

# CURRICULUM VITAE

## Steven W. Graves, Ph. D.

Director, Biomedical Engineering Graduate Program  
Associate Professor, Department of Chemical and Nuclear Engineering  
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### EDUCATION

- Ph. D. Biochemistry, Microbiology and Molecular Biology, 1998  
The Pennsylvania State University, University Park, PA  
Doctoral Dissertation: "The cloning, purification, and kinetic characterization of the catalytic subunit of the human mitochondrial DNA polymerase."
- B.A. Biochemistry and Molecular Biology (Double Major), 1991  
University of Colorado, Boulder, CO

### PROFESSIONAL EXPERIENCE

- 2010 – Present **Director**  
Biomedical Engineering Graduate Program, School of Engineering, University of New Mexico, Albuquerque, NM
- 2008 – Present **Associate Professor**  
Chemical and Nuclear Engineering Department, Secondary Appointment in Biochemistry & Molecular Biology (2011 – Present), University of New Mexico, Albuquerque, NM
- 2008 – 2012 **Associate Director**  
Center for Biomedical Engineering, University of New Mexico, Albuquerque, NM
- 2007 – 2008 **Team Leader, Optical Spectroscopy and Instrumentation**  
Biosciences Division, Los Alamos National Laboratory, Los Alamos, NM
- 2003 – 2008 **Adjunct Assistant Professor**  
Biochemistry and Molecular Biology Department, University of New Mexico, Albuquerque, NM
- 2002 – 2008 **Technical Staff Member**

Biosciences Division, Los Alamos National Laboratory, Los Alamos, NM

- 1999 – 2002    **Post-Doctoral Fellow**  
Biosciences Division, Los Alamos National Laboratory, Los Alamos, NM
- 1998 – 1999    **Applications Specialist**  
KinTek Corporation, Austin, TX
- 1992 – 1998    **Graduate Research Assistant**  
The Pennsylvania State University, University Park, PA
- 1991-1992    **Analyst**  
Rocky Mountain Analytical Laboratory, Arvada, CO

## **PROFESSIONAL ACTIVITIES AND SERVICE**

### *PROFESSIONAL MEMBERSHIPS*

- 2011 – Present    Member, International Society for Nanoscale Science, Computation, and Engineering
- 2009 – Present    Member, American Institute for Chemical Engineering
- 2002 – Present    Member, International Society for the Advancement of Cytometry
- 1999 – Present    Member, American Association for the Advancement of Science

### *PROFESSIONAL SERVICE*

- 2012    Session Chair, Cell Handling, Ultrasonic Standing Wave Network (USWNet) 2012 Conference, September 21-22, Lund, Sweden
- 2012    Session Chair, Cytometry Technology: Microsystems, International Society for Advancement of Cytometry (ISAC) 2012 28<sup>th</sup> Congress (Cyto2013) Program Committee
- 2012    Member, International Society for Advancement of Cytometry (ISAC) 2012 28<sup>th</sup> Congress (Cyto2013) Program Committee
- 2011    Member, International Society for Advancement of Cytometry (ISAC) 2012 27<sup>th</sup> Congress (Cyto2012) Program Committee
- 2011    Ad Hoc Member, International Society for Advancement of Cytometry (ISAC) Strategic Planning Team at Cyto2011
- 2011    UNM Co-Lead for the 34<sup>th</sup> Annual Course on Flow Cytometry, University of New Mexico, Albuquerque, NM
- 2011    NIH F08 Study Section member (March meeting)

2011	NIH Biomedical Technology ZRR-BT(7) Study Section (February Meeting)
2010	Member, International Society for Advancement of Cytometry (ISAC) 2011 26 <sup>th</sup> Congress (Cyto2011) Program Committee
2010	Session Chair, Cytometry Technologies (Parallel Session 17) International Society for Advancement of Cytometry (ISAC) 2010 25 <sup>th</sup> Congress
2010	NIH IMST-15 Study Section member (March meeting)
2010	NIH F14 Study Section member (March meeting)
2009	Member, International Society for Advancement of Cytometry (ISAC) 2010 25 <sup>th</sup> Congress Program Committee
2009	UNM Lead for the 32 <sup>nd</sup> Annual Course on Flow Cytometry, University of New Mexico, Albuquerque, NM
2009	NIH S10 Study Section for Shared Instrumentation Committee
2009	NIH IMST-15 Study Section member
2008	Member, International Society for Advancement of Cytometry (ISAC) 2008 Congress Program Committee
2008	NIH ISD Study Section member
2007	Co-Organizer for the 30 <sup>th</sup> Annual Flow Cytometry Course, June 2007, Los Alamos, NM
2007 – 2008	Member, Los Alamos National Laboratory LDRD-DR strategy team tasked with reviewing about \$25M worth of internal proposals per year.
2006 – 2008	Member, LANL Bioscience Division Post-Doctoral Conversion Committee
2006	Session Lead: Future of Biodetection Systems Workshop, October 2006, Santa Fe, N.M.
2006	Member, ISAC Data Standards Committee
2005	Laboratory presenter, 28 <sup>th</sup> Annual Flow Cytometry Course, June 2005, Los Alamos, NM
2004 – 2009	Recurring Member, NIH peer review GGG-J study section
2003	Laboratory presenter, 26 <sup>th</sup> Annual Flow Cytometry Course, June 2003, Los Alamos, NM
1999-2003	Member, Association for Laboratory Automation
1993-1995	Graduate Representative for the Biochemistry, Microbiology and Molecular Biology department at the Pennsylvania State University

1998 – Present            Reviewer Services to Journals  
                                 Analytical Chemistry  
                                 Biochemistry  
                                 Cytometry  
                                 Cytometry: Part A  
                                 Journal of the Royal Society: Interface  
                                 Lab on a Chip  
                                 Langmuir  
                                 Optics Express  
                                 Proceedings of the National Academy of Sciences (USA)

## AWARDS AND HONORS

2011                        Plenary Speaker – International Society for Advancement of Cytometry (ISAC) 2011 26<sup>th</sup> Congress (Cyto2011)

2008                        Distinguished Patent Award for “Ultrasonic Analyte Concentration and Application in Flow Cytometry”, Los Alamos National Laboratory

2008                        Northern New Mexico Regional Economic Impact Award, Technology Transfer Division, Los Alamos National Laboratory

2007                        R&D 100 Award for the development of the Portable Acoustic Cytometer

2004                        Certificate of Appreciation Received from CTO of the Intelligence Community

2004                        Bioscience Division Employee Award for Outstanding Achievement

2001                        Bioscience Division Employee Award for Outstanding Achievement with the National Flow Cytometry Resource Team

1992-1995                NIH Pre-Doctoral Research Fellowship

## PUBLICATIONS

40. Cushing, K. W., Piyasena M. E., Carroll N. J., Maestas G. C., Lopez B. A., Edwards B. S., Graves S. W., and Lopez, G. P., Elastomeric Negative Acoustic Contrast Particles for Affinity Capture Assays, *Anal. Chem.*, Just Accepted Manuscript DOI: 10.1021/ac3029344
39. Gossett, D. R., Tse, H. T. K., Dudani, J. S., Goda, K., Woods, T. A., **Graves, S. W.** and Di Carlo, D. (2012), Inertial Manipulation and Transfer of Microparticles Across Laminar Fluid Streams. *Small*, 8: 2757–2764. doi: 10.1002/smll.201200588
38. Austin Suthanthiraraj P. P., Piyasena M. E., Woods T. A., Naivar M. A., Lopez G. P., **Graves S.W.**, One-dimensional acoustic standing waves in rectangular channels for flow cytometry, *Methods* (2012), Volume 57, Issue 3, July 2012, Pages 259-271,

37. Piyasena M. E., Austin Suthanthiraraj P. P., Applegate Jr. R.W., †Goumas A. M., †Woods T.A., López G. P., and **Graves S. W.**, Multinode acoustic focusing for parallel flow cytometry. *Anal. Chem.*, 2012, 84 (4), pp 1831–1839
36. Edwards, B. S., Zhu, J., Chen, J., Carter, M. B., Thal, D. M., Tesmer, J. J.G., **Graves, S. W.** and Sklar, L. A. (2012), Cluster cytometry for high-capacity bioanalysis. *Cytometry*, 81A: 419–429. doi: 10.1002/cyto.a.22039
35. Vuyisich M., Sanders C. K., **Graves S. W.**, Binding and cell intoxication studies of anthrax lethal toxin, *MOLECULAR BIOLOGY REPORTS* (2012) 2012/5, pp. 1-7 DOI: 10.1007/s11033-011-1401-2
34. §Lillo A. M., Ayriss J. E., Shou S., **Graves S. W.**, Bradbury A.R.M and Pavlik P. Development of phage-based scFv antibody reagents for detection of *Yersinia pestis*. *PLOS One* (2011) 6 (12), e27756
33. Marina, O.C., Sanders, C. K., Kaduchak, G., Goddard, G. R., **Graves S. W.**, Acoustic Lysis of Vegetative Bacterial Cells: Method and Device Development, *Analytical Methods*, 2011, 3, 2573-2578
32. Corbitt T. S., Zhou Z, Tang Y, **Graves S. W.**, Whitten D. G., Rapid Evaluation of the Antibacterial Activity of Arylene–Ethyne Compounds, *ACS Appli. Mater. Interfaces*, 2011, v.3 n.8 p.2938-2943
31. Goddard G. R., Brown L.O., Habbersett R. C., Brady C. I., Martin J. C., **Graves S. W.**, Freyer JP, Doorn, SK. High Resolution Analysis of Individual Surface-enhanced Raman-Active Nanoparticle Spectral Tags in Flow. *JACS*, 2010 v.132 n. 17 p. 6081-6090.
30. Deshpande, A., Gans, J., **Graves S. W.**, Green, L., Grigsby, L., Kim, H.B., Kunde, Y., Leonard, P., Mark, J., Vuyisich, M. and White, P. S., A Rapid Multiplex Assay for Nucleic Acid-Based Diagnostics, *Journal of Microbiological Methods*, 2010 v.80 n. 2 p. 155-163
29. §Saunders, M. J., **Graves, S. W.**, Sklar, L. A., Oprea, T. I., and Edwards, B. S. High Throughput Multiplex Flow Cytometry Screening for novel Botulinum Neurotoxin type A Light Chain inhibitors, *ASSAY and Drug Development Technologies*, 2010 v.8 n.1 p.37-46
28. Oakey J, §Applegate RW, †Arellano E, Di Carlo, D., **Graves, S. W.**, Toner, M., Particle Focusing in Staged Inertial Microfluidic Devices for Flow Cytometry, (I am co-corresponding) *Anal. Chem.*, May 2010 v.82 n.9 p.3862-3867
27. †Saunders, M.J, Edwards, B.S., †Shu, J., Sklar, L.A., **Graves, S.W.**, (October 2010) Microsphere-Based Flow Cytometry Protease Assays for Use in Protease Activity Detection and High-Throughput Screening, *Current Protocols in Cytometry* Unit 13.12. (J.P. Robinson, editor), John Wiley and Sons.
26. Naivar M. A., Wilder M. E., †Woods T. A., Habbersett R. C., **Graves, S. W.**, Development of small and inexpensive digital data acquisition systems using a microcontroller

based approach, *Cytometry Part A*. December 2009; v.71A, n.11, p.915-924

25. §Applegate Jr., R. W., Marr D. W. M., Squier J., **Graves S. W.** Particle size limits when using optical trapping and deflection of particles for sorting using diode laser bars. 2009 *Opt. Express* 17, 16731-16738
24. Watson, D. A., Brown, L. O., Graham, D. A., Naivar, M. A., **Graves, S. W.**, Doorn, S. K., Nolan J. P., A flow cytometer for the measurement of Raman spectra. *Cytometry Part A*. 2008 Feb;73(2):119-28.
23. Goddard GR, Houston JP, Martin JC **Graves SW**; Freyer JP., Cellular discrimination based on spectral analysis of intrinsic fluorescence., *Proc. of the SPIE*; 2008 Feb. 7; vol.6859, p.685908-1-10
22. §Goddard G.R., Sanders C., Martin J.C., Kaduchak G., **Graves S.W.** Analytical performance of an ultrasonic particle focusing flow cytometer, *Anal. Chem.*, 2007. Nov 15;79(22):8740-6.
21. Naivar M.A, Parson J.D., Wilder M.E, Habbersett R.C., Edwards B.S., Sklar L, Nolan J.P., **Graves S.W.**, Martin J.C., Jett J. H., and Freyer, J.P., Open, Reconfigurable Cytometric Acquisition System: ORCAS, *Cytometry Part A*. NOV 2007; v.71A, no.11, p.915-924.
20. Habbersett R. C., Naivar M.A., Woods T.A., §Goddard G.R., **Graves S.W.**, Evaluation of the use of a green laser pointer for flow cytometry, *Cytometry A*. 2007 Oct;71(10):809-17.
19. Edwards, B.S., Young, S. M. , †Saunders M. J., Bologna C., Oprea T. I., Ye R. D., Prossnitz E. R., **Graves S.W.**, and Sklar L.A., High-throughput flow cytometry for drug discovery, *Expert Opin. Drug Discov.* (2007) 2(5):1-12
18. §Goddard G, Martin JC, Naivar M, Goodwin PM, **Graves SW**, Habbersett R, Nolan JP, Jett JH. (2006) Single particle high resolution spectral analysis flow cytometry. *Cytometry A*. Aug;69(8):842-51.
17. §Deshpande A, †Hammon RJ, Sanders CK, **Graves SW**. (2006) Quantitative analysis of the effect of cell type and cellular differentiation on protective antigen binding to human target cells. *FEBS Lett.* Jul 24;580(17):4172-5.
16. †Saunders MJ, †Kim H, Woods TA, Nolan JP, Sklar LA, Edwards BS, **Graves SW** (2006). Microsphere-based protease assays and screening application for lethal factor and factor Xa. *Cytometry A*. May;69(5):342-52.
15. §Goddard G, Martin JC, **Graves SW**, Kaduchak G. (2006) Ultrasonic particle-concentration for sheathless focusing of particles for analysis in a flow cytometer. *Cytometry A*. Feb;69(2):66-74.
14. Espy, M A; Carr, C; Sandin, J H; Hanson, CJ; Daniels, SG; Matlachov, A N; **Graves, SW**; Ward, M D; Jr, R H Kraus; Fritz, S; Leslie-Pelecky SQUID-Based Bioassay with Magnetic Particles in Flow. *Journal of Physics: Conference Series* Volume: 43, Issue: 1, June 01, 2006, pp. 1254-1257

13. **Graves, S. W.**, Woods, T. A., †Kim, H., Nolan, J. P. (2005) Direct fluorescent staining and analysis of proteins on microspheres using CBQCA, *Cytometry*, 65A (1), 50-58.
12. Woods, T.A., **Graves, S.W.**, Nolan J.P., (October 2005) Protein surface concentration measurements using flow cytometry. *Current Protocols in Cytometry* Unit 13.2. (J.P. Robinson, editor), John Wiley and Sons.
11. **Graves, S.W.** Nolan, J. P. Sklar, L. A., (2005) Molecular Assemblies, Probes, and Proteomics in Flow Cytometry – in *Flow Cytometry for Biotechnology* (L. A. Sklar, editor) Oxford University Press, New York, New York.
10. Chigaev A., Zwartz G., **Graves S. W.**, Dwyer D. C., Tsuji H., Foutz T. D., Edwards B. S., Prossnitz E. R., Larson RS, Sklar LA. (2003) Alpha4beta1 integrin affinity changes govern cell adhesion. *J Biol Chem*. Oct 3;278(40):38174-82.
9. Kraus, R.H., Espy, M.A., Matlachov, A.N., Matsson, T.J., Carr, C., Martin, J.C., Nolan, J.P., **Graves, S.W.**, Bergstrom, A.C., Ward, M.D., Grodzinski, P., Bioassay with magnetic particles in flow: a method for highly parallel molecular separations of complex biological systems. *EUCAS 2003 Proceedings*.
8. **Graves, S. W.**, Nolan, J. P., Jett, J. H., Martin, J. C., and Sklar, L.A. (2002) Nozzle design parameters and their effects on rapid sample delivery in flow cytometry. *Cytometry* 47(2):127-37
7. Sklar, L.A., Edwards, B., **Graves, S.W.**, Nolan J.P., Prossnitz, E (2002) Flow cytometric analysis of ligand-receptor interactions and molecular assemblies. *Annual Review of Biophysics and Biomolecular Structure* 31:97-119.
6. **Graves, S.W.**, R.C. Habbersett, J.P. Nolan (May 2002) Dynamic thermoregulation of the sample in flow cytometry. *Current Protocols in Cytometry*, Unit 1.18 (J.P. Robinson, editor), John Wiley and Sons.
5. **Graves, S.W.**, Habbersett, R.C. and Nolan, J.P. (2001) A dynamic inline sample thermoregulation unit for flow cytometry. *Cytometry*, 43(1), 23-30
4. Patterson, H.G. and **Graves, S.** (2000) DNAssist: the integrated editing and analysis of molecular biology sequences in Windows. *Bioinformatics*, 16(7) 652-653
3. Patterson, H.G. and **Graves, S.** (2000) DNAssist, a C++ program for editing and analysis of nucleic acid and protein sequences on PC-compatible computers running Windows 95, 98, NT4.0 or 2000. *Biotechniques*, 28(6) 1192-1197
2. Johnson, A.A., Tsai, Y., **Graves S.W.** and Johnson, K.A. (2000) Human mitochondrial DNA polymerase holoenzyme: Reconstitution and characterization. *Biochemistry*, 39(7), 1702-1708
1. **Graves S.W.**, Johnson A.A. and Johnson K.A. (1998). Expression, purification, and initial kinetic characterization of the large subunit of the human mitochondrial DNA polymerase. *Biochemistry*, 37(17) 6050-6058.

## PATENTS

3. Method for non-contact particle manipulation and control of particle spacing along an axis, Gregory R. Goddard, Gregory Kaduchak, James H Jett, **Steven W. Graves**. Patent number: 8,263,407. Issued September 11<sup>th</sup>, 2012.
2. System and Method for Measuring Particles in a Sample Stream of a Flow Cytometer or the Like, **Steven W. Graves** and Robert C. Habbersett. Patent number: 7,835,000. Issued November 16<sup>th</sup>, 2010.
1. Ultrasonic analyte concentration and application in flow cytometry, Gregory Goddard, Gregory Kaduchak, John C. Martin, **Steven W. Graves**, Gary C. Salzman, Dipen Sinha. Patent number: 7,340,957. Issued March 4<sup>th</sup>, 2008

## **PRESENTATIONS**

### *PLENARY PRESENTATIONS*

1. Acoustic and Inertial Flow Cytometry: Pathways to point-of-care and high-speed parallel cellular diagnostics. Plenary Speaker at the Annual Meeting for the 26<sup>th</sup> International Society for the Advancement of Cytometry (ISAC), Baltimore, MA. May 22<sup>nd</sup>, 2011.

### *INVITED PRESENTATIONS*

20. Acoustic and Inertial Flow Cytometry: Pathways to point-of-care and high-speed parallel cellular diagnostics. Biomedical Engineering Departmental Seminar, Duke University, October 13<sup>th</sup>, 2011
19. Nanometer to millimeter sized particles in flow based analysis, Sandia/UNM Symposium on Nanoparticle Human Interactions: June 02 & 03, 2011
18. Acoustic and Inertial Flow Cytometry: Pathways to point-of-care and high-speed parallel cellular diagnostics. Center for Non-Linear Studies, Los Alamos National Lab, Los Alamos, NM. March 7<sup>th</sup>, 2011
17. Engineering solutions for critical world health applications, IEEE Photonics Society Los Angeles Chapter at the University of California, Los Angeles, Electrical Engineering Department. Los Angeles, CA, November, 7<sup>th</sup>, 2010.
16. Engineering solutions for critical world health applications. INCBN-IGERT Seminar, University of New Mexico, October 18<sup>th</sup>, 2010.
15. Engineering solutions for critical world health applications, Chemical Engineering Departmental Seminar, New Mexico State University, Las Cruces, NM October 7<sup>th</sup>, 2010
14. Development of Custom Flow Cytometry Instrumentation, Invited Workshop at



Cyto2010, the Annual Meeting for the International Society for the Advancement of Cytometry (ISAC), Seattle, WA. May 8-12, 2010.

13. The Future of Flow Cytometry Instrumentation, 32<sup>nd</sup> Annual Research Course in Flow Cytometry, The University of New Mexico, Albuquerque, New Mexico, May 30-June 5, 2009
12. Bringing the power of flow cytometry to critical applications in the clinic and biomedical research. The CINT Seminar Series, January 2009. Los Alamos National Laboratory, Los Alamos, NM.
11. Miniaturization and parallelization efforts to reduce diagnostic costs and increase the analytical capabilities of flow based instrumentation, BD Biosciences Seminar, April 30<sup>th</sup>, 2008. San Jose, CA.
10. Low Cost Portable Flow Cytometry for Diagnosis and Detection in Resource Limited Settings. Bio-Security Science Workshop, Sponsored by the LANL Center for Bio-Security Science, December 13-14<sup>th</sup>, 2007. Los Alamos National Laboratory, Los Alamos, NM
9. Low-cost portable flow cytometry. Fall 2007 Seminar Series in the Chemical Engineering Department, September 7, 2007. Colorado School of Mines, Golden, CO.
8. Measurement and analysis of nano scale materials by flow cytometry. 1st Annual Symposium: Integrating Nanotechnology with Cell Biology and Neuroscience, August 15, 2007, The University of New Mexico.
7. New Developments in Flow Cytometry Instrumentation, 30<sup>th</sup> Annual Research Course in Flow Cytometry, June 9-15, 2007, The National Flow Cytometry Resource, Los Alamos National Laboratory, Los Alamos, NM
6. A chip based flow cytometer. Flow Cytometry for Exploration Missions – A workshop by Wyle Laboratories and NASA/Johnson Space Center. November 5<sup>th</sup>, 2004
5. Molecular Assembly Analysis by Flow Cytometry, La Jolla Bioengineering Institute, La Jolla, CA. September 2004
4. Flow cytometry as a platform for analysis and discovery of molecular assemblies for bio-defense and biomedical applications, Biochemistry Department, The University of New Mexico, August 2004
3. Rapid Mix and High Throughput Flow Cytometry (Lecture and Laboratory Session) 26<sup>th</sup> Annual Research Course in Flow Cytometry, The National Flow Cytometry Resource, Los Alamos National Laboratory, Los Alamos, NM June 2003
2. Flow cytometry as a platform for analysis and discovery of molecular assemblies, Great Lakes International Imaging and Flow Cytometry Association GLIFCA, "CelleFTA" 20 years of Immunophenotyping, from OKT-4 Receptors to Cytonomics, Detroit, MI, October 4 - 6, 2002
1. Cloning, Expression, and Kinetic Analysis of the Large Subunit of Human Mitochondrial DNA polymerase. Life Sciences Division, Los Alamos National Laboratory, Los

Alamos, NM. June 1999.

## CONTRIBUTED PRESENTATIONS

72. Controlling Deoxyribozyme Activity Using Toehold-Mediated DNA Strand Displacement Reactions. Carl Brown, Matthew Lakin, Steven Graves, Darko Stefanovic. fNANO 2012, April 16-19, 2012. Snowbird, Utah.
71. Acoustic Focusing and Separation of Nanospheres using Microfluidics Menake Piyasena, Daniel Kalb, Jingshu Zhu, Andrew Goumas, **Steven Graves**; Ultrasonic Standing Wave Network (USWNet) 2012 Conference, September 21-22, Lund, Sweden (poster program)
70. A High Flow Rate Acoustic Focusing Capillary: Enhancing Flow Cytometry for Remote Plankton Monitoring, Daniel Kalb, Robert Olson, Heidi Sosik, Menake Piyasena, **Steven Graves**, Ultrasonic Standing Wave Network (USWNet) 2012 Conference, September 21-22, Lund, Sweden (oral program)
69. An extremely parallel acoustic flow cell for rapid cellular analysis, **Steven Graves**, Pearlson Austin Suthanthiraraj, Menake Piyasena, Ultrasonic Standing Wave Network (USWNet) 2012 Conference, September 21-22, Lund, Sweden (oral program)
68. Acoustically Enhanced Flow Cytometry for Remote Plankton Monitoring D. Kalb, R. Olsen, H. Sosik, M. Piyasena and **S.W. Graves**. Cyto 2012 XXVII Congress of the International Society for the Advancement of Cytometry. Leipzig, Germany. June 22-27, 2012
67. CD4+ T Cell Assays in Acoustic Focusing Microfabricated Systems M.E. Piyasena, A.M. Goumas, G.P. Lopez and **S.W. Graves**. Cyto 2012 XXVII Congress of the International Society for the Advancement of Cytometry. Leipzig, Germany. June 22-27, 2012
66. Biomimetic Surfaces on Microspheres and Chips for Protease Diagnostics J. Cornejo, N. Zurek, C. Brown III, G. Lopez and **S. Graves**. Cyto 2012 XXVII Congress of the International Society for the Advancement of Cytometry. Leipzig, Germany. June 22-27, 2012
65. Parallel Protease Assays Using Suspension Microsphere Arrays **S. Graves**, J. Zhu, B. Edwards, M. Saunders and L. Sklar. Cyto 2012 XXVII Congress of the International Society for the Advancement of Cytometry. Leipzig, Germany. June 22-27, 2012
64. An Extremely Parallel Acoustic Flow Cell for Rapid Cellular Analysis P.P. Austin Suthanthiraraj, M.E. Piyasena and **S.W. Graves**. Cyto 2012 XXVII Congress of the International Society for the Advancement of Cytometry. Leipzig, Germany. June 22-27, 2012 (PODIUM PRESENTATION)
63. Protein Engineering for High-Throughput Screening and Protease Dynamic Analysis. Jingshu Zhu, Matthew A. Saunders, Larry A. Sklar, Bruce S. Edwards and **Steven W. Graves**, AIChE 2011 Annual Meeting, October 19<sup>th</sup>, 2011. Minneapolis, MN (poster)
62. Improving the Decision Speed, Functionality, and Applicability of Deoxyribozyme Logic Circuits via a Comprehensive Kinetic Model. Carl Brown, Marissa Anderson, Renjun Pei, Milan Stojanovic, Darko Stefanovic and **Steven Graves**, DNA 17, 17th International Conference on DNA Computing and Molecular Programming, California Institute of Technology, Beckman Institute, Pasadena, California, USA, September 19 - 23, 2011 (poster)
61. Integrated Sample Preparation and Analysis Techniques in Planar Microfluidic Devices for Flow Cytometric Bioassays. Menake Piyasena, Robert W. Applegate Jr., Gabriel P. Lopez, **Steven W. Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (PODIUM PRESENTATION)
60. Simple Symmetric Inertial Focusing Channels for Flow Cytometry Analysis. Erik Arellano, Robert W. Applegate Jr., Soojung Claire Hur, Austin Chavez, Travis Woods, Dino Di Carlo, **Steven W. Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (PODIUM PRESENTATION)
59. Ordered Particle Delivery for Increased Throughput in a Commercial Cytometer. Robert W. Applegate Jr., Soojung Claire Hur, Travis Woods, Erik Arellano, Dino Di Carlo, **Steven W. Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (PODIUM PRESENTATION)
58. High Ni-NTA Density Supported Lipid Bilayers for Directional and Extremely Stable Protein Attachment to Nanoporous Silica Microspheres. Carl Brown III, Alexandre Chigaev, Yelena Smegley, Larry Sklar, **Steven W. Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (PODIUM PRESENTATION)
57. High Throughput Simultaneous Screening of Multiple Proteases to Select Inhibitors Via Flow Cytometry. Jingshu Zhu, Matthew Saunders, Larry Sklar, Bruce Edwards, **Steven W. Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (PODIUM PRESENTATION)
56. Physics-Based Model for the Estimation of Transverse Flowing Particles in a Laser. Michael Thomas, Robert Applegate Jr., James Plusquellic, **Steven W. Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (poster)
55. Physics-Based Model for the Estimation of Transverse Flowing Particles in a Laser. Michael Thomas, Robert Applegate Jr., James Plusquellic, **Steven W. Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (poster)
54. Evolution of Thermo-Stable Fluorescent Proteins, Patricia Langan, Csaba Kiss, Claire Sanders, **Steven Graves**, James Freyer, Babs Marrone, Andrew Bradbury. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (poster)
53. Microfluidic Dielectrophoresis Devices for Ordered Particle Delivery and Particle Manipulation. Rath Chaleunphonh, Robert Applegate, **Steven Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (poster)
52. Biomimetic Particles for Rapid Detection of Botulinum Neurotoxin Protease Activity. Jose Cornejo, Menake Piyasena, Steven Graves, Gabriel Lopez. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (poster)
51. Highly Parallel Multinode Acoustic Focusing Flow Cell. Pearlson Austin Suthanthiraraj, Menake E. Piyasena, Robert W. Applegate Jr., **Steven W. Graves**. Cyto 2011 XXVI Congress of the International Society for the Advancement of Cytometry. Baltimore Convention Center, Baltimore, MD. May 21-25, 2011 (poster)
50. Microspheres and Flow Cytometry as a Platform for Protease Assays in High-Throughput Screening and Protease Kinetic Analysis, **Steven W. Graves**, Matthew A. Saunders, Bruce S. Edwards, Larry A. Sklar, Tudor Oprea, Carl Brown III and Jingshu Zhu AIChE 2010 Annual Meeting, Salt Lake City, UT. November 7-12, 2010. (PODIUM PRESENTATION)
49. Particle size limits of optical trapping and deflection for sorting using diode laser bars. Robert W. Applegate Jr., David W. M. Marr, Jeff Squier, and **Steven W. Graves**. CLEO/QELS: 2010 Laser Science to Photonic Applications May 16-21, 2010 San Jose McEnery Convention Center in San Jose, California (PODIUM PRESENTATION)
48. An inexpensive, portable, acoustic flow cytometer for critical cellular diagnostics. **Steven W. Graves**, Travis Woods, Mark Naivar, Michael Ward, Gregory Kaduchak. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center Seattle, WA, USA (PODIUM PRESENTATION)
47. COMPLEX PULSES IN HIGH BACKGROUNDS: SQUINTING YOUR OPTICS HELPS YOU LOOK FOR A LIT BULB ON THE SURFACE OF THE SUN. Travis A. Woods, Mark Naivar, John Martin, Greg Goddard, **Steven W. Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center Seattle, WA, USA (PODIUM PRESENTATION)
46. Particle size limits of optical trapping and deflection for sorting using diode laser bars. Robert W. Applegate Jr., David W. M. Marr, Jeff Squier, and **Steven W. Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (PODIUM PRESENTATION)
45. Variable Velocity Particle Sorting. Michael J. Thomas, Mark A. Navar, Erik Arellano, Rath Chaleunphonh, **Steven W. Graves**. CYTO 2010 - XXV

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44. Performance Analysis of Microfluidic Inertial Focusing Channels for Flow Cytometry Robert W. Applegate Jr., John Oakey, Erik Arellano, Dino DiCarlo, Mehmet Toner, **Steven W. Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (poster)
  43. Planar acoustic focusing in microfluidic flow channels for flow cytometry. Menake Piyasena, Robert Applegate, Travis Woods, Scott Sibbett, Gabriel Lopez, **Steven Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (PODIUM PRESENTATION)
  42. Mesofluidic and Field-Based Size Selection of Different Cell Types. Pearlson Prashanth Austin Suthanthiraraj, Robert Applegate Jr., **Steven W. Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (poster)
  41. MICROSPHERE BASED ASSAYS FOR DENGUE PROTEASE ACTIVITY Carl Brown, III,2, Matthew Saunders, Marisa Durfee, Bruce Edwards, Larry Sklar, **Steven Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (poster)
  40. Evaluation of passive focusing techniques in microfluidic flow-cells for flow cytometry Erik Arellano, Rath Chaleunphonh, Robert Applegate, **Steven Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (poster)
  39. Development of a Hepatitis C Virus Surface-Based Protease Assay. Marisa Durfee, Carl Brown, Matthew Saunders, **Steven Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (poster)
  38. Evolution of thermo-stable fluorescent proteins Patricia Langan, Csaba Kiss, Claire Sanders, Cassidy Burnett, James Freyer, **Steven Graves**, Andrew Bradbury. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (poster)
  37. Surface Plasmon Based Protease Assays. Jose Cornejo, Marisa Durfee, Gabriel Lopez, **Steven Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (poster)
  36. Microsphere based protease analysis. Matthew Saunders, Bruce Edwards, Larry Sklar, **Steven Graves**. CYTO 2010 - XXV Congress of the International Society for Advancement of Cytometry CYTO 2010 May 8-12, 2010 Washington State Convention and Trade Center, Seattle, WA, USA (PODIUM PRESENTATION)
  35. Engineered Fusion Proteins Containing Full-Length Substrates for Protease Mechanism Studies and High-Throughput Screening for Pharmaceutical Lead Compounds. **Steven W. Graves**, Matthew A. Saunders, Carl Brown III, Center for Biomedical Engineering, Larry A. Sklar, Tudor Oprea, Bruce S. Edwards. 2009 AIChE Annual Meeting. Nashville, TN, November 11, 2009. (PODIUM PRESENTATION)
  34. Sheathless Focusing Approaches for Flow Cytometry. **Steven W. Graves**. The 19<sup>th</sup> Annual Flow Cytometry Workshop. Asilomar Conference Grounds, Pacific Grove, CA. October 14<sup>th</sup>-18<sup>th</sup>, 2009. (PODIUM PRESENTATION)
  33. Lower Cost Portable Flow Cytometry Using an Integrated Cytometer Equipped with Acoustic Focusing, OEM Laser Pointer Modules, and Single Chip Digital Data Acquisition. **Steven W. Graves**; Travis A. Woods; Gregory R. Goddard; Mark A. Naivar; Robert C. Habbersett; Michael D. Ward; Gregory Kaduchak. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  32. Developments in Frequency-Domain Flow Cytometry for Phase-Filtering and Fluorescence Lifetime Measurements. Jessica P. Houston; Mark A. Naivar; John C. Martin; Greg R. Goddard; Susan Carpenter; Judith R. Mourant; Leif O. Brown; Steven K. Doorn; **Steven W. Graves**; James P. Freyer. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  31. A Raman Spectral Flow Cytometer. Dakota A. Watson; Leif O. Brown; Stephen K. Doorn; Mark Naivar; **Steven W. Graves**; Ramon Alvarez-Puebla; Hicham Fenniri; John P. Nolan. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  30. High Throughput Screening for Botulinum Toxin Light Chain Protease Inhibitors by Multiplex Flow Cytometry Matthew J. Saunders; Larry A. Sklar; **Steven W. Graves**; Clemencia Pinilla; Richard A. Houghten; Tudor I. Oprea; Bruce S. Edwards. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  29. Multiparameter Measurements Using Raman Flow Cytometry. John P. Nolan; Dakota A. Watson; Loretta Yang; Leif O. Brown; Stephen K. Doorn; Ramon Alvarez-Puebla; Hicham Fenniri; Mark Naivar; **Steven W. Graves**. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  28. In Sync: Implications of Axial Acoustic Focusing for Flow Cytometry Greg R. Goddard; Gregory Kaduchak; **Steven W. Graves**; Mark A. Naivar; Travis A. Woods. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  27. Quantification of Vegetative Cells, Spores and Viruses Lysis Using Flow Cytometry Oana C. Marina; Gregory Kaduchak; **Steven W. Graves**; Michael D. Ward; Robert Habbersett; Gregory R. Goddard. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  26. A Novel Luminex-Based Assay for the Detection and Characterization of Respiratory Pathogens Alina Deshpande; Jason D. Gans; HeungBok Kim; Yuliya A. Kunde; **Steven W. Graves**; P S. White. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (poster)
  25. Recent Developments in Digital Data Acquisition for Flow Cytometry Mark A. Naivar; Mark E. Wilder; Jeremy J. Trujillo; **Steven W. Graves**; Bruce S. Edwards; John P. Nolan; James P. Freyer. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  24. Analytical Validation of a High Resolution Spectral Flow Cytometer: Hardware and Software Developments for Automated Spectral Analysis Greg R. Goddard; David M. Haaland; John C. Martin; Mark A. Naivar; **Steven W. Graves**; James P. Freyer. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (PODIUM PRESENTATION)
  23. Optical Scatter artifacts limit the resolution of free vs. bound fluorescence measurements for low affinity interactions Travis A. Woods, Greg R. Goddard, Mark A. Naivar, John C. Martin, **Steven W. Graves**. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (poster)
  22. Fluorescence and Scatter from Subwavelength Dimensioned Nanoparticles. Robert C. Habbersett, **Steven Graves**, Gregory Goddard, James Freyer. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (poster)
  21. Developing Effective Performance Specifications for Green Laser Pointers Intended for Flow Cytometry. Travis A. Woods, Robert C. Habbersett, Mark A. Naivar, Greg R. Goddard, **Steven W. Graves**. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (poster)
  20. Diode Laser Bar Based Optical Manipulation of Large Particles. Robert W. Applegate, **Steven W. Graves**, Jeff Squier, David Marr. XXIV Congress of the Society for the Analytical of Cytology (ISAC), Budapest, Hungary, May 17-21 2008 (poster)
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  18. Low Cost Hand-Portable Flow Cytometry. **Steven W. Graves**, Greg Kaduchak., Greg R. Goddard, Robert C. Habbersett, Michael D. Ward, Martin

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17. Design and Quantitative Evaluation microfluidic flow cells. **Steven W. Graves**, et. al., International Society of Analytical Cytology 22<sup>nd</sup> Annual Conference, Montpellier France, May 21<sup>st</sup>-27<sup>th</sup>, 2004. Cytometry; May 2004; v.59A, no.1, p.52 (PODIUM PRESENTATION)
  16. Multiplexed DNA Based Assays for Pathogen Point Detection. **Steven W. Graves** and John P. Nolan, CBNP Quarterly Review Meeting at Livermore National Laboratory. November 2000. (PODIUM PRESENTATION)
  15. Low cost light source and miniature detectors yield high performance in a slow-flow system, Robert Habbersett, Mark Naivar, **Steven W. Graves**. International Society of Analytical Cytology 23<sup>rd</sup> Annual Conference, Quebec City, Quebec, Canada, May 20-24<sup>th</sup>, 2006. (PODIUM PRESENTATION)
  14. Modular, expandable, high-speed digital data acquisition system designed to support mixed mode data from PMTs, photon counting APDs, and high resolution CCD arrays. Mark Naivar, James Jeff, Jim Parson, Robert Habbersett, **Steven W. Graves**, John Martin, Mark Wilder, John Nolan, James Freyer, International Society of Analytical Cytology 23<sup>rd</sup> Annual Conference, Quebec City, Quebec, Canada, May 20-24<sup>th</sup>, 2006. (PODIUM PRESENTATION)
  13. Development of a high throughput and generally applicable screening method for investigating protease/substrate interaction. Weon Bae; J. Zhou; **Steven W. Graves**. FASEB Journal; MAR 6 2006; v.20, no.4, Part 1, p.A50-A51 Conference: Experimental Biology 2006 Meeting; April 01 -05, 2006; San Francisco, CA, USA (poster)
  12. Tools and approaches for protein interaction studies using microsphere arrays. **Steven W. Graves**. Travis Woods. John P. Nolan. Cytometry; May 2004; v.59A, no.1, p.149 International Society of Analytical Cytology 22<sup>nd</sup> Annual Conference, Montpellier France, May 21<sup>st</sup>-27<sup>th</sup>, 2004. (PODIUM PRESENTATION)
  11. A magnetic field sensing flow cytometer. John C. Martin, Michelle Espy, Andrew Bergstrom, **Steven W. Graves**, Chris Carr, T. J. Matsson, Andre Matlachov., Robert Kraus, John Nolan. Cytometry; May 2004; v.59A, no.1, p.147 International Society of Analytical Cytology 22<sup>nd</sup> Annual Conference, Montpellier France, May 21<sup>st</sup>-27<sup>th</sup>, 2004. (poster)
  10. Binding and uptake of bacterial toxins by mammalian cells. John Nolan, Alina Deshpande, Travis Woods, **Steven W. Graves**. Cytometry; May 2004; v.59A, no.1, p.132 International Society of Analytical Cytology 22<sup>nd</sup> Annual Conference, Montpellier France, May 21<sup>st</sup>-27<sup>th</sup>, 2004. (poster)
  9. Spectral analysis flow cytometry. John Martin, Thomas Yoshida, **Steven Graves**, Cytometry; May 2004; v.59A, no.1, p.30 International Society of Analytical Cytology 22<sup>nd</sup> Annual Conference, Montpellier France, May 21<sup>st</sup>-27<sup>th</sup>, 2004 (PODIUM PRESENTATION)
  8. Nozzle design effects on rapid delivery and rapid kinetic measurements in flow cytometry. **Steven W. Graves**.; Nolan, John P.; Jeff, James H.; Martin, John C.; Chigaev, Alexandre; Sklar, Larry A. Cytometry Supplement; 2002; no.11, p.121 Conference: XXI Congress of the International Society for Analytical Cytology; May 04-09, 2002; San Diego, CA, USA (PODIUM PRESENTATION)
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  4. Rapid sample delivery for flow cytometers. **Steven W. Graves**. Eleventh Cytometry Development Workshop. October 14-17, 2001 Asilomar Conference Center Pacific Grove, California (PODIUM PRESENTATION)
  3. Expression, purification, and initial kinetic characterization of the large subunit of the human mitochondrial DNA polymerase. **Steven W. Graves**, Allison Johnson, and Kenneth Johnson. 43<sup>rd</sup> Annual Meeting of the Biophysical Society. February 1998. Kansas City, MO (poster) and the annual meeting of the American Society of Biochemistry and Molecular Biology, New Orleans, LA. (poster)
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  1. Kinetic analysis of porcine liver DNA polymerase-gamma. **Steven W. Graves** and Kenneth A. Johnson 38<sup>th</sup> Annual Meeting of the Biophysical Society. February 1994 New Orleans, LA (poster)