

# GIACOMO VACCA, Ph.D.

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## CAREER HIGHLIGHTS

- 77 patents filed, 39 issued, 30 pending
- 20 years experience in research and product development
- 17 years experience in intellectual property generation, landscape analysis, and management
- 6 years experience leading hematology R&D group
- Managed 15 people, multimillion-dollar development programs, and IP portfolios
- Volwiler Research Fellow at Abbott Laboratories
- Stanford Ph.D.
- Harvard B.A., M.A.

## KEY INTELLECTUAL PROPERTY EXPERIENCE

- 15 years experience in flow cytometry and sorting
- 26 years experience in optics and lasers
- 68 patents filed in flow cytometry and sorting
- 5 years experience managing IP portfolio for business unit of Fortune 100 company
- 13 years experience performing technical IP evaluations, due diligence, technology assessment
- retained as expert witness on patent infringement, trade secrets, IPR and PGR proceedings (8 cases—2 in progress, 5 reports, 2 depositions)
- participated in Silicon Valley Business Leader Briefing on IP and Patent Reform with USPTO Director, Michelle Lee

## KEY TECHNICAL KNOW-HOW

- Hematology, *in vitro* diagnostics, flow cytometry, fluorescence-activated cell sorting
- Fluorescence assays, next-gen immunoassays, next-gen DNA sequencing
- Fluorescence detection systems, biosensors, optofluidics, microfluidics, microoptics, optical waveguides
- Nonlinear optics, nonlinear spectroscopy, confocal microscopy, optical microscopy
- Laser design, laser architectures, optical system design
- Pulsed ultrafast lasers, frequency conversion
- Light scattering, X-ray scattering, light-matter interaction
- Digital electronics, analog electronics, ultrafast circuitry

## EXPERIENCE

### Founder and President

2010 to present

*Kinetic River Corp.*, Mountain View, CA

- Established biophotonics design and engineering consulting company
- Designed, developed and launched the *Potomac*, modular flow cytometer; sold one unit to National Cancer Institute
- Designed, developed and launched the *Danube*, fluorescence lifetime flow cytometer; sold two units to New Mexico State University
- Awarded Phase I SBIR grant from National Institute of General Medical Sciences
- Designed and built a working 2-laser, 6-detector flow cytometer prototype in less than 2 months
- Performed due-diligence technology assessment for leading OEM on international M&A project
- Executed and delivered designs, prototypes, design reviews, technology evaluations, IP assessments, and market studies
- Developed and delivered training seminars on flow cytometry and other biophotonics technologies and markets

- Co-founder and Chief Scientific Officer** 2013 to present  
*BeamWise, Inc.*, San Jose, CA
- Established optomechanical design automation company
  - Introduced BeamWise software tool and services to bridge gap between optomechanical design and implementation
- Volwiler Research Fellow** 2010 to 2011  
*Abbott Laboratories*, Abbott Park, IL
- Organized and hosted IP harvesting workshop leading to 130 new disclosures in strategic flow cytometry areas
  - Successfully completed multi-year research & feasibility program for breakthrough hematology platform
- Intellectual Property Manager** 2007 to 2011  
*Abbott Hematology*, Santa Clara, CA
- Hematology business unit representative on Diagnostics Division-wide Patent Governance Board
  - Responsible for managing hematology IP portfolio (disclosures, patent applications, nationalization, and abandonment)
  - Held IP training session, implemented IP tracking metrics, and substantially increased site disclosures and applications
- Member, New Technology Group** 2006 to 2011  
*Abbott Diagnostics*, Abbott Park, IL
- Carried out technology assessment on dozens of companies for prospective partnering/licensing/acquisition transactions
  - Performed due diligence, developed deal structure, and coauthored offer resulting in acquisition of IP assets
- Program Manager, R&D** 2005 to 2011  
*Abbott Hematology*, Santa Clara, CA
- Responsible for early-stage R&D and feasibility of next-generation hematology reagents, assays, and analyzers
  - Managed group of 15 engineers and scientists and a multimillion-dollar budget for R&D and product support projects
  - Invented novel technology for cellular analysis and led project through feasibility with working prototypes
  - Launched new hematology analyzer and delivered six major upgrades through feasibility, integration, and testing
  - Supported two 510(k) class-II medical device submissions to the FDA with data analysis and feasibility reports
  - Developed interactive simulation platforms to model flow cytometer operation
  - Coordinated response to field actions on CELL-DYN products, from root cause investigation to issue resolution
  - Created and championed adoption of resource tracking tools for project planning and execution
- Product Marketing Manager, Cyan Laser Product Line** 2004 to 2005  
*Picarro, Inc.*, Sunnyvale, CA
- Responsible for company's largest revenue-producing product line
  - Signed up major new customer for \$1M worth of business
  - Identified new applications, markets, and customers, quantified business opportunities and developed new business
  - Wrote new product specifications and marketing materials, and presented to customers
  - Resolved applications issues at customer sites and trained customers' staff of field service engineers
  - Coordinated communication among customers, sales, R&D, engineering, and manufacturing
- Project Leader and Optical Engineer** 2002 to 2004  
*Picarro, Inc.*, Sunnyvale, CA
- Headed project to develop narrow-linewidth infrared lasers for spectroscopy applications
  - Led team of 6 people in new product development program, delivered on time and under budget
  - Invented and demonstrated optical designs geared for manufacturing stable, widely tunable lasers
  - Invented and developed signal processing tools used to increase manufacturing yield
  - Developed and built visible and infrared laser prototypes based on novel architectures
- Design Physicist** 2000 to 2002  
*Lightwave Microsystems Corp.*, San Jose, CA
- Invented microfluidic technology and developed prototypes for use in planar lightwave circuits (PLCs)
  - Designed and established new laboratory for research and development in microfluidics and optics

- Led team for development of novel PLCs based on microfluidics
- Designed dynamic PLCs based on silica optical waveguides
- Developed interactive optical modeling tools used to predict the optical performance of PLCs
- Analyzed data on the optical performance of PLCs in order to optimize fabrication processes

**Graduate Research Assistant** 1994 to 2000  
*Stanford University*, Stanford, CA

- Worked with 1998 Physics Nobel-Prize-winning advisor (Robert B. Laughlin)
- Invented ultrafast light scattering technique to probe microscopic fluid dynamics
- Built laboratory for laser-based research on ultrafast phenomena in fluid dynamics
- Planned, organized, and conducted experiments and computer simulations, analyzed data, and published results
- Trained undergraduates and directed theoretical and experimental student research projects
- Wrote grant proposals to obtain funding for research in ultrafast optics and fluid dynamics

**Graduate Teaching Assistant** 1996 to 1999  
*Stanford University*, Stanford, CA

- Led discussion and laboratory sessions and graded assignments for introductory and advanced physics courses

**Associate Physicist** 1991 to 1994  
*Exxon Research and Engineering Company*, Clinton, NJ

- Conducted x-ray scattering experiments to characterize complex fluids, thin films, and composite materials
- Designed and constructed experimental equipment to study multiphase flow in porous media
- Maintained and repaired x-ray equipment used in analytical studies and product development research

**Undergraduate Research Assistant** Summer 1990  
*Harvard University*, Cambridge, MA

- Investigated atomic transport processes in silicon using differential scanning calorimetry

## EDUCATION

**Ph.D. in Applied Physics** 2001  
*Stanford University*, Stanford, CA  
 Dissertation: Ultrafast optical studies of single-bubble sonoluminescence

**M.A. in Physics** 1991  
*Harvard University*, Cambridge, MA  
 Thesis: A laser simulation using SPICE

**B.A. in Physics** 1991  
*Harvard University*, Cambridge, MA  
 Cum Laude in General Studies

## HONORS AND ACHIEVEMENTS

- Senior Member, SPIE, 2015
- Volwiler Research Fellow, Abbott Laboratories, 2010
- Senior Member, Optical Society of America, 2010
- Top Research Platinum Award for Laser Rastering, Abbott Hematology, 2009
- Silver Award for outstanding technical leadership, Abbott Hematology, 2009
- Abbott Diagnostics Technical Advisory Board Technical Leadership Award Nominee, Abbott Park, 2008
- Communications Director of the United World Colleges National Network, New York, 1991-1994
- Founder and President of the Society for International Education, Harvard University, 1989-1990
- Dean's List of Academic Achievement all semesters, Harvard College, 1987-1990
- Merit-based full scholarship to Lester B. Pearson College, 1985-1987

## PROFESSIONAL MEMBERSHIPS

- SPIE Short Course Instructor, 2015-present
- CYTO Program Committee Member (ISAC), 2013-present
- CYTO Reviewer (ISAC), 2013-present
- Consultants' Network of Silicon Valley (IEEE-CNSV), 2011-present
- Bio2Device Group (B2DG), 2011-present
- International Society for Advancement of Cytometry (ISAC), 2006-present
- The International Society for Optics and Photonics (SPIE), 2005-present
- The Optical Society (OSA), 1998-present

## INTELLECTUAL PROPERTY

1. J. Wu, **G. Vacca**, U.S. patent #9,797,824, "Method for hematology analysis," issued October 24, 2017
2. **G. Vacca**, U.S. patent #9,778,193, "Methods and apparatuses for label-free particle analysis," issued October 3, 2017
3. J. Wu, M. Coleman, E. Lin, M. Buhl, **G. Vacca**, U.S. patent #9,778,163, "Nucleated red blood cell analysis system and method," issued October 3, 2017
4. J. Wu, **G. Vacca**, U.S. patent #9,778,162, "White blood cell analysis system and method," issued October 3, 2017
5. **G. Vacca**, U.S. patent application, "Methods and apparatuses for label-free particle analysis," filed October 2, 2017
6. J. Wu, M. Buhl, **G. Vacca**, Japanese patent #6,166,716, "Basophils analysis system and method," issued July 19, 2017
7. J. Wu, M. Coleman, E. Lin, M. Buhl, **G. Vacca**, Chinese patent #103,975,054, "Nucleated red blood analysis system and method," issued July 7, 2017
8. **G. Vacca**, U.S. patent #9,671,326, "Flow cytometry apparatus and methods," issued June 6, 2017
9. **G. Vacca**, U.S. patent #9,658,148, "Particle analysis and sorting apparatus and methods," issued May 23, 2017
10. **G. Vacca**, U.S. patent application, "Particle analysis and sorting apparatus and methods," filed April 30, 2017
11. **G. Vacca**, European patent application, "Particle analysis and sorting apparatus and methods," filed April 25, 2017
12. **G. Vacca**, Japanese patent application, "Particle analysis and sorting apparatus and methods," filed April 25, 2017
13. **G. Vacca**, U.S. patent application, "Flow cytometry apparatus and methods," filed April 23, 2017
14. M. Krockenberger, J. Wu, B. Römer, **G. Vacca**, U.S. patent #9,638,621, "Method for discriminating red blood cells from white blood cells by using forward scattering from a laser in an automated hematology analyzer," issued May 2, 2017
15. M. Krockenberger, R. Bordenkircher, D. Garrett, J. Glazier, J. Bearden, B. Römer, **G. Vacca**, U.S. patent #9,618,498, "Method for flagging a blood sample," issued April 11, 2017
16. J. Wu, **G. Vacca**, Chinese patent #103,987,834, "White blood cells analysis system and method," issued March 29, 2017
17. J. Wu, **G. Vacca**, Japanese patent #6,104,233, "White blood cells analysis system and method," issued March 29, 2017
18. **G. Vacca**, Chinese patent application, "Flow cytometry apparatus and methods," filed March 6, 2017
19. **G. Vacca**, European patent application #15819262.5, "Flow cytometry apparatus and methods," filed February 8, 2017
20. **G. Vacca**, U.S. patent #9,551,645, "Flow cytometry apparatus and methods," issued January 24, 2017
21. **G. Vacca**, Canadian patent application #2,954,163, "Flow cytometry apparatus and methods," filed January 3, 2017
22. J. Wu, M. Coleman, E. Lin, M. Buhl, **G. Vacca**, Japanese patent #6,029,657, "Nucleated red blood analysis system and method," issued November 24, 2016
23. M. Krockenberger, D. Garrett, **G. Vacca**, U.S. patent application #2016/0258853, "Method for determining volume and hemoglobin content of individual red blood cells," filed September 8, 2016
24. J. Wu, M. Buhl, **G. Vacca**, Chinese patent #103,917,868, "Basophils analysis system and method," issued August 24, 2016
25. M. Krockenberger, J. Wu, B. Römer, **G. Vacca**, Japanese patent #5,871,792, "In automated hematology analyzers, by using a forward scatter from a laser, a method to determine the red blood cells from white blood cells," issued March 1, 2016
26. M. Krockenberger, J. Wu, B. Römer, **G. Vacca**, U.S. patent #9,267,931, "Method for discriminating red blood cells from white blood cells by using forward scattering from a laser in an automated hematology analyzer," issued February 23, 2016
27. **G. Vacca**, M. Krockenberger, D. Garrett, U.S. patent #9,261,515, "Method for determining volume and hemoglobin

- content of individual red blood cells,” issued February 16, 2016
28. M. Krockenberger, R. Bordenkircher, D. Garrett, J. Glazier, J. Bearden, B. Römer, **G. Vacca**, U.S. patent #9,261,495, “Method for flagging a sample,” issued February 16, 2016
  29. J. Wu, M. Buhl, **G. Vacca**, U.S. patent publication #2016/0018311, “Basophil analysis system and method,” filed January 21, 2016
  30. M. Krockenberger, D. Garrett, **G. Vacca**, Chinese patent #102,933,964, “A method for measuring the volume and hemoglobin content of individual red blood cells,” issued October 7, 2015
  31. J. Wu, M. Coleman, M. Buhl, **G. Vacca**, E. Lin, U.S. patent #9,103,759, “Nucleated red blood cell analysis system and method,” issued August 11, 2015
  32. J. Wu, **G. Vacca**, U.S. patent #9,097,704, “Method for hematology analysis,” issued August 4, 2015
  33. J. Wu, M. Buhl, **G. Vacca**, U.S. patent #9,091,625, “Basophil analysis system and method,” issued July 28, 2015
  34. J. Wu, **G. Vacca**, U.S. patent #9,091,624, “White blood cell analysis system and method,” issued July 28, 2015
  35. M. Krockenberger, R. Bordenkircher, D. Garrett, J. Glazier, J. Bearden, B. Römer, **G. Vacca**, U.S. patent #8,911,669, “Method for flagging a sample,” issued December 16, 2014
  36. M. Krockenberger, J. Wu, B. Römer, **G. Vacca**, U.S. patent #8,906,309, “Method for discriminating red blood cells from white blood cells by using forward scattering from a laser in an automated hematology analyzer,” issued December 9, 2014
  37. M. Krockenberger, D. Garrett, **G. Vacca**, U.S. patent #8,906,308, “Method for determining volume and hemoglobin content of individual red blood cells,” issued December 9, 2014
  38. J. Wu, M. Junnarkar, and **G. Vacca**, U.S. patent #8,715,572, “Method and apparatus for detection, analysis, and collection of rare cellular events,” issued May 6, 2014
  39. **G. Vacca**, Japanese patent #5,465,180, “Count and identification methods and apparatus for high-speed biological particles in the flow,” issued April 9, 2014
  40. M. Krockenberger, R. Bordenkircher, D. Garrett, J. Glazier, J. Bearden, B. Römer, **G. Vacca**, Japanese patent #5,457,560, “A method for attaching a flag to a sample,” issued April 2, 2014
  41. J. Wu, M. Buhl, **G. Vacca**, European patent publication #2705135, “Basophil analysis system and method,” filed March 12, 2014
  42. J. Wu, M. Coleman, E. Lin, M. Buhl, **G. Vacca**, European patent publication #2705136, “Nucleated red blood cell analysis system and method,” filed March 12, 2014
  43. J. Wu, **G. Vacca**, European patent publication #2705134, “White blood cells analysis system and method,” filed March 12, 2014
  44. **G. Vacca**, N. Goldblatt, and M. Yee, Japanese patent #5,226,007, “Method and apparatus for rapidly count identify suspended particles by scanning,” issued July 3, 2013
  45. **G. Vacca**, R. Kendall, N. Goldblatt, M. Yee, and M. Junnarkar, U.S. patent #8,400,632 “Method and apparatus for rapidly counting and identifying biological particles in a flow stream,” issued March 19, 2013
  46. J. Wu, M. Buhl, **G. Vacca**, WIPO patent publication #2012/151105, “Basophil analysis system and method,” filed November 8, 2012
  47. J. Wu, M. Coleman, E. Lin, M. Buhl, **G. Vacca**, WIPO patent publication #2012/151103, “Nucleated red blood cell analysis system and method,” filed November 8, 2012
  48. J. Wu, **G. Vacca**, WIPO patent publication #2012/151102, “White blood cells analysis system and method,” filed November 8, 2012
  49. **G. Vacca**, N. Goldblatt, and M. Yee, U.S. patent #8,253,938, “Method and apparatus for rapidly counting and identifying biological particles in a flow stream,” issued August 28, 2012
  50. M. Krockenberger, R. Bordenkircher, D. Garrett, J. Glazier, J. Bearden, B. Römer, **G. Vacca**, European patent publication #2470881, “Method for flagging a sample,” filed July 4, 2012
  51. J. Wu, M. Junnarkar, and **G. Vacca**, WIPO patent publication #2012/158826, “Method and apparatus for detection, analysis, and collection of rare cellular events,” filed May 16, 2012
  52. **G. Vacca**, R. Kendall, N. Goldblatt, M. Yee, and M. Junnarkar, U.S. patent #8,159,670, “Method and apparatus for rapidly counting and identifying biological particles in a flow stream,” issued April 17, 2012
  53. M. Krockenberger, J. Wu, B. Römer, **G. Vacca**, European patent publication #2425241, “Method for discriminating red blood cells from white blood cells by using forward scattering from a laser in an automated hematology analyzer,” filed March 7, 2012
  54. J. Wu, **G. Vacca**, WIPO patent publication #2011/140042, “Method for hematology analysis,” filed November 10, 2011
  55. **G. Vacca**, N. Goldblatt, and M. Yee, U.S. patent #8,045,162, “Method and apparatus for rapidly counting and identifying biological particles in a flow stream,” issued October 25, 2011
  56. M. Krockenberger, R. Bordenkircher, D. Garrett, J. Glazier, J. Bearden, B. Römer, **G. Vacca**, Canadian patent application #2770461, “Method for flagging a sample,” filed March 10, 2011
  57. M. Krockenberger, R. Bordenkircher, D. Garrett, J. Glazier, J. Bearden, B. Römer, **G. Vacca**, WIPO patent

- application #2011/028437, "Method for flagging a sample," filed March 10, 2011
58. M. Krockenberger, D. Garrett, **G. Vacca**, European patent publication #2524222, "Method for determining volume and hemoglobin content of individual red blood cells," filed January 14, 2011
  59. M. Krockenberger, D. Garrett, **G. Vacca**, WIPO patent publication #2011/088314, "Method for determining volume and hemoglobin content of individual red blood cells," filed January 14, 2011
  60. M. Krockenberger, J. Wu, B. Römer, **G. Vacca**, Canadian patent application #2759392, "Method for discriminating red blood cells from white blood cells by using forward scattering from a laser in an automated hematology analyzer," filed November 4, 2010
  61. M. Krockenberger, J. Wu, B. Römer, **G. Vacca**, WIPO patent publication #2010/126838, "Method for discriminating red blood cells from white blood cells by using forward scattering from a laser in an automated hematology analyzer," filed November 4, 2010
  62. **G. Vacca**, N. Goldblatt, and M. Yee, U.S. patent #7,804,594, "Method and apparatus for rapidly counting and identifying biological particles in a flow stream," issued September 28, 2010
  63. **G. Vacca**, WIPO patent publication #2009/061710, "Method and apparatus for rapidly counting and identifying biological particles in a flow stream," filed May 14, 2009
  64. **G. Vacca**, Canadian patent application #2704699, "Method and apparatus for rapidly counting and identifying biological particles in a flow stream," filed November 4, 2008
  65. **G. Vacca**, European patent application #2008/847427, "Method and apparatus for rapidly counting and identifying biological particles in a flow stream," filed November 4, 2008
  66. **G. Vacca**, N. Goldblatt, and M. Yee, WIPO patent publication #2008/082813, "Method and apparatus for rapidly counting and identifying particles in suspension by scanning," filed July 10, 2008
  67. **G. Vacca**, N. Goldblatt, and M. Yee, Canadian patent application #2672883, "Method and apparatus for rapidly counting and identifying particles in suspension by scanning," filed November 20, 2007
  68. **G. Vacca**, N. Goldblatt, and M. Yee, European patent application #2007/864624, "Method and apparatus for rapidly counting and identifying particles in suspension by scanning," filed November 20, 2007
  69. A. J. Ticknor, J. T. Kenney, **G. Vacca**, D. A. Saville, and K. G. Purchase, U.S. patent #7,283,696, "Microfluidic control for waveguide optical switches, variable attenuators, and other optical devices," issued Oct. 16, 2007
  70. A. J. Ticknor, J. T. Kenney, **G. Vacca**, D. A. Saville, and K. G. Purchase, U.S. patent #7,016,560, "Microfluidic control for waveguide optical switches, variable attenuators, and other optical devices," issued Mar. 21, 2006
  71. **G. Vacca**, J. T. Kenney, and D. A. Saville, U.S. patent #6,949,176, "Microfluidic control using dielectric pumping," issued Sep. 27, 2005
  72. S. Koulikov, **G. Vacca**, A. Kachanov, B. Richman, B. Kharlamov, G. Knippels, C. Rella, and H. Pham, European patent publication #1560052, "Method and apparatus for adjusting the path of an optical beam," filed Jan. 31, 2005
  73. B. Richman, **G. Vacca**, and G. Knippels, U.S. patent publication #2006/0132766, "Continuously tunable external cavity diode laser," filed Dec. 21, 2004
  74. S. Koulikov, **G. Vacca**, A. Kachanov, B. Richman, B. Kharlamov, G. Knippels, C. Rella, and H. Pham, U.S. patent publication #2005/0168826, "Method and apparatus for adjusting the path of an optical beam," filed Aug. 3, 2004
  75. S. Koulikov, **G. Vacca**, A. Kachanov, B. Richman, B. Kharlamov, G. Knippels, C. Rella, and H. Pham, U.S. patent publication #2005/0168825, "Method and apparatus for adjusting the path of an optical beam," filed Feb. 3, 2004
  76. A. J. Ticknor, J. T. Kenney, **G. Vacca**, D. A. Saville, and K. G. Purchase, WIPO patent publication #02/069016, "Microfluidic control for waveguide optical switches, variable attenuators, and other optical devices," filed Feb. 28, 2002
  77. **G. Vacca**, J. T. Kenney, and D. A. Saville, WIPO patent publication #02/068821, "Microfluidic control using dielectric pumping," filed Feb. 28, 2002

## INVITED TALKS

1. **Speaker**, VIP Industry Leaders Speed Meeting Lunch, *CLEO* (San Jose, CA, 2017)
2. **Moderator**, Technology Transfer Program, *CLEO:EXPO* (San Jose, CA, 2017)
3. **Panel Speaker**, "Technology and Markets: What bioinstrumentation developers need from the photonics industry," *Laser & Photonics Marketplace Seminar* (San Francisco, CA, 2017)
4. **Short Course Instructor**, "Flow Cytometry Trends & Drivers," *SPIE Photonics West* (San Francisco, CA, 2017)
5. **Panel Speaker**, "Entrepreneurship and Uncertainty," *10<sup>th</sup> Women Intel Network Conference* (Folsom, CA, 2016)
6. **Mentor**, Health Startups Pitch Sessions, *Startup Weekend Sacramento Health Edition* (Sacramento, CA, 2016)
7. **Short Course Instructor**, "Flow Cytometry Trends & Drivers," *SPIE Photonics West* (San Francisco, CA, 2016)
8. **Panel Speaker**, "Prospects and Future of Microfluidics," *Photonics West* (San Francisco, CA, 2016)
9. **Keynote Speaker**, "System Design Convergence: From Concept to Working Instrument in < 8 Wks," *20<sup>th</sup> International Conference of the Society for Design and Process Science* (Ft. Worth, TX, 2015)
10. **Chair**, "Flow Cytometry Trends and Drivers," *Workshop at CYTO, the XXX International Congress of the International*

- Society for Advancement of Cytometry* (Glasgow, Scotland, 2015)
11. **Moderator**, Technology Transfer Program, *CLEO:EXPO* (San Jose, CA, 2015)
  12. **Short Course Instructor**, “Flow Cytometry Trends & Drivers,” *SPIE Photonics West* (San Francisco, CA, 2015)
  13. **Speaker**, “Phys-Engi-Preneur: The Neverending Metamorphosis,” *Engineers in Medicine and Biology Society Seminar* (Stanford, CA, 2014)
  14. **Speaker**, “Human Cell Analysis: The Technology Behind The World’s Most Common Diagnostic Test,” *IEEE Consultants’ Network of Silicon Valley Meeting* (Santa Clara, CA, 2014)
  15. **Speaker**, “Gap Between The Optical World and the Mechanical World,” *Hyland Optical Lunch & Learn* (Scotts Valley, CA, 2014)
  16. **Speaker**, “Phys-Engi-Preneur: The Neverending Metamorphosis,” *University of California – Merced Physics Department Colloquium* (Merced, CA, 2014)
  17. **Moderator**, Technology Pitch Session, *CLEO:EXPO* (San Jose, CA, 2014)
  18. **Moderator**, Technology Transfer Program, *CLEO:EXPO* (San Jose, CA, 2014)
  19. **Co-chair**, “New Instruments,” *Session at CYTO, the XXIX International Congress of the International Society for Advancement of Cytometry* (Ft. Lauderdale, FL, 2014)
  20. **Seminar Instructor**, “Flow cytometry Seminar,” *1-day seminar at leading optical sensors company* (California, 2014)
  21. **Seminar Instructor**, “Flow cytometry Seminar Series,” *2-day site-wide seminar series at leading optics & photonics company* (United Kingdom and Germany, 2014)
  22. **Speaker**, “Advances in Optical Design,” *Meeting of the Northern California Section of the OSA* (Palo Alto, CA, 2014)
  23. **Panel Speaker**, “Prospects and Future of Microfluidics,” *Photonics West: MEMS/MOEMS* (San Francisco, CA, 2014)
  24. **Speaker**, “Automated Design Tools for Biophotonic Systems,” *Photonics West: OPTO* (San Francisco, CA, 2014)
  25. **Speaker**, “New Tools for Cell Analysis: High-Throughput Fluorescence Lifetime,” *Leibniz Association Seminar, Deutsche Rheumaforschungszentrum* (Berlin, Germany, 2014)
  26. **Speaker**, “Phys-Engi-Preneur: The Neverending Metamorphosis,” *Santa Clara University Physics Department Colloquium* (Santa Clara, CA 2013)
  27. **Speaker**, “New Tools for Cancer Research: Probing Cellular Processes at High Throughput,” *Bio2Device Group Seminar Series* (Sunnyvale, CA, 2013)
  28. **Co-chair**, “Trends in Cytometry Instrumentation,” *Workshop at the XXVIII International Congress of the International Society for Advancement of Cytometry* (San Diego, CA, 2013)
  29. **Panel Speaker**, “Working for Equity: Startup CEOs Share Lessons Learned,” *Silicon Valley Code Camp* (Los Altos, CA, 2012)
  30. **Speaker**, “Live Ideas: Interactive Medical Device Simulations,” *IEEE-CNSV Med-SIG Seminar Series* (Santa Clara, CA, 2012)
  31. **Speaker**, “System design tools for medical devices and life science instrumentation,” *Bio2Device Group Seminar Series* (Sunnyvale, CA, 2012)
  32. **Speaker**, “Looking at cells in a new light: trends and advances in flow cytometry,” *Department of Chemical Engineering, New Mexico State University* (Las Cruces, NM, 2012)
  33. **Seminar Instructor**, “Flow cytometry: A technical overview,” *R&D group at leading optics company* (2012)
  34. **Seminar Instructor** “Flow cytometry: A technical overview,” *R&D group at leading test & measurement company* (2011)
  35. **Speaker**, “Laser Rastering: Acousto-optical deflectors put to use in medical diagnostics” *19<sup>th</sup> Annual Symposium of the Great Lakes International Imaging and Flow Cytometry Association* (Detroit, MI, 2010)
  36. **Speaker**, “Laser Rastering: technology and applications” *2010 Fall Meeting of the Materials Research Society* (Boston, MA, 2010)
  37. **Speaker**, “Laser rastering: Flow cytometry on rocket boosters,” *Center for Biomedical Engineering, University of New Mexico* (Albuquerque, NM, 2009)
  38. **Speaker**, “Laser rastering: The opportunity for rare-event analysis and high throughput at warp speed,” *Cancer Research Facility, University of New Mexico* (Albuquerque, NM, 2009)
  39. **Speaker**, “Laser rastering flow cytometry: Cell analysis at new orders of magnitude,” *High-Content Analysis East 2009* (Boston, MA, 2009)
  40. **Speaker**, “Laser rastering flow cytometry,” *Los Alamos National Laboratory* (Los Alamos, NM, 2008)
  41. **Speaker**, “What old-fashioned TVs have to do with flow cytometry,” *Xerox PARC* (Palo Alto, CA, 2008)
  42. **Speaker**, “Abbott Hematology: Lessons learned in medical device design,” *National Instruments* (Austin, TX, 2008)
  43. **Speaker**, “Ultrafast optical studies of single-bubble sonoluminescence,” *Istituto Elettrotecnico Nazionale Galileo Ferraris* (Torino, Italy, 2000)

## BOOKS & BOOK CHAPTERS

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2. **G. Vacca**, S. Murphy, T. Karras, H. Lehtimäki, “New software environment creates coherent workflow for optical system design,” *Laser Focus World* (May 2017)
3. **G. Vacca**, “In Vitro Diagnostics, Immunology Spurring Advances in Flow Cytometry,” *Photonics Spectra* (Nov. 2016)
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5. **G. Vacca**, “Lessons Learned in Biophotonic Systems Design,” *Biophotonics* (October 2014)
6. **G. Vacca**, interview by S. Tracy, “3 Questions With Dr. Giacomo Vacca, Kinetic River Corp.,” *Biophotonics* (May 2014)
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## CONFERENCE PRESENTATIONS

1. **G. Vacca**, “New Frontiers in Flow Cytometry Multiplexing” 27<sup>th</sup> Annual Cytometry Development Workshop (La Jolla, CA, 2017)
2. **G. Vacca**, “A Modular Platform for Flexible Flow Cytometry” 27<sup>th</sup> Annual Cytometry Development Workshop (La Jolla, CA, 2017)
3. **G. Vacca**, K.P. Shevgaonkar, N.V. Hawk, V. Kapoor, W. Telford, “A Modular Platform for Flexible Flow Cytometry,” XXII International Congress of the International Society for Advancement of Cytometry (Boston, MA, 2017)
4. W. Telford, V. Kapoor, N.V. Hawk, **G. Vacca**, “An Open Architecture Analyzer for Flow Cytometry Technology Development,” XXII International Congress of the International Society for Advancement of Cytometry (Boston, MA, 2017)
5. **G. Vacca**, “Danube, Potomac, Arno: A Tale of Many Rivers (and One Genie),” 26<sup>th</sup> Annual Cytometry Development Workshop (La Jolla, CA, 2016)
6. **G. Vacca**, “An Expanded Multiplexing Flow Cytometry Platform” XXXI Congress of the International Society for Advancement of Cytometry (Seattle, WA, 2016)
7. **G. Vacca**, “Modern Design Tools: From Concept to Working Instrument in < 8 Wks,” 25<sup>th</sup> Annual Cytometry Development Workshop (La Jolla, CA, 2015)
8. **G. Vacca**, “The Potomac Modular Flow Cytometer: A Customized Build-As-You-Go Platform,” 25<sup>th</sup> Annual Cytometry



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9. **G. Vacca**, "Next-Generation Fluorescence Lifetime Flow Cytometer," *24<sup>th</sup> Annual Cytometry Development Workshop* (La Jolla, CA, 2014)
  10. **G. Vacca**, "New Functionality from BeamWise: Design Automation," *24<sup>th</sup> Annual Cytometry Development Workshop* (La Jolla, CA, 2014)
  11. **G. Vacca**, "Design Automation in Flow Cytometry: New Instruments at the Push of a Button," *23<sup>rd</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2013)
  12. **G. Vacca**, "Exosomes Done Right: Pushing the Boundaries in Microvesicle Detection," *23<sup>rd</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2013)
  13. **G. Vacca**, "The (Life)Time is Now: New Horizons in Fluorescence Lifetime Flow Cytometry," *23<sup>rd</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2013)
  14. **G. Vacca**, "Lessons Learned in Instrumentation Design and Prototyping," *22<sup>nd</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2012)
  15. **G. Vacca**, "Live Ideas: Interactive Simulations to Speed Up System Development," *22<sup>nd</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2012)
  16. **G. Vacca**, "Interactive System Modeling: Taking Risk Out of Design," *XXVII International Congress of the International Society for Advancement of Cytometry* (Leipzig, Germany, 2012)
  17. **G. Vacca**, "Performance and cost in flow cytometry," *21<sup>st</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2011)
  18. **G. Vacca**, M. Junnarkar, M. Coleman, J. Wu, "Laser Rastering Flow Cytometry for Rare-Event Analysis," *XXVI International Congress of the International Society for Advancement of Cytometry* (Baltimore, MD, 2011)
  19. **G. Vacca**, J. Wu, M. Junnarkar, S. Friedman, M. Coleman, J. Sagala, R. Stenerson, M. Yee, J. P. Yang, W. Lui, H. Vu, J. Smith, G. Parhar, "Laser Rastering: Cellular Analysis at the Speed of Light," *55<sup>th</sup> Annual Meeting of the Biophysical Society* (Baltimore, MD, 2011)
  20. **G. Vacca**, "Laser Rastering: Promise and Challenges," *20<sup>th</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2010)
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  23. D. Garrett, M. Krockenberger, **G. Vacca**, A. Huisman, and W. van Solinge, "Extended red blood cell parameters for disease states on the CELL-DYN<sup>®</sup> Sapphire analyzer," *XXIII International Symposium on Technological Innovations in Laboratory Hematology* (Brighton, U.K., 2010)
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  29. M. Junnarkar and **G. Vacca**, "Mie scattering signatures: Optimization of flow-based hematology analyzers," *XXV International Congress of the International Society for Advancement of Cytometry* (Seattle, WA, 2010)
  30. M. Krockenberger, D. Garrett, **G. Vacca**, A. Huisman, and W. van Solinge, "Reticulocytes and red blood cell patterns for disease states on the CELL-DYN<sup>®</sup> Sapphire," *XXV International Congress of the International Society for Advancement of Cytometry* (Seattle, WA, 2010)
  31. **G. Vacca**, "Laser rastering: routine whole-blood assays at 300,000+ events/sec," *19<sup>th</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2009)
  32. **G. Vacca**, "Laser rastering and lysis-free assays," *19<sup>th</sup> Annual Cytometry Development Workshop* (Asilomar, CA, 2009)
  33. **G. Vacca**, M. Yee, M. Junnarkar, N. Goldblatt, W. Liu, B. van Slyke, T. Briese, S. Friedman, W. Sun, and R. Stenerson, "Laser rastering flow cytometry: Turbocharging cell counting," *XXII International Symposium on Technological*

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