

JAMES F. SHANLEY, Ph.D.

Professional Profile**Career Objective**

To secure consulting or opportunities which can exploit my broad physics and engineering knowledge as well as my international and domestic business skills.

Technical Skills Summary

- Mathematical Analysis & System Engineering.
- Optical Analysis, Modeling & Design Using Light Tools, Code V & Zemax.
- Electrical/Electronic Analysis & Design.
- Mechanical Design
- Laser Systems Analysis & Modeling.
- Optical and Infrared Sensor Design
- Thermal Analysis, Modeling & Design.
- LED circuit analysis design and fabrication.
- Digital Camera Design, Fabrication and Production for whole product line of consumer models.
- LCD illumination system and optical film design and fabrication.
- Semiconductor (IR, CCD, CMOS, LED, QED, Solid State & Diode Lasers) Analysis, Modeling & Processing
- Lidar & LADAR Design, build, testing and integration using lasers and LEDs for variety of systems.
- Designed and built LIDAR systems for space, avionics, vehicle and handheld applications.
- Home Theater, Video, LED Projection Display Design and Build, and Color Theory Image Analysis, Design and Implementation.
- LED Array Bias circuit design and fabrication.
- LCD screen and illumination system design using LCD arrays.

Management Skills Summary

- Direction and Leadership of Large International Engineering Organizations
- Major Program/Project Management
- Proposal Writing
- Budgeting and Financial Management
- Writing & Implementing Business Plans
- Leading and Managing Product Development
- Employee Development Planning & Implementation
- Working with Marketing to Formulate & Initiate Engineering Product Development Roadmaps
- Ensuring Product Development Schedules and Deliveries are Met
- Engineering Process Improvement
- Meeting Engineering and Corporate Financial Goals
- Implementing Corporate Engineering Strategy
- Developing R&D and Capital Equipment Plans

Professional Experience

Bose Corporation – Chief Engineer (2000-2004)

- Responsibilities include the design of new home theater products and implementation of strategy for bringing these new products to worldwide markets
- Directed engineers at Taiwan Company (Primax) for production of home theater products.
- LED analysis and modeling for projection TVs and home theater applications.
- LED Array Fabrication and Circuit Design and build.
- LED Projection system design for home theater applications.
- Color theory analysis, modeling and implementing in projection systems.

Polaroid Corporation – Vice President Worldwide Engineering (1995-2004)

- Organization included design centers in US, Scotland, and Shanghai.
- Responsible for the design of all Polaroid products ranging from digital and analog cameras, printers, scanners, color film recorders, projection systems and software products. VP of division responsible for design and manufacture of plastic optics.
- Introduced digital projector systems to international market.
- LED and Diode laser analysis and modeling for projection systems.

McDonnell Douglas Electronic Systems Company – Director of Engineering (1989-2005)

- Engineering organization consisted of 450 Engineers in four divisions- Flight Simulation, Laser Systems, Avionics and Ground Support Systems and Space Laser Communications.
- Designed LIDAR systems for aircraft avionics applications such as helicopter wire avoidance and NAPE of the earth flight.
- Funded and directed group of scientists in Russia (Lebedev Institute) for the development of II-VI Laser materials.
- Research on semiconductor lasers and solid-state optical switching.

General Electric Space Systems Division – A Level Manager Electro-Optic (1985-1989)

- Groups included electronics design, laser design, optical design, image processing, IR and optical, LiDAR and LADAR sensing and atmospheric sensing. LiDAR systems include applications such as cloud top height determination, atmospheric wind velocity measurements, submarine acoustic wave sensing.
- Designed LiDAR system for MOLA (Mars Orbiter laser altimeter).
- III-V diode laser analysis and processing.
- Group also performed all integration of all electro-optics packages on satellites. This included surveillance and earth resource sensing satellites.

Honeywell Electro-Optics Division – Group Leader (1976-1985)

- First level Manager of a group performing Infrared Semiconductor Device Physics
- II=VI semiconductor development - analysis, modeling and processing.
- Developed IR imaging device employing heterodyne technology for LADAR. Built LADAR test lab.
- Designed components and fabricated test bed for LiDAR range finder system for tanks.

Consulting Experience

Olympus (2004-2006)

- Consulted on new image processing technology (both software and hardware) – including viability of technology and strategy and business plan for introducing the new product.
- Developed business and marketing strategy for new product introduction.

Samsung (2007-2008)

- Expert witness for patent infringement suit concerning video imaging using 4 color algorithms instead of the conventional three-color process.
- We were successful in having patent declared invalid.

Mitsubishi (2007-2008)

- Expert witness for patent infringement suit concerning video imaging using 4 color algorithms instead of the conventional three-color process. I was an expert witness for both Samsung and Mitsubishi.

Itek (2003)

- Optical and IR sensor design analysis and manufacture for space surveillance applications.
- Optical system design for an airborne laser weapon.

Insight Media (2008-2010)

- Image processing and new methods of stitching images to obtain one large high-resolution image.
- Web Seminar on imaging issues of current Flight Simulation Companies.

InfraMetrics (200-2002)

- Development of new IR imaging systems- this included both the electronics, mechanicals and IR devices.
- These systems are used for night vision by military, police, and fire departments.

Mersive, Denver, CO (2009)

- Develop marketing and business plans for image processing and stitching images together to make one high resolution image software.
- Developed new business by introducing products to many of my former contacts in the simulation industry.

Scalable Displays (2006)

- Developed marketing plan for image processing hardware and software. Developed contact list for new product introduction.

Scram Technologies (2005-2011)

- Designed hand-held LED IR Lidar for target designation and range finding for DARPA
- Designed and built LED array base F-18 cockpit display.
- Designed and built large screen LCD and LED projection display for ship applications.
- Circuit analysis and build optimum electronics for LED optimum power and lifetime.

Expert Witness Experience

- Honeywell in a trade secret breach of contract dispute United States District Court for the District of Arizona as Case No. CV-17-02083-PHX-GMS. - Robins Kaplan Law Firm HESAI EX1021, P.3

- Microsoft in a patent infringement action the United States District Court for the Eastern District of Texas. Civil Action NO. 6:18-cv-00042. - Fish and Richardson Law Firm
- Rockley Photonics in a “Non-infringement opinion for U.S. Patent Nos. 8,053,790 and 8,346,028” - Baker Botts Law Firm
- Samsung Electronics and Mitsubishi in a patent infringement action in the Southern District of New York. *Genoa Color Tech., Ltd. v. Samsung Elec. Co., Ltd., et al.* (S.D.N.Y.) - Covington and Burling Law Firm.
- Masimo Corporation and Cercacor Laboratories, Inc. in patent infringement In the Matter of Certain Light-Based Physiological Measurement Devices and Components Thereof Inv. No. 337-TA-1276. – Knobbe Martens Law Firm

Patents

11 patents and patents pending in the areas of lasers, semiconductor lasers, imaging systems, optics, light emitting diodes (LEDs), and video projectors.

Publications

Over 35 publications in the areas of millimeter wave astronomy, microwaves devices, II-VI semiconductor devices, optical and IR imaging systems, IR Doppler laser ranging and imaging, III-V laser and LED diodes, optical switching.

Honors and Awards

Honeywell Technical Achievement Award
 Polaroid Outstanding Engineer C
 AIAA Sensors Award
 Editor for two SPIE books on IR Surveillance Technologies
 Chairmen of Several SPIE Imaging Conference Sessions
 Invited Lecturer at Hong Kong Science and Technical University

Professional societies

American Physical Society
 Institute of Electrical and Electronics Engineers
 SPIE (Society of Photo- Optical Industrial Engineers)
 Society for Information display
 American Institute of Aeronautics & Astronautics - AIAA

Education

CLARKSON UNIVERSITY – Potsdam, New York B.S.
 Physics (1966)
UNIVERSITY OF MASSACHUSETTS – Amherst, Massachusetts
 M.S. Physics, (1970)
 PhD Electrical Engineering & Physics (1980)

Management Training

Honeywell Management Training Course
 GE management Training (Crotonville series of Courses)
 McDonnell Douglas Management Training Program

List of Patents and Patent Applications

1. Optical system for a digital light projection system including a multi-light path lens, patent application 2011016422.
2. Optical system for a digital light projection system including a 3-channel LED array light engine, patent number 20090323028.
3. Light enhancing, patent number: 7520624
4. Optical system for a digital light projection system including 3-channel and 4-channel LED array light engines, patent number 7508590.
5. Optical Panel for Front Projection Under Ambient Lighting Conditions, patent application 20080285125.
6. Optical system for a digital light projection system including optical concentrator elements having reflective aperture elements, patent number 7369316.
7. Microdisplay Projection, patent number 7241014.
8. Vertical cavity electron beam pumped semiconductor lasers and methods, patent number 5807764
9. Vertical cavity electron beam pumped semiconductor lasers and methods, patent number 5677923.
10. LCD projector, patent number D451528.
11. High efficiency beam shaping illumination optical device for light emitting diode
Patent application 2007065002 A1

List of Publications

1. J. A. Mroczkowski, J. F. Shanley, M. B. Reine, P. L. LoVecchio, and D. L. Polla, Lifetime measurement in Hg_{0.7}Cd_{0.3}Te by population modulation, Appl. Phys. Lett. **38**, 261 (1981).
2. D. L. Polla, R. L. Aggarwal, J. F. Shanley, J. A. Mroczkowski, and M. B. Reine, Optical Absorption below the absorption edge in Hg_{1-x}Cd_xTe, IEDM Proceedings, 7.5, Washington (1981)
3. J. F. Shanley, C. T. Flanagan, J. A. Mroczkowski, and T. N. Casselman, Heterodyne Laser Mixer Detector Study, Final Technical Report, U.S. Air Force Avionics Laboratory Contract No. F33615-79-C-1762.
4. D. L. Polla, R. L. Aggarwal, J. A. Mroczkowski, J. F. Shanley, and M. B. Reine, Observation of deep levels in Hg_{1-x}Cd_xTe with optical modulation spectroscopy, Appl. Phys. Lett. **40**, 338, (1982).
5. Yngvesson, K. S., Cardiasmenos, A. G., Shanley, J. F., Rydbeck, O. E. H., and Elldé, Maser radiometer observations of water vapor and OH in weak galactic OH sources, J., Astrophys. J., **195**, 91 (1975).
6. Yngvesson, K. S., Cardiasmenos, A. G., Shanley, J. F., Low Noise Traveling-Wave Maser Receiver for Three Millimeter Wavelength, IEE-MTT-S, International Microwave Symposium, 241-243, (1976).
7. Yngvesson, K. S., Cardiasmenos, A. G., Shanley, J. F., A Traveling-Wave Maser Amplifier for 85-90 GHz Using a Slot-Fed Image-Guide Slow-Wave Circuit, IEEE Transactions on Microwave Theory and Techniques **24**(11):725 - 730 · December 1976
8. J.F. Shanley and C.T. Flanagan , Proceedings of Lasers Conference, Orlando, Florida, 17-21 December 1979.
9. J. F. Shanley, C. T. Flanagan, M. B. Reine, T. N. Casselman, T. (1980). Thermal diffusion current mechanisms in n⁺-p-p⁺Hg_{1-x}Cd_xTe photodiodes. Technical Digest - International Electron Devices Meeting, 26. 10.1109/IEDM.1980.189878.
10. J.F. Shanley, C. T. Flanagan, M.B. Reine, T.N Casselman, Thermal diffusion current mechanisms in n⁺-p-p⁺Hg_{1-x}Cd_xTe photodiodes. Proceedings IEDM 501- 507. (1980).
11. J.F. Shanley, C. T. Flanagan, Wide Bandwidth, High Sensitivity Hg_{0.8}Cd_{0.2}Te Photodiodes for CO₂ Laser Applications, Proceedings - Society of Photo-Optical Instrumentation Engineers 227:123-132 · August 1980
12. J.F. Shanley, C. T. Flanagan, M.B. Reine, Elevated Temperature n⁺-p Hg_{0.8}Cd_{0.2}Te Photodiodes For Moderate Bandwidth Infrared Heterodyne Applications, Proceedings - Society of Photo-Optical Instrumentation Engineers 227:117-122: August 1980.
13. J.F. Shanley, C. T. Flanagan, Some n-p (Hg,Cd)Te photodiodes for 8-14 micrometer heterodyne applications, Proceedings - Society of Photo-Optical Instrumentation Engineers 228:217-222: August 1980.
14. D.L Polla, R. Aggarwal, J A Mroczkowski, J.F. Shanley, M. B. Reine, H.R.Vydyanath,. (1981). Characterization of Hg_{1-x}Cd_xTe for high performance device applications by optical modulation spectroscopy. 27. 169- 171. 10.1109/IEDM.1981.190030.
15. J. A. Mroczkowski, J. F. Shanley, D.L. Polla, P. J. Kannam, P. (1981). Lifetime Scanning Measurements On Hg_{0.7}Cd_{0.3}Te By Population Modulation. DOI Microlithography Conference, 55-58. 10.1117/12.931686.
16. D.L Polla, R. Aggarwal, J A Mroczkowski, J.F. Shanley, M.B Reine, Excess carrier lifetime in Hg_{1-x}Cd_xTe by population modulation spectroscopy, "Physics of Narrow Gap Semiconductors" · JAPSAI EX1021, P.5 1982 DOI 10.1007/3-540-11191-3ISSN 0075-8450.

17. William A. Radford, J. F. Shanley, O. L. Doyle, (1983). Comparison of optically modulated absorption and photoconductivity decay lifetime measurements on HgCdTe. Journal of Vacuum Science & Technology A: Vacuum, Surfaces, and Films. 1. 1700 - 1705. 10.1116/1.572261.
18. O. L. Doyle, J. A. Mroczkowski, J. F. Shanley, (1985). Photoabsorptance and electron lifetime measurement in HgCdTe. Journal of Vacuum Science & Technology A: Vacuum, Surfaces, and Films. 3. 259 - 263. 10.1116/1.573213.
19. D.L Polla, R. Aggarwal, D. A. Nelson, J. F. Shanley, M. B. Reine, (1983). Hg vacancy related lifetime in Hg_{0.68}Cd_{0.32}Te by optical modulation spectroscopy. Applied Physics Letters. 43. 941 - 943. 10.1063/1.94189.
20. R. J. Briggs, J. F. Shanley, (1984). Hg diffused Hg_{1-x}Cd_xTe photodiodes for LWIR direct detection applications. 30.10.1109/IEDM.1984.190732.
21. Cindrich, E., Del Grande, N.K., Gowrinathan, S., & Johnson, P.B. Shanley, J.F. (Ed.). (1994). Aerial surveillance sensing including obscured and underground object detection. United States: SPIE--The International Society for Optical Engineering.
22. J. C. Petheram, J. F. Shanley, J. T. Sroga, R. C. Vitz, A. B. Wissinger, T. R. Lawrence, The Laser Atmospheric Wind Sounder-Preliminary Design, Proc. SPIE 1181, 5th Conf on Coherent Laser Radar: Technology and Applications, (12 December 1989); doi: 10.1117/12.963753; <http://dx.doi.org/10.1117/12.963753>
23. J. C. Petheram; J. F. Shanley; J. T. Sroga; R. C. Vitz; A. B. Wissinger; T. R. Lawrence; The Laser Atmospheric Wind Sounder-Preliminary Design.
24. Proceedings Volume 1181, 5th Conference on Coherent Laser Radar: Technology and Applications; (1989); DOI: 10.1117/12.96375 Event: Fifth Conference on Coherent Laser Radar, 1989, Munich, Germany.
25. Robert R. Rice; James F. Shanley; Neil F. Ruggieri; Dual-use applications for e-beam-pumped semiconductor lasers, Proceedings Volume 2374, Novel Applications of Lasers and Pulsed Power; (1995); DOI: 10.1117/12.205012, Event: Photonics West '95, 1995, San Jose, CA, United States
26. Gowrinathan, S., C.B. Johnson, and J.F. Shanley. Surveillance Technologies and Imaging Components." United States: Bellingham, WA (United States); SPIE--The International Society for Optical Engineering, 1993.
27. Gowrinathan, S., and J.F. Shanley. "Surveillance Technologies II; Proceedings of the Meeting, Orlando, FL, Apr. 21-23, 1992." United States: Bellingham, WA (United States); Society of Photo-Optical Instrumentation Engineers, 1992.
28. J. F. Shanley, W. A. Paulauskas, D.A. Taylor, Development of a HgCdTe photomixer and impedance matched GaAs FET amplifier, NASA-CR-170608, NAS 1.26:170608, DOC. 19840003322.
29. Diann L. Gallagher; Steven Prutzer; James F. Shanley; Richard J. Hanby; Boyd McClaskey; Sandra L. Witman; Thomas F. Gallagher; Resonant Cavity Electro-Optic Frequency Modulator For Heterodyne Evaluation Of HgCdTe Detectors At 2.0 Ghz, Proceedings Volume 0750, Infrared Systems and Components; (1987); DOI: 10.1117/12.939851, Event: OE LASE'87 and EO Imaging Symposium, 1987, Los Angeles, CA, United States.
30. J. F. Shanley, L.C. Perry, Wide bandwidth 10.6 μ m (Hg,Cd)Te photodiodes for infrared heterodyne applications, IEEE Electron Devices Meeting, DOI 10.1109 IEDM.1978.189445
31. J. F. Shanley, IR Heterodyne HgCdTe Detectors, Proc. of the International Conf. on Heterodyne Systems and Technology, Williamsburg, March 25-27, 1980, pp. 309-326 (NASA CP-2138).
32. J. C. Petheram, J. F. Shanley, J. T. Sroga, R. C. Vitz, A. B. Wissinger, and T. R. Lawrence, LAWS - Laser Atmospheric Wind Sensor, Proc. SPIE 1062, 274 (1989).
33. C.A. Balestra, J.F. Shanley, Making the Switch in Photonics, Photonics Spectra Sept. 1994, (143 - 159).
34. Firooz A. Allahdadi; Michael Chrisp; Concetto R. Giuliano; W. Pete Latham; James F. Shanley, Space Instrumentation and Dual-Use Technologies, Proceedings of SPIE, Volume Number: 2214, 8 June 1994.
35. Shanley, J. F.; Maruska, H. P.; Prutzer, S.; Golden, J. A, Performance Characteristics Of Hg_{1-x}Cd_xTe Heterodyne Receiver, Proceedings of the SPIE, Volume 1181, pp. 170-175 (1989).