

**Tariq Manzur, Ph.D; FlinstP; Fellow SPIE; Fellow APS  
S&T Lead, Imaging & Electronic Warfare  
Code 342, NUWC, DIVNPT, NAVSEA**

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**EDUCATION**

- 1988 **PH.D. IN MATERIALS SCIENCE & ENGINEERING**  
University of Connecticut  
Storrs, CT 06269  
Dissertation title: *Processing Technique of Nb-Si, Nb-Ge, Nb-(AlSi)  
Superconducting Ribbons by Chill Block Spinning.*
- 1985 **M.S. IN METALLURGY**  
University of Connecticut  
Storrs, CT 06269
- 1983 **M.S. IN PHYSICS**  
University of Connecticut  
Storrs, CT 06269
- 1980 **M.SC. IN SOLID STATE PHYSICS**  
Dissertation title: *Preparation and Study of Ni-Zn Ferrites.*  
Dhaka University, Dhaka, Bangladesh
- 1978 **B.SC. IN PHYSICS**  
Dhaka University, Dhaka, Bangladesh

**WORK EXPERIENCE and MANAGEMENT SKILLS:**

**US NAVY/ NAVSEA (January 2004 to Date):**

S&T Lead for Directed Energy, Imaging and Electronic Warfare in the Electromagnetic Department (NUWC Code 342).

Areas of Research Interest:

1. High resolution submarine Imaging and target tracking
2. 360 degree periscope imaging systems
3. Submarine high energy laser, laser system and lethality study
4. Near marine boundary layer data collection and beam propagation modeling
5. Submarine IR Countermeasure
6. Next generation submarine Microwave Photonics in support of Electronic Warfare
7. Laser test range (Indoor and outdoor) setup at NUWC Fisher's Island, NY

## **PRIVATE INDUSTRY (1997 to 2003)**

### **November 2002 to December 2003: Advanced Chips and Products Inc. NJ and Consultant to Optigain Inc. RI.**

Vice President, Sales, Marketing and New Products @ Advanced Chips and Products (AC&P), NJ, USA. At AC&P Dr. Manzur developed the highest brightness laser diode module as a pump source, 30 W at 1  $\mu\text{m}$  wavelength fiber coupled (125 $\mu\text{m}$ , 0.25 NA) for high power fiber laser and amplifier.

### **September 2001 to November 2002: IMRA America, Inc., Ann Arbor, Michigan Director Prototyping, Group Leader Laser and Optics and Project Manager for diode pump Femto-Second Laser Systems.**

At IMR America, Inc., Dr. Manzur was the Director of Prototyping, Group Leader of Laser Optics, and the Project Manager of two very important products for the customers. These were nanosecond and femtosecond fiber lasers, both operating at 1  $\mu\text{m}$ . He was also leading 1.5  $\mu\text{m}$  femtosecond laser development at 1  $\mu\text{J}$ , 250 kHz,  $\sim$ 300 fs, and was managing 5 senior level Ph.D. Eng/Scientists, 3 Master level Engineers, and 4 Technicians to do the Prototyping.

The position of Director was a senior level management position at IMRA and Dr. Manzur was responsible for planning, budgeting, scheduling, and customer and vendor interaction. This position also required the broad base technical ability to understand the product and process development and transfer the technology from Development to Engineering to Prototyping.

### **May 1997 to September 2001: Optigain, Inc., Rhode Island Director New Product Introduction (NPI), FMA and Team Leader for EDFA design.**

Dr. Manzur was responsible for the development of multi-wavelength high power RAMAN amplifiers, both pumped by laser diode and fiber laser, single and multi-mode beam propagation, single-mode beam propagation in multi-mode fiber, EDFA simulation using OASiX software, both at C and L band, L band ASE source and combine C & L band EDFA and tunable fiber ring laser @ 1550 nm band as a pump source for other applications.

At Optigain he was the PI of one-micron high power fiber laser project funded by BMDO. In 2000, Optigain was awarded a 940 nm high power fiber laser project by NASA for deep space applications. Under the one-micron project he developed tunable Yb doped fiber laser at 1090 nm and tunable eye safe 1500 nm Yb/Er fiber laser and high power EDFA pump by fiber laser. As a success of this project, Optigain has been able to commercialize >30 dBm EDFA both in C band, 27 dBm EDFA in L band. Dr. Manzur has a number of patents pending in the areas of beam coupling techniques, Fiber designs and EDFA design, etc.

Dr. Manzur's expertise in the area of fiber fusion splicing is also mentionable. At Optigain he was responsible for introducing new products, process development and characterization of the fiber and splicing processes for the product. In the past, and especially more recently, he has been working closely with fiber manufacturers such as INO, Coreactive, Fibercore, etc. for the development of new fiber and its subsequent characterization. In the case of splicing and

tapering, he is also working with Amherst fiber optic, using Eriksson, Fitel Splicer.

## **CONSULTING AND UNIVERSITY RESEARCH (1993 to 1997)**

### **December 1996 to May 1997: SPECTRAN SPECIALITY FIBER Inc., Connecticut Consultant for Education and Failure Analysis**

Before Dr. Manzur joined Optigain, he worked briefly at SPECTRAN Specialty Fiber in Connecticut. His main responsibility at SPECTRAN was new rare earth fiber design evaluation, failure mode analysis of their fiber, metalized pigtail, education and training programs for their engineers.

### **May 1993 to Dec 1999: Photonics Research Center, University of Connecticut**

#### **Senior Research Associate:**

At the University of Connecticut Dr. Manzur's primary responsibility was to set up the Photonics Research Center's industry need driven research program. At the center, he pioneered the development of Solid Free-form Fabrication (SFF) and desktop manufacturing using high-powered diode lasers and multimode diode laser pump fiber laser. Dr. Manzur had a diverse research background, from superconductor to rare earth magnetic materials fabrication, characterization to applications of diode lasers in manufacturing, to power delivery systems and optics design. His expertise was in the areas of material processing, material evaluation, MOCVD, CVD, MBE, Ion Implanter, Arc Melter, Induction furnace, development of spinning machine for metallic ribbons, SEM, TEM, X-ray diffraction, REED camera, powder camera, for the development and characterization of optical and other materials.

## **CERTIFICATIONS**

Dr. Manzur has been certified as System Engineer level III by DAWIA. COR certification (222) by DA University, DoD Acquisition (CLC055 and CLC106), SBIR/STTR FAC010; Acquisition Ethics (CLM003).

Dr. Manzur has been recognized as a subject matter expert (SME) in imaging, IR, IR countermeasures, and fiber lasers by national and international organizations. With his recognition Dr. Manzur has been selected as Fellow by the Royal Institute of Physics and Topical Editors for OSA. Dr. Manzur was also the co-coordinator and steering committee member for the 11<sup>th</sup> International Infrared Optoelectronics: Materials and Devices (MIOMD-XI) Conference held at Northwestern University in Chicago, Sept. 4-8, 2012. Cutting-edge research developments were highlighted by 136 speakers in the areas of Infrared (IR) Emission, IR Detection, IR Integrated Systems, and IR Applications of IR Emission/Detection. A number of Nobel laureates participated in the conference where Dr. Manzur also presented a paper on uncooled detectors funded by NUWC ILIR, FY2011.

## PATENTS

Patent #	Description	Year
US 6,307,668	Ultra-wide bandwidth fiber based optical amplifier	2001
US 6,490,388	Side-pumped fiber laser	2002
0,051,378 A1	Frequency-tuned detectors coupled with optical amplifiers for weak signal detection; <b>Aravinda Kar</b> ; Professor of Optics, EECS and MMAE, Center for Research and Education in Optics and Lasers (CREOL); <b>Dr. Tariq Manzur</b> ; S&T Lead, I&EW, Undersea Warfare Electromagnetic Systems Development, NUWC	2012
US 9,219,890 B1	Optical Surface Analysis System and Method	2015
NCNo: 101762	ADVANCED SHADOW IMAGING SYSTEM FOR OPTICAL MATERIAL AND MICRO-CELL ANALYSIS; Dr. Tariq Manzur, NUWC; Dr. John Zeller, NUWC, CTR; Dr. Utkan Demirci, PhD; Harvard and Brigham Woman Hospital (bwh); Navy Case No. 101762	2012
US 8,842,361 B1	Mode-Locked Laser with Free Space Optical Feed-Back	2014
US 8,849,080 B1	MONOLITHICALLY INTEGRATED MULTI-WAVELENGTH HIGH POWER WAVEGUIDE/FIBER OPTIC COUPLER	2014
NCNo: 300126	LOW PROBABILITY of INTERCEPT OPTICAL RANGE FINDER	2015
Navy Patent Applied	WIDEBAND PHOTODETECTOR WITH OPTICAL READOUT	2014
NCNo: 300138	Wide Band RF Imaging System e-pixel to p-pixel	2016
NCNo: 300127	Active Erbium Doped LiN03 or Similar Other Doped (InP) Modulator with Integrated LNA Driver	2016

## PROFESSIONAL ACTIVITIES

### Society Fellow:

Institute of Physics (IOP); FInstP; Fellow SPIE; Fellow American Physical Society (APS)

### Professional Membership:

1. SPIE
2. Optical Society of America (OSA)
3. American Physical Society (APS)
4. Institute of Physics (IOP)
5. DEPS

### OSA Editor:

Dr. Manzur has also been selected as Topical Editor for Applied Optics for the period of three years, at the end of 10/31/2015.

### SPIE:

SPIE Service: Under federally funded NAPAM program, at University of Connecticut Photonic Research Center (PRC) Dr. Manzur was also responsible to develop Photonics Courses for the

Industry Engineers and Technicians with SPIE and CREO (UCF) to meet the challenge of photonic education at 21<sup>st</sup> century.

**SPIE PROGRAM COMMITTEE and SESSION CHAIR 2005-2012:**

SPIE Unattended Ground, Sea, and Air Sensor Technologies and Applications XI

- SPIE Europe: 2008; SPIE Europe 2009; SPIE 2010
- SPIE Defense Orlando, FL 2009; SPIE Defense Orlando, FL 2010

CO-CHAIR; PROGRAM COMMITTEE; SPIE Terahertz Physics, Devices, and Systems III: Advanced Applications in Industry and Defense; 2007-2012

- SPIE Defense Orlando, FL 2009; SPIE Defense Orlando, FL 20010
- SPIE Defense Orlando, FL 20011;

**PUBLICATIONS**

**Book Chapters:**

1. ZnO Nanostructures for Optoelectronic Applications (Chapter 9), Published by OPTOELECTRONIC DEVICES AND PROPERTIES, Edited by Oleg Sergiyenko; ISBN 978-953-307-204-3; Askok K. Sood, Zhong Lin Wang, Dennis L. Polla, Nibir K. Dhar, Tariq Manzur and A.F.M. Anwar.
2. "Rapid Prototyping using fiber-coupled high power laser diodes" (Chapter 5), Published by Rapid Response Manufacturing; Edited By Jian Dong; ANSI/NISO Z39.48-1992; Jian Dong, Tariq Manzur, Chandra S. Roychoudhuri (University of Connecticut).
3. Title: Optical Correlator Based Target Detection, Recognition, Classification, and Tracking. Authors: Tariq Manzur, John Zeller, Steve Serati Journal: Applied Optics Submitted: 28 February 2012, Current Process: Peer Review; Manuscript ID: 163719.

**Journal Publications:**

- 1 Geunsik Lim<sup>1</sup>, Tariq Manzur<sup>2</sup> and Aravinda Kar<sup>1</sup>; "Improved Optical Properties and Detectivity of Uncooled Silicon Carbide Mid-wave Infrared Optical Detector with increased Dopant Concentration" <sup>1</sup>Laser-Advanced Materials Processing Laboratory, Department of Mechanical, Materials and Aerospace Engineering, College of Optics and Photonics, Center for Research and Education in Optics and Lasers (CREOL), University of Central Florida, Orlando, Florida 32816-2700, USA; <sup>2</sup>S&T Lead, I&EW, Naval Undersea Warfare Center (NUWC, DIVNPT), Undersea Warfare Electromagnetic Systems Development, Building 1319, 1176 Howell Street, Newport, Rhode Island 02841-1708, USA. Accepted to published in Journal of Optics, 2012.
- 2 Tariq Manzur,<sup>1,\*</sup> John Zeller,<sup>1</sup> and Steve Serati<sup>2</sup>; "Optical correlator based target detection, recognition, classification, and tracking" <sup>1</sup>Naval Undersea Warfare Center, 1176 Howell Street, Newport, Rhode Island 02841, USA, <sup>2</sup>Boulder Nonlinear Systems, Inc., 450 Courtney Way, Lafayette, Colorado 80026, USA  
Published in APPLIED OPTICS / Vol. 51, No. 21 / 20 July 2012.
- 3 <sup>1a</sup>G. Lim, <sup>2</sup>T. Manzur and <sup>1</sup>A. Kar; "Laser-Doped SiC as Wireless Remote Gas Sensor based on Semiconductor Optics" Material Science Forum Vols. 717-720 (2012) pp 1195-1198; <sup>1</sup>Laser Advanced Materials Processing laboratory, CREOL, University of Central Florida, <sup>2</sup>Naval Undersea Warfare Center (NUWC), DIVNPT, Newport, RI 02841-1708, USA

- 4 Hung Chi Chou<sup>a</sup>, Mehdi Anwar<sup>a</sup>, Tariq Manzur<sup>b</sup> "Active layer Design and Power Calculation of Nitride-Based THz Quantum Cascade Lasers," Submitted to Solid State Electronics, 2011, <sup>a</sup>Electrical and Computer Engineering, University of Connecticut, Storrs, CT, USA, <sup>b</sup>Naval Undersea Warfare Center (NUWC), DIVNPT, Newport, RI 02841-1708, USA
- 5 Hung Chi Chou<sup>a</sup>, Mehdi Anwar<sup>a</sup> and Tariq Manzur<sup>b</sup>, "Nitride THz GaN Quantum Cascade Lasers," Submitted to Solid State Electronics, 2011; <sup>a</sup>Electrical and Computer Engineering, University of Connecticut, Storrs, CT, USA, huc10003@engr.uconn.edu  
<sup>b</sup>Naval Undersea Warfare Center (NUWC), DIVNPT, Newport, RI 02841-1708, USA
- 6 Tariq Manzur and Mehdi Anwar, "STRAIN INDUCED ACTIVE LAYER DESIGN OF GaN-THz QUANTUM CASCADE LASERS," International Journal of High Speed Electronics and Systems (IJHSES), Sept 2011, DOI No:10.1142/S012915641100691X, Page: 621-627.
- 7 G. Lim, T. Manzur, U. P. DeSilva, N. R. Quick and A. Kar, "Laser-Optical Gas Sensor by Photoexcitation Effect on Refractive Index," Applied Optics, Vol. 49, 2010 pp, 1563-1573  
carbide for Uncooled Mid-Wave Infrared Detector, Applied Optics.
- 8 G. Lim, T. Manzur and A. Kar, June 2011, "Optical Response of Laser-Doped Silicon carbide for Uncooled Mid-Wave Infrared Detector, applied Optics," Vol. 50, No. 17
- 9 Tariq Manzur, B. Bzymek, C. Roychoudhuri & B. T. Ramakrishnan; "Solid Freeform Fabrication Directly From Metal/Ceramic Powders Using High Power Laser Diodes"; Published at International Symposium on Automotive Technology and Automation; ISATA, 1996.
- 10 Mali Balasubramanian, Tariq Manzur, D. Pease, J. I. Budnick, Dale Brewes; "XAFS VIII Conference", Berlin [Physica B].
- 11 Mali Balasubramanian, Tariq Manzur, D. Pease, J. I. Budnick, and Dale Brewes; "Local environment of transition metal ternary dopants in b phase transition aluminides", Physical Rev. B. 208 & 209 (1995), pp. 493-494.
- 12 Mali Balasubramanian, Tariq Manzur, D. Pease, J. I. Budnick, and Dale Brewes; "Site-occupation tendencies for ternary additions (Fe, Co, Ni) in b-phase transition-metal aluminides," Physical Rev. B. 1 April 1995, vol. 51, number 13, pp. 8102-8106.
- 13 Y. D. Zhang, D. P. Yang, J. I. Budnick, G. W. Fernando, T. Manzur and T. D. Xiao; "Nitrogen diffusion and distribution in the Y<sub>2</sub>Fe<sub>17</sub> Lattice," Physical Rev. B., Condensed Matter, 1 May 1995 -II, third series, vol. 51, number 18, pp. 1201-1209.
- 14 Y. D. Zhang, J. I. Budnick, T. Manzur, and T. D. Xiao; "Nitrogen location in Y<sub>2</sub>Fe<sub>17</sub> Lattice," Journal of Magnetism and Magnetic Materials (J. Mag. & M.M) (1995), 145, L11.
- 15 Y. D. Zhang, D. P. Yang, J. I. Budnick, W. A. Hines, G. W. Fernando, T. D. Xiao and T. Manzur; "NMR Study of Y<sub>2</sub>Fe<sub>17</sub> Nitrides," Journal of Magnetism and Magnetic materials (J. Mag. & M. M.), 140-144, (1995), pp. 987 - 988.
- 16 Patrick Chartier, Mali Balasubramanian, Dale Brewes, Tariq Manzur, D. Pease, J. I. Budnick, Li. Haung, Chi Law, Scott Russell, and Clyde Kimball; "Site Selectivity in Fe Doped  $\beta$  Phase NiAl," Journal of Applied Physics, (1994), 75, pp. 3842.
- 17 Tariq Manzur and M. T. Clapp; "Continuous Al<sub>15</sub>Nb<sub>3</sub>Ge Superconducting Tapes Via the Amorphous State," Journal of Applied. Phys. 65 (6) 15 March 1989, pp. 2384-2388.

- 18 M. T. Clapp, Z. Jian and T. Manzur; "Microstructure of Nb<sub>3</sub>(AlSiB) Superconducting Tapes with Extremely High Critical Current Densities," Journal Matls. Res., May/June 1989, vol. 4, number 3, pp. 526 - 529.
- 19 Mireille T. Clapp and Tariq Manzur; "The Effect of Nitrogen Implantation on A-15 Phase Formation in Nb<sub>3</sub>Si," Journal of Applied. Physics 1987, 61(2), pp. 792 - 795.
- 20 J. M. Galligan, J. Pellegrino and Tariq Manzur; "Kinetics of Photoplasticity in Dislocation Drag Processes," Materials Research Society on Defect in Processing Semiconductors, 1984.

**Trade Journal Publications:**

1. C. Roychoudhuri, W. Chen, T. Manzur and A. J. DeMaria; "Diode lasers point to Desktop manufacturing," Laser Focus World, pp. 97 – 102; September 1996.

**Conference Publications/Presentations:**

- 1 Tariq Manzur, Ph.D, FInstP; Free-Space Optical Communication at 1.55  $\mu\text{m}$  and 4.85  $\mu\text{m}$  and optical correlation through the evaporation layer; SPIE Defense and Security Conference , Baltimore, Maryland April 23 to 27, 2012 Naval Undersea Warfare Center (NUWC, DIVNPT) Newport, RI 02841
- 2 Tariq Manzur, Ph.D, FInstP; Uncooled Detector for MWIR Imaging & Countermeasure in Electronic Warfare; SPIE Defense and Security Conference , Baltimore, Maryland April 23 to 27, 2012 Naval Undersea Warfare Center (NUWC, DIVNPT) Newport, RI 02841
- 3 Tariq Manzur, Ph.D, FInstP\*; Prof. Manijeh Razeghi\*\*High-Performance Quantum Cascade Ring Lasers for Free Space Optical Communication; at APS March meeting Feb 27-March 2; Boston, Massachusetts; \*Naval Undersea Warfare Center (NUWC, DIVNPT) Newport, RI 02841; \*\*Northwestern University, CQD, Chicago, IL
- 4 Tariq Manzur, Ph.D, FInstP; Fiber Laser & High Power Laser Application at NUWC; at FILAS Conference Sna Diego Jan 29 to Feb 3<sup>rd</sup>, CA; Naval Undersea Warfare Center (NUWC), DIVNPT, Newport, RI 02841-1708, USA
- 5 Hung Chi Chou<sup>a</sup>, Mehdi Anwar<sup>a</sup>, Tariq Manzur<sup>b</sup> "Active layer Design and Power Calculation of Nitride-Based THz Quantum Cascade Lasers," ISDRS 2011, Dec 7-9 College Park, MD USA, <sup>a</sup>Electrical and Computer Engineering, University of Connecticut, Storrs, CT, USA, <sup>b</sup>Naval Undersea Warfare Center (NUWC), DIVNPT, Newport, RI 02841-1708, USA
- 6 Hung Chi Chou<sup>a</sup>, Mehdi Anwar<sup>a</sup> and Tariq Manzur<sup>b</sup>, "Nitride THz GaN Quantum Cascade Lasers," ISDRS 2011, Dec 7-9 College Park, MD USA,; <sup>a</sup>Electrical and Computer Engineering, University of Connecticut, Storrs, CT, USA, <sup>b</sup>Naval Undersea Warfare Center (NUWC), DIVNPT, Newport, RI 02841-1708, USA
- 7 Abdiel Rivera<sup>a</sup>, Mehdi Anwar<sup>b</sup>, Mathiey R. Monville<sup>c</sup>, Shihsheng Chang<sup>c</sup>, John Zeller<sup>d</sup>, Sood<sup>d</sup> and Tariq Manzur<sup>e</sup>, <sup>a,b,c</sup>Electrical and Computer Engineering, University of Connecticut, Storrs, CT, USA, <sup>e</sup>Naval Undersea Warfare Center (NUWC), DIVNPT, Newport, RI 02841-1708, USA, <sup>d</sup>Magnolia Optical Technologies, USA, "Growth and Characterization of Nanowires and Nanorods on Al<sub>2</sub>O<sub>3</sub>(110), Si(111) and SiO<sub>2</sub>/p-Si(100) MOCVD," ISDRS 2011, Dec 7-9 College Park, MD USA
- 8 Tariq Manzur (NUWC), Aravinda Kar (UCF, CREO), Geunsik Lim (UCF, CREO),

- “Gas sensing and focal plane array imaging based on optical properties of crystalline silicon carbide,” SPIE 2011, Sept. 2011, Prague, Czech
- 9 Tariq Manzur (NUWC), Ashok K. Sood “EO/IR sensor development using nanostructures for unattended ground sensor applications,” SPIE 2011, Sept. 2011, Prague, Czech
- 10 John Zeller, Tariq Manzur “Effects of Evaporation layer on free-space optical communication links near sea surface at 1.55  $\mu\text{m}$ ,” SPIE 2011, Sept. 2011, Prague, Czech
- 11 Ashok K. Sood, John Zeller, Yash R. Puri (Magnolia Optical Technologies, Inc, USA), Tariq Manzur, (Naval Undersea Warfare Center, NUWC, DIVNPT, USA), Nibir K. Dhar (DARPA, USA), A. F. Mehdi Anwar (University of Connecticut, USA) “EO/IR sensor development using nanostructures for unattended ground sensor applications,” SP 2011, Sept. 2011, Prague, Czech.
- 12 SPIE 2011, April 25-29, Orlando, FL “Active layer design of GaN based quantum cascade lasers,” Hung Chi Chou (UCONN), Tariq Manzur (NUWC), A.F. Mehdi Anwar (University of Connecticut).
- 13 SPIE 2011, April 25-29, Orlando, “Nanostructure based EO/IR sensor development Ashok Sood (Magnolia Optical Technologies), Tariq Manzur (NUWC), A.F. Mehdi Anwar (University of Connecticut), Nibir Dhar, Dennis L. Polla (DARPA); “CMOS usin temperature ZnO nanowire technique,” for homeland security applications,
- 14 SPIE 2011, April 25-29, Orlando, FL ; “Ultraviolet photodetectors directly integrated on ZnO,” Robert Olah, Achyutt Dutta (Banpil Photonics), Tariq Manzur (NUWC), Deli Wang,
- 15 SPIE 2011, April 25-29, Orlando, FL “Relative intensity noise for uncooled silicon carbide mid-wave infrared detectors,” Geunsik Lim (UCF, CREOL) Tariq Manzur (NUWC), Aravinda Kar (UCF, CREOL).
- 16 SPIE 2011, April 25-29, Orlando, FL “Free-space optical communication links at 1.55  $\mu\text{m}$  for remote operation,” John Zeller, Tariq Manzur (NUWC).
- 17 SPIE 2010, Sept 20-24<sup>th</sup>, Europe Toulouse, France “GaN-Based THz Quantum Cascade for Manned and Unmanned Applications,” Tariq Manzur *S&T lead Code 342*, NUWCDIVNPT, Newport, RI, USA, A. F. M. Anwar, Electrical and Computer Engineering, University of Connecticut, Storrs, CT 06268
- 18 SPIE 2010, April 5- 9<sup>th</sup>, “Effect of atmosphere on free-space optical communication networks for border patrol,” J. W. Zeller and T. Manzur; 7666-08, Session 2
- 19 SPIE 2010, April 5- 9<sup>th</sup>, “MWIR room temperature photodetector based on laser-doped silicon carbide,” G. Lim, T. Manzur, and A. Kar; 7666-68, Session 11
- 20 “GaN-based THz quantum cascade lasers,” T. Manzur, M. Anwar, and E. M. Carapezza 7671-06, Session 1; SPIE 2010, April 5- 9<sup>th</sup>, “Atmospheric transmission at  $\sim 1.55 \mu\text{m}$  for free-space optical communication,” J. W. Zeller and T. Manzur 7693-53, Session 9
- 21 SPIE 2010, April 5- 9<sup>th</sup>, “Next-generation nanostructure based EO/IR focal plane arrays for unattended ground sensor applications,” A. K. Sood and T. Manzur 7693-11, Session 2
- 22 SPIE 2010 Europe, 31 August -3<sup>rd</sup> September, Berlin, Germany, “MWIR room temperature photodetector based on laser-doped silicon carbide,” Tariq Manzur, G. Lim Aravinda Kar.



- 23 SPIE 2009 Europe, 31 August -3<sup>rd</sup> September, Berlin, Germany, "Laser fabrication of silicon carbide detector for gas sensing and focal plane array imaging," G. Lim, Tariq Manzur, Aravinda Kar.
- 24 SPIE 2009 Europe, 31 August -3<sup>rd</sup> September, Berlin, Germany, "Escherichia Coli Counting using lens-free imaging for sepsis diagnosis," SangJun Moon, Fahim Manzur, Tariq Manzur, Catherine Klapperich, U. Demirci.
- 25 SPIE 2009 Europe, 31 August -3<sup>rd</sup> September, Berlin, Germany, "GaN-Based THz Advanced Quantum Cascade Lasers for Manned and Unmanned Systems," Mehdi Anwar, Tariq Manzur, Ed. Carapezza.
- 26 SPIE 2009 Defense, 13-126 April, Orlando, FL, USA, "Free Space optical technologies for distributed sensor network," Larry Shah, Tariq Manzur, John Zeller.
- 27 SPIE 2009 Defense, 13-126 April, Orlando, FL, USA, Uncooled detector," Matthew Erdtmann, Jack Salerno, Tariq Manzur.
- 28 SPIE 2008 Europe, 15 - 18 September 2008 University of Wales Institute, Cardiff, Cardiff, Wales, United Kingdom, "Technology Road Map," Invited Talk, Tariq Manzur, Maj. Robert Winston.
- 29 SPIE 2008 Europe, 15 - 18 September 2008 University of Wales Institute, Cardiff, Cardiff, Wales, United Kingdom, "Uncooled MWIR Imaging System," Tariq Manzur.
- 30 SPIE 2008 Europe, 15 - 18 September 2008 University of Wales Institute, Cardiff, Cardiff, Wales, United Kingdom, "Optical Cell Monitoring System for Underwater Targets," SangJun Moon, Fahim Manzur, Tariq Manzur\*, and Utkan Demirci\*\*
- 31 ATEDS April 9<sup>th</sup> 2008, Conference San Jose California, "Uncooled MWIR Technology," Tariq Manzur; NUWC
- 32 AVONICS Conference, October 2007 Victoria BC, CANADA, 'Free Space Optical Communication," Tariq Manzur; NUWC
- 33 SPIE 2000 Photonics West Conference at San Jose, California. Title: "High Power Fiber Laser/Amplifier Present & Future Potential Role," Tariq Manzur
- 34 Airforce DL Conference 5/11/99 Title: "High Power Dual Wavelength Double Clad Fiber Laser," Tariq Manzur; Optigain, Inc
- 35 Tariq Manzur, J. Dong & C. Roychoudhuri; "Fiber Coupled High Power Laser Diodes For SFF," Journal of Eng. Design and Automation. January, 1997.
- 36 Tariq Manzur, C. Roychoudhuri, F. Hossain; "Potential Role of High Power Laser Diode in Manufacturing," Photonics East Conference, at Boston, 1997.
- 37 SPIE 1996 Photonics East Conference at Boston, Massachusetts. Title: "Potential Role of High Power Laser Diode in Desktop Manufacturing," Tariq Manzur
- 38 Solid Freeform Fabrication Symposium August, Poster Session, 1996, Austin, Texas; Title: "SFF Using Diode Lasers."
- 39 Tariq Manzur, C. Roychoudhuri, H. Marcus; "SFF Using Diode Lasers," Solid Freeform Fabrication Symposium Proceedings 1996, Austin, Texas.
- 40 Shay Harrison, James E. Crocker, Tariq Manzur, and Harris L. Marsus; "Solid Freeform Fabrication at the University of Connecticut," Solid Freeform Fabrication Symposium Proceedings 1996, Austin, Texas.
- 41 Tariq Manzur, B. Bzymek, C. Roychoudhuri & B. T. Ramakrishnan; "Solid Freeform Fabrication Directly From Metal/Ceramic Powders Using High Power Laser Diodes," Published at International Symposium on Automotive Technology and Automation; ISATA, 1996.

- 42 Tariq Manzur, T. DeMaria & C. Roychoudhuri; "Potential Role of High Power Laser Diode in Manufacturing," SPIE vol. 2703, pp. 491 - 501, January, 1996.
- 43 Chandra S. Roychoudhuri and Tariq Manzur; "Demonstration of the Evolution of Spectral Resolving Power as a Superposition of Higher Order Delayed Beams," 28 / SPIE vol. 2525, August, 1995.