPTICS EXPRESS* 15, (13049-13057) 2007.

9. P. B. Chu, I. Brener, C. Pu, S-S. Lee, J.I. Dadap, S. Park, K. Bergman, N. Bonadeo, T. Chau, M. Chou, R. Doran, R. Gibson, R. Harel, J. J. Johnson, C. D. Lee, D. R. Peale, B. Tang, D. Tong, M. Tsai, Q. Wu, W. Zhong, E. L. Goldstein, L. Y. Lin, and J. A. Walker , “Design and Nonlinear Servo Control of MEMS Mirrors and Their Performance in a Large Port count Optical Switch”, *Journal of microelectromechanical systems* 14, 261(2005).
10. C. Pu, S. Park, P. B. Chu, S. S. Lee, M. Tsai, D. Peale, N. H. Bonadeo, and I. Brener, "Electrostatic actuation of three-dimensional MEMS mirrors using, sidewall electrodes," *IEEE Journal of Selected Topics in Quantum Electronics*, vol. 10, pp. 472, 2004.

Collaborators: *G. Subramania, D. Branch, K. Westlake, M. Sinclair, E. Carles, P. Clem, M. Wanke, L. Basilio, L. Warne, X. Miao, E. Shaner*, Sandia National Laboratories, Albuquerque, NM; *A. Taylor, J. O’Hara, E. Smirnova*, Los Alamos National Laboratory, Los Alamos, NM; *R. Averitt*, Boston University, Boston, MA; *R. Singh, Jianguang Han, Weili Zhang*, Oklahoma State University, Stillwater, OH; *V. Yakovlev*, University of Milwaukee, MI; *W. Padilla*, Boston College, Boston, MA; *S. Brueck*, University of New Mexico, NM; *G. Shvets*, University of Texas, Austin, TX; *P. Planken*, Delft University, Netherlands, *M. Koch*, Braunschweig University, Germany; *Martyn Hill*, University of Southampton, Southampton, UK; *X.G. Peralta*, University of Texas, San Antonio

Graduate and Postdoctoral Advisors: Elisha Cohen, Physics Department, Technion, Haifa, Israel; Wayne Knox, Optics Dept., University of Rochester, NY

Thesis Advisor and Postgraduate – Scholar Sponsor: T. Barrick, UNM; K. Westlake, UNM; J. Wright, UNM; S.K. Ravula, Sandia ; K. Taylor, Sandia; X.G. Peralta, Sandia; D. Bender, Sandia; J. Ginn, Sandia

Synergistic Activities

Honors:

Fellow of the Optical Society of America

Award of Excellence, Bell Labs.

Rotschild scholarship for post-doctoral studies, 1991-1993.

Gutwirth excellency prize, 1991.