

Curriculum Vitae

Susan Zonglu Hua

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Education

Ph.D. Materials Science & Engineering, University of Maryland, College Park, 1993
M.S. Physics, Peking University, Beijing, China, 1984
B.Sc. Physics, Peking University, Beijing, China, 1982

Appointments

08/09- Professor, Mechanical & Aerospace Engineering Department and Physiology & Biophysics Department, University at Buffalo, Buffalo, NY
08/07-08/09: Associate Professor, Mechanical & Aerospace Engineering Department and Physiology & Biophysics Department, University at Buffalo, Buffalo, NY
08/04-08/07: Assistant Professor, Mechanical & Aerospace Engineering Department and Physiology & Biophysics Department, University at Buffalo, Buffalo, NY
12/00-08/04: Research Associate Professor, Mechanical & Aerospace Engineering Department, University at Buffalo, Buffalo, NY
09/00-08/04: Bio-MEMS Facility Director, School of Medicine, University at Buffalo, NY
11/94-08/00: Senior Scientist and Co-Technical Director, Materials Innovation Inc., West Lebanon, NH
06/93-11/94: Postdoctoral Research Associate, National Institute of Standards & Technology, Gaithersburg, MD
1984-1988: Assistant Professor, Department of Electrical Engineering, Beijing University of Science & Tech. Beijing, China

Awards & Honors

- Recipient of UB Sustained Achievement Award, 2015.
- Visionary Innovator (for developing technologies licensed to industrial partners), University at Buffalo, 2012, 2009.
- Results on stability and mechanics of quantum and Sharnin conductors highlighted by the American Physical Society's *Physics - spotlighting exceptional research*, NSF, MRS, ASM, etc. (2011).

- Work on cell volume sensor resulted in many press articles in 2005 by various professional journals, including: Life Science news, Inside Bioassays, Technology Research News, Frost & Sullivan Technical Insights, etc.
- Honored as "Promising Inventor" of SUNY by Chancellor R. L. King on May 20, 2002, on the invention of electrochemical based bubble actuation and sensing approach for microfluidics.
- Work on nanoscience listed by NSF as one of the top breakthroughs of 2002, "Genomes, Cosmos, and Nano among NSF Science Highlights from 2002".
- Listed as top 20 nanotechnology researchers of 2002 by Forbes/Wolfe Nanotech Report, 2002.

Papers in Refereed Archival Journals

1. Maneshi, M.M., Sachs, F. & Hua, S.Z. A threshold shear force for calcium influx in an astrocyte model of traumatic brain injury. *J. Neurotrauma* **32**, 1020-1029 (2015) (**Featured article and cover figure** in vol. 32, issue 13, 2015).
2. Suffoletto, K., Ye, N., Meng, F., Verma, D. & Hua, S.Z. Intracellular forces during guided cell growth on micropatterns using FRET measurement. *J. Biomech.* **48**, 627-635 (2015). (**Highlighted article and cover figure** in vol.48, issue 4, 2015, <http://www.jbiomech.com/>).
3. Ye, N., Verma, D., Meng, F., Davidson, M.W., Suffoletto, K. & Hua, S.Z. Direct observation of alpha-actinin tension and recruitment at focal adhesions during contact growth. *Experimental cell research* **327**, 57-67 (2014).
4. Larsen, B.R., Assentoft, M., Cotrina, M.L., Hua, S.Z., Nedergaard, M., Kaila, K., Voipio, J. & MacAulay, N. Contributions of the Na(+)/K(+)-ATPase, NKCC1, and Kir4.1 to hippocampal K(+) clearance and volume responses. *Glia* **62**, 608-622 (2014).
5. Hua, S.Z. Mapped! A machinery of degranulation in mast cells. Focus on "Serum- and glucocorticoid-inducible kinase SGK1 regulates reorganization of actin cytoskeleton in mast cells upon degranulation". *Am J Physiol Cell Physiol* **304**, C36-37 (2013) (**Invited Editorial Focus**).
6. Assentoft, M., Kaptan, S., Fenton, R.A., Hua, S.Z., de Groot, B.L. & MacAulay, N. Phosphorylation of rat aquaporin-4 at Ser(111) is not required for channel gating. *Glia* **61**, 1101-1112 (2013).
7. Armstrong, J.N., Hua, S.Z. & Chopra, H.D. Anisotropic Curie temperature materials. *Phys Status Solidi B* **250**, 387-395 (2013).
8. Verma, D., Ye, N., Meng, F., Sachs, F., Rahimzadeh, J. & Hua, S.Z. Interplay between cytoskeletal stresses and cell adaptation under chronic flow. *PloS one* **7**, e44167 (2012).
9. Bathany, C., Beahm, D.L., Besch, S., Sachs, F. & Hua, S.Z. A microfluidic platform for measuring electrical activity across cells. *Biomicrofluidics* **6**, 34121 (2012).
10. Heo, J., Sachs, F., Wang, J. & Hua, S.Z. Shear-induced volume decrease in MDCK cells. *Cell Physiol Biochem* **30**, 395-406 (2012).
11. Armstrong, J.N., Gande, E.M., Vinti, J.W., Hua, S.Z. & Chopra, H.D. Physical properties of a two-component system at the Fermi and Sharvin length scales. *J Appl Phys* **112** (2012).
12. Armstrong, J.N., Hua, S.Z. & Chopra, H.D. Strength of metals at the Fermi length scale. *Phys Status Solidi-R* **6**, 99-101 (2012). (**Highlighted** on the cover page, March 2012 issue)

13. Rahimzadeh, J., Meng, F., Sachs, F., Wang, J., Verma, D. & Hua, S.Z. Real-time observation of flow-induced cytoskeletal stress in living cells. *Am J Physiol Cell Physiol* **301**, C646-652 (2011).
14. Ye, N., Bathany, C. & Hua, S.Z. Assay for molecular transport across gap junction channels in one-dimensional cell arrays. *Lab on a chip* **11**, 1096-1101 (2011).
15. Bathany, C., Beahm, D., Felske, J.D., Sachs, F. & Hua, S.Z. High throughput assay of diffusion through Cx43 gap junction channels with a microfluidic chip. *Analytical chemistry* **83**, 933-939 (2011).
16. Armstrong, J.N., Hua, S.Z. & Chopra, H.D. Mechanics of quantum and Sharvin conductors. *Phys Rev B* **83** (2011). (**Highlighted by APS' Physics** (spotlighting exceptional research), National Science Foundation, MRS issue 8, 2011, etc.)
17. Kowalsky, G.B., Beam, D., Oh, M.J., Sachs, F., Hua, S.Z. & Levitan, I. Cholesterol depletion facilitates recovery from hypotonic cell swelling in CHO cells. *Cell Physiol Biochem* **28**, 1247-1254 (2011).
18. Armstrong, J.N., Hua, S.Z. & Chopra, H.D. Cooperative motion of domain walls in magnetic multilayers. *Phys Rev B* **83** (2011).
19. Hua, S.Z., Gottlieb, P.A., Heo, J. & Sachs, F. A mechanosensitive ion channel regulating cell volume. *Am J Physiol Cell Physiol* **298**, C1424-1430 (2010).
20. Wang, J., Heo, J. & Hua, S.Z. Spatially resolved shear distribution in microfluidic chip for studying force transduction mechanisms in cells. *Lab on a chip* **10**, 235-239 (2010).
21. Armstrong, J.N., Schaub, R.M., Hua, S.Z. & Chopra, H.D. Channel saturation and conductance quantization in single-atom gold constrictions. *Phys Rev B* **82** (2010).
22. Hua, S.Z. & Pennell, T. A microfluidic chip for real-time studies of the volume of single cells. *Lab on a chip* **9**, 251-256 (2009).
23. Heo, J.H., S. Z. An Overview of Recent Strategies in Pathogen Sensing. *Sensors* **9**, 19 (2009).
24. Heo, J., Meng, F. & Hua, S.Z. Contribution of aquaporins to cellular water transport observed by a microfluidic cell volume sensor. *Analytical chemistry* **80**, 6974-6980 (2008).
25. Huntington, M.D., Armstrong, J.N., Sullivan, M.R., Hua, S.Z. & Chopra, H.D. Mechanistic understanding of transition between quantized conductance plateaus under strain perturbation. *Phys Rev B* **78** (2008).
26. Heo, J., Meng, F., Sachs, F. & Hua, S.Z. Dynamic effects of Hg²⁺-induced changes in cell volume. *Cell biochemistry and biophysics* **51**, 21-32 (2008).
27. Pennell, T., Suchyna, T., Wang, J., Heo, J., Felske, J.D., Sachs, F. & Hua, S.Z. Microfluidic chip to produce temperature jumps for electrophysiology. *Analytical chemistry* **80**, 2447-2451 (2008).
28. Wang, J.B., Sullivan, M. & Hua, S.Z. Electrolytic-bubble-based flow sensor for microfluidic systems. *J Microelectromech S* **16**, 1087-1094 (2007).
29. Boehm, D.A., Gottlieb, P.A. & Hua, S.Z. On-chip microfluidic biosensor for bacterial detection and identification. *Sensor Actuat B-Chem* **126**, 508-514 (2007).
30. Li, X.L., Hua, S.Z., Chopra, H.D. & Tao, N.J. Formation of atomic point contacts and molecular junctions with a combined mechanical break junction and electrodeposition method. *Micro Nano Lett* **1**, 83-88 (2006).

31. Hua, S.Z., Sullivan, M.R. & Armstrong, J.N. Single-atom spintronics. *T Nonferr Metal Soc* **16**, S146-S153 (2006).
32. Chopra, H.D., Sullivan, M.R., Armstrong, J.N. & Hua, S.Z. The quantum spin-valve in cobalt atomic point contacts. *Nature materials* **4**, 832-837 (2005).
33. Ateya, D.A., Sachs, F., Gottlieb, P.A., Besch, S. & Hua, S.Z. Volume cytometry: microfluidic sensor for high-throughput screening in real time. *Analytical chemistry* **77**, 1290-1294 (2005).
34. Ateya, D.A., Shah, A.A. & Hua, S.Z. Impedance-based response of an electrolytic gas bubble to pressure in microfluidic channels. *Sensor Actuat a-Phys* **122**, 235-241 (2005).
35. Sullivan, M.R., Pirotta, S.J., Chernenko, V.A., Wu, G.H., Balasubramaniam, G., Hua, S.Z. & Chopra, H.D. Magnetic mosaics in crystalline tiles: The novel concept of polymagnets (invited). *Int J Appl Electrom* **22**, 11-23 (2005).
36. Sullivan, M.R., Boehm, D.A., Ateya, D.A., Hua, S.Z. & Chopra, H.D. Ballistic magnetoresistance in nickel single-atom conductors without magnetostriction. *Phys Rev B* **71** (2005).
37. Ateya, D.A., Shah, A.A. & Hua, S.Z. An electrolytically actuated micropump. *Rev Sci Instrum* **75**, 915-920 (2004).
38. Hua, S.Z. & Chopra, H.D. 100,000% ballistic magnetoresistance in stable Ni nanocontacts at room temperature. *Phys Rev B* **67** (2003). (**Highlighted by** Physics Today, National Science Foundation, etc.)
39. Hua, S.Z., Sachs, F., Yang, D.X. & Chopra, H.D. Microfluidic actuation using electrochemically generated bubbles. *Analytical chemistry* **74**, 6392-6396 (2002).
40. Chopra, H.D. & Hua, S.Z. Ballistic magnetoresistance over 3000% in Ni nanocontacts at room temperature. *Phys Rev B* **66** (2002).
41. Chopra, H.D., Ludwig, A., Quandt, E., Hua, S.Z., Brown, H.J., Swartzendruber, L.J. & Wuttig, M. Magnetic mesostructure of giant magnetostrictive spring magnet type multilayers. *J Appl Phys* **85**, 6238-6240 (1999).
42. Chopra, H.D., Hua, S.Z., Lashmore, D.S., Shull, R.D., Egelhoff, J., W.F. & Swartzendruber, L.J. Review Article: Domain behavior in single films, multilayers and nanocomposites. *Microscopy & Analysis* **28** (1998).
43. Hua, S.Z., Lashmore, D.S., Swartzendruber, L.J., Egelhoff, W.F., Raj, K. & Chopra, H.D. Observation of domain dynamics in giant magnetoresistive Co-Cu-based polycrystalline multilayers. *J Appl Phys* **81**, 4582-4584 (1997).
44. Chopra, H.D., Hockey, B.J., Chen, P.J., Egelhoff, W.F., Wuttig, M. & Hua, S.Z. Nanostructural considerations in giant magnetoresistive Co-Cu-based symmetric spin valves. *Phys Rev B* **55**, 8390-8397 (1997).
45. Chopra, H.D., Hockey, B.J., Swartzendruber, L.J., Hua, S.Z., Chen, P.J., Raj, K., Lashmore, D.S., Wuttig, M. & Egelhoff, W.F. Giant magnetoresistance in symmetric spin-valves: Nanostructure and domain dynamics. *Nanostruct Mater* **9**, 451-454 (1997).
46. Bennett, L.H., McMichael, R.D., Swartzendruber, L.J., Hua, S., Lashmore, D.S., Shapiro, A.J., Gornakov, V.S., Dedukh, L.M. & Nikitenko, V.I. Magneto-optical Indicator Film Observation of Domain-Structure in Magnetic Multilayers. *Appl Phys Lett* **66**, 888-890 (1995).

47. Hua, S.Z., Salamancariba, L., Bennett, L.H., Swartzendruber, L.J., McMichael, R.D., Lashmore, D.S. & Schlesinger, M. Giant Magnetoresistance of Electrodeposited Conicu/Cu Multilayers. *Scripta Metall Mater* **33**, 1643-1646 (1995).
48. Bennett, L.H., McMichael, R.D., Swartzendruber, L.J., Hua, S., Lashmore, D.S., Shapiro, A.J., Gornakov, V.S., Dedukh, L.M. & Nikitenko, V.I. Dynamics of Domain-Structure in Magnetic Multilayers. *Ieee T Magn* **31**, 4088-4090 (1995).
49. Nikitenko, V.I., Gornakov, V.S., Dedukh, L.M., Bennett, L.H., McMichael, R.D., Swartzendruber, L.J., Hua, S.Z., Lashmore, D.L. & Shapiro, A.J. Direct Experimental Study of Domain Structure in Magnetic Multilayers. *Mat. Res. Soc.* **79** (1995).
50. Hua, S.Z., Lashmore, D.S., Salamancariba, L., Schwarzacher, W., Swartzenruber, L.J., McMichael, R.D., Bennett, L.H. & Hart, R. Giant Magnetoresistance Peaks in Conicu/Cu Multilayers Grown by Electrodeposition. *J Appl Phys* **76**, 6519-6521 (1994).
51. Hua, S.Z., Salamancariba, L., Wuttig, M. & Soltani, P.K. Microstructural Studies of Photoluminescent Thin-Films of Srs-Eu²⁺,Sm³⁺. *J Cryst Growth* **141**, 165-174 (1994).
52. Su, Q.M., Hua, S.Z. & Wuttig, M. Nondestructive Dynamic Evaluation of Thin Niti Film Adhesion. *J Adhes Sci Technol* **8**, 625-633 (1994).
53. Su, Q.M., Hua, S.Z. & Wuttig, M. Martensitic-Transformation in Ni₅₀ti₅₀ Films. *J Alloy Compd* **212**, 460-463 (1994).
54. Hua, Z., Salamancariba, L., Wuttig, M. & Soltani, P.K. Temperature-Dependence of Photoluminescence in Srseu²⁺, Sm³⁺ Thin-Films. *J Opt Soc Am B* **10**, 1464-1469 (1993).
55. Zhang, J.G., Eklund, P.C., Hua, Z.L., Salamancariba, L.G., Wuttig, M., Soltani, P.K. & Storti, G.M. Photoluminescence and Optical-Absorption in Cas-Eu²⁺-Sm³⁺ Thin-Films. *J Mater Res* **7**, 411-417 (1992).
56. Qin, G.G. & Hua, Z.L. The Convergent Effect of the Annealing Temperatures of Electron-Irradiated Defects in Fz Silicon Grown in Hydrogen. *Solid State Commun* **53**, 975-978 (1985).
57. Hua, S.Z., Qin, G. & Zhou, J. Three Kinds of Hydrogen-Related Electron Irradiated Defects in Silicon Grown in Hydrogen. *Chinese Phys. Lett.* **2** (1985).

Patents

1. U.S. Patent # 8,397,311: "Metrology probe and method of configuring a metrology probe" Harsh Deep Chopra, Jason N. Armstrong and Zonglu (Susan) Hua, 03-12-2013.
2. US Patent # 8,372,600 B2: "Method and apparatus for measuring changes in cell volume", F. Sachs, S. Z. Hua, H. Chopra, P. Gottlieb, D. Ateya and S. Besch, 2-25-2009.
3. US Patent # 7,425,826: "Selectively conductive structure wherein a magnetic conductor is sized to have a cross-section diameter similar to a Fermi wavelength of electrons", Harsh Deep Chopra, Zonglu Hua, and Matthew R. Sullivan, and Jason N. Armstrong, 9-16-2008.
4. US Patent # 5,982,073: "Low core-loss, well bonded ferromagnetic parts" by D. S. Lashmore, Z. Hua, L. Deresh, and G. Beane, 11-09-99.
5. US Patent # 6,129,790: "Low core loss, well bonded soft magnetic" by D. S. Lashmore, Z. Hua, L. Deresh, and G. Beane, 10-10-2000.

6. US Patent # 6,251,514: "Ferromagnetic powder for low core loss, well-bonded parts, parts made therefrom and methods for producing same". D. S. Lashmore, G. Beane, L. Deresh, and Z. Hua, 1-26-2001.
7. US Patent # 6,309,748: "Ferromagnetic powder for low core loss parts". D. S. Lashmore, G. Beane, L. Deresh, and Z. Hua, 10-30-2001.
8. US Patent # 6,342,108: "Low core loss, well bonded soft magnetic stator, rotor, and armature". D. S. Lashmore, G. Beane, L. Deresh, and Z. Hua, 1-29-2002.
9. US Patent # 6,340,397: "Method for making low core loss, well bonded, soft magnetic parts". D. S. Lashmore, G. Beane, L. Deresh, and Z. Hua, 1-22-2002.

Invited Talks

1. "Impedance Based Microfluidic Devices to Study Cell Physiology", Pittcon 2014, Chicago, Mar. 2-6, 2014.
2. "Direct measurement of flow-induced force transduction in cross-linking proteins using novel FRET probes", Department of Oral Biology, UB, Feb. 2014.
3. "Real-Time Measurements of Cellular Transport Using Microfluidic Chips", National University of Singapore, Singapore, June, 2010.
4. "Studies of Cell Volume Response to Physical & Chemical Stimuli Using Microfluidic Chip", Virginia Tech, Blacksburg, VT, April, 2008.
5. "Cellular Transport Studies Using Cell Volume Sensor" University of Washington, Seattle, WA, May, 2008.
6. "Microfluidic Lab Chip for High Throughput Drug Screening and Toxicity Detection" University of Maryland, MD, May, 2008.
7. "Studies of Cell volume Response to Environmental Variables Using Microfluidic Chip", CBE, UB, 2008.
8. "Cell-based Biosensors", 5th Int'l Forum on Advanced Material Science and Technology, Xiangtan, China, 2006.
9. "Single Atom Spintronics", 5th Int'l Forum on Advanced Material Science and Technology, Xiangtan, China, June 11-14, 2006.
10. "New High Throughput Cell Volume Screening Technology", Ion Channel Targets Conf., Boston, MA, 2005.
11. "Nano/Bio-Technologies", Atlantic Nano Forum, VA, 2005.
12. "Microfluidic cell volume cytometry", Annual Meeting of American Society for Cell Biology, Symposium on Thermal and Mechano-Sensation, Washington DC, 2004.
13. "Microfluidic Bio-MEMS", 3rd Annual Emerging Information Technology Conf. Princeton, NJ, 2003.
14. "Electrolysis Bubble Actuated Microfluidic Systems", Microfluidic group, NIST, Gaithersburg, MD, 2003.
15. "Electrolysis Bubble Actuated Microfluidic Systems", Department of Physics, UCF, Orlando, FL, 2002.

Conference Proceedings

1. “Low level laser exposure influence on calcium channels and intracellular release in cultured astrocytes”, by T. Mang, M. Maneshi, D. Shucard, S. Z. Hua and F. Sachs, *SPIE Mechanisms of Photobiomodulation Therapy XI*, San Francisco, CA (2016) (Invited talk).
2. “Gating of aquaporin 4-phosphorylation versus protonation”, Assentoft, M, Kaptan, S, Fenton, RA, Hua, SZ, Degroot, BL, MacAulay, N. *GLIA*, 63, E-446-E446, (2015); *The 12th European Meeting on Glial Cell Function in Health and Disease*, Bilbao, SPAIN.
3. “NMDA receptors are sensitive to shear stress”, by M. Maneshi, B. Maki, G. K. Popescu and S. Z. Hua, *J. Head Trauma Rehabilitation*, 30, ppE98-E99, (2015); *The 12th Annual Conference on Brain Injury*, San Antonio, Texas.
4. “Role of fluid shear stress on E-cadherin dynamics and cytoskeletal stresses”, by Deepika Verma, Nannan Ye and Susan Z. Hua, *Northeastern Biomedical Engineering Conf*, Troy, NY (2015).
5. “Effects of low level laser exposure on calcium channels and intracellular release in cultured astrocytes”, by T. Mang, M. Maneshi, D. Shucard, S. Z. Hua and F. Sachs, *The 35th Annual Conference of the American Society for Laser Medicine and Surgery*, Kissimmee, Florida (2015).
6. “Early Calcium response in astrocytes to controlled shear stimuli”, by M. M. Maneshi F. Sachs, and S. Z. Hua, *Brain Injury*, 28, pp771-772 (2014); *IBIA 10th World Congress on Brain Injury*, San Francisco.
7. “Real-time Measurement of Intercellular Stresses in Cells Grown on Micropatterns”, by K. Suffoletto, N. Ye, F. Meng, F. Sachs, and S. Z. Hua, *Biomaterials 2013 Annual Meeting and Exposition*, Boston (2013).
8. “Phosphorylation of aquaporin-4 at Ser111 is not required for channel gating”, by M. Assentoft, S. Kaptan, R. Fenton, S. Z. Hua, B. L. de Groot, and N. MacAulay, *11th European Meeting on Glial Cell Function in Health and Disease*, Berlin, Germany, July 03-06 (2013).
9. “Mechanisms of K⁺-clearance in the brain: the Na⁺/K⁺-ATPase as the key contributor”, by B. R. Larsen, M. Assentoft, S. Z. Hua, K. Kaila, J. Voipio, and N. MacAulay, *11th European Meeting on Glial Cell Function in Health and Disease*, Berlin, Germany, July 03-06 (2013).
10. “Real time observation of cytoskeletal stresses and subsequent focal adhesion remodeling in live cells”, by N. Ye, D. Verma, F. Meng, F. Sachs, and S. Z. Hua, *Experimental Biology*, San Diego (2012).
11. “A microfluidic assay for measuring electrical conductivity of gap junction channels”, by Cédric Bathany, Derek Beahm, Steve Besch, Frederick Sachs, and Susan Z. Hua, *Mater. Res. Soc. Symp. Proc.* (2011).
12. “A Microfluidic chip for studying intercellular communication via gap junction channels” by Cédric Bathany , Thomas Suchyna, Susan Z. Hua, *Proc. NEMB*, 2010-13135, ASME First Global Congress on NanoEngineering for Medicine and Biology, Houston, TX, Feb. 7-10 (2010).
13. “Development of Microfluidic Chips to Study the Effects of Shear Stress on Cell Functions” by Jianbin Wang, Jinseok Heo, Susan Z. Hua, *Proc. NEMB*, 2010-13132, ASME First Global Congress on NanoEngineering for Medicine and Biology, Houston, TX, Feb. 7-10 (2010).
14. “Cationic Mechanosensitive Ion Channels Are Not the Sole Cell Volume Sensors for RVD” by Susan Z. Hua, Jinseok Heo, Philip Gottlieb, Frederick Sachs, *Biophysical Annual Meeting*, Boston, MA, Feb. 27-Mar. 4 (2009).

15. "Dynamic effects of Hg²⁺-induced changes in cell volume" by Jinseok Heo, Fanjie Meng, Fred Sachs, and Susan Z. Hua, ACS National Meeting, New Orleans, LA, April 6-10, (2008).
16. "High-speed microfluidic thermal stimulator for temperature-activated ion channel studies" by Thomas Pennell, Jianbin Wang, Susan Z. Hua, *Proc. SPIE*, 6528, 65280N1-8 (2007).
17. "Surface functionalization of a microfluidic biosensor for bacteria detection and identification" by D. A. Boehm, P. Gottlieb, S. Z. Hua, *Proc. SPIE*, 6529, 65290H1-8 (2007).
18. "Contribution of Aquaporins on Cellular Water Transport Observed Using Microfluidic Cell Volume Sensor" Jinseok Heo, Fanjie Meng, and Susan Z. Hua, *Anneal meeting of Cell Biology*.(2006).
19. "An integrated approach to flow sensing and actuation using electrolytic bubbles", by J. Wang, D. A. Ateya, J. N. Armstrong, M. R. Sullivan and S. Z. Hua, *Proc. SPIE*, 6174, pp. 650-657 (2006).
20. "Microfluidic Cell Volume Biosensor for High Throughput Screening", by D. A. Ateya, F. Sachs, and S. Z. Hua, *Mater. Res. Soc. Symp. Proc.* 845, AA5.12.1 (2004).
21. "Bubble based microfluidic sensing", D. A. Ateya, A. A. Shah, F. Sachs, and S. Z. Hua, *Proc. ASME Int'l Mech. Eng. Cong. & Exp. Anaheim, CA*, IMECE2004-62177 (2004).
22. "Ballistic nanocontacts for magnetic and chemical sensing"(Invited); Harsh Deep Chopra and Susan Z. Hua*, *Nanomaterials 2004 Conference, Stamford, CT*, pp.1-8 (2004).
23. "Sequential electrolytic bubble-based micropump dosing system", by M. Lewandowski, D. A. Ateya, A. A. Shah, S. Z. Hua, *Proc. ASME Int'l Mech. Eng. Cong. & Exp. Washington, DC*, IMECE2004-41314, pp.1-5, (2003).
24. "Electrochemically actuated microvalves for microfluidic systems", by S. Z. Hua, F. Sachs, and H. D. Chopra, *Proc. ASME Int'l Mech. Eng. Cong. & Exp. New Orleans, FL*. IMECE2002-34387, pp.1-6 (2002).
25. "Evaluation of mechanical properties of magnetic materials using a non-destructive method" by D. X. Yang, K. P. Kankolenski, S. Z. Hua, L. J. Swartzendruber, G. E. Hicho, and H. D. Chopra. *IEEE Transactions on Magnetics*, 37, no.4, pp.2758-2760 (2001).
26. "Non-destructive evaluation of mechanical properties of magnetic materials", by K. P. Kankolenski, S. Z. Hua, D. X. Yang, G. E. Hicho, L. J. Swartzendruber, Z. Zang, and H. D. Chopra, *Mat. Res. Soc. Symp. Proc.* 591, 157 (2000).
27. "Electrochemically synthesized magnetoresistance and giant magnetoresistance sensors", by D. S. Lashmore, and S. Z. Hua. *Proceedings SENSORS EXPO Baltimore*, pp.323-326, (1999).
28. "Giant magnetoresistivity in electrochemically produced cobalt-copper multilayers" by D. S. Lashmore, and S. Z. Hua. *Polycrystalline Thin Films: Structure, Texture, Properties, and Applications II. Symposium. Mater. Res. Soc.* pp.161-70, (1996).
29. "Progress in the electrodeposition of multilayered alloys" by D. S. Lashmore and S. Z. Hua. *Proc. 4th Intl. Symposium on Magnetic Materials, Processes, and Devices. Applications to Storage and Microelectromechanical Systems (MEMS). Electrochem. Sco.* pp.122-124 (1996).
30. "Magnetoresistance of Electrochemically Synthesized Multilayers", D. S. Lashmore, S. Hua, and Y. Zhang, *Abstracts of Papers of the Amer. Chem. Soc.* 208, 184 (1994).

31. "TEM study of MOCVD grown InSb/GaAs heterostructures with and without TMIn predeposited layers" by L. H. Kuo, S. Z. Hua, L. Salamanca-Riba, D. L. Partin, L. Green, J. Heremans. *Compound Semiconductor Epitaxy Symposium. Mater. Res. Soc.* pp.405-410, (1994).
32. "Martensitic transformation in Ni/sub 50/Ti/sub 50/ films" Q. Su, S. Z. Hua, and M. Wuttig. *Proceedings of SPIE - the International Society for Optical Engineering*, 2189, pp.409-412, (1994).
33. "Effects of Microstructure on Photoluminescence of SrS:Eu²⁺,Sm³⁺ Thin Films", S. Z. Hua, L. Salamanca-Riba, M. Wuttig and P. K. Soltani, *Mater. Res. Symp. Proc.* pp.359-364 (1993).
34. "Transformation Induced Stresses in SMA Thin Films", S. Z. Hua, C. M. Su, and M. Wuttig, *Mater. Res. Symp. Proc.* 308, (1993).
35. "Magneto-resistance Measurements of Electrochemically Produced Cu/Ni Multilayers", D. S. Lashmore, Y. Zhang, S. Hua, M. P. Dariel, L. Swartzendruber and L. Salamanca-Riba, *Proc. Symp. Mag. Mat.: Processes and Devices*, New Orleans, Oct. (1993).
36. "Trapping and Luminescence Mechanism Studies in SrS:Eu²⁺,Sm³⁺ Thin Films at Various Temperatures", S. Z. Hua, L. Salamanca-Riba, M. Wuttig, and P. K. Soltani, *Mater. Res. Soc. Symp. Proc.* 281, 597-602 (1992).
37. "Damping and Interface Constraint in Martensitic NiTi Films," C. M. Su, S. Z. Hua, and M. Wuttig, in *Damping of Multiphase Inorganic Materials*, ed. R. B. Bhagat (ASM Proc.) pp. 165 (1992).

Active and past (last 3 years) grants:

Ongoing Research Support

NIH/R21NS085517 Hua (PI) 09/01/13-08/31/2016

Title: Traumatic brain injury: early mechanosensitive events in astrocytes

This work aims to study the stimulus properties that are most critical to cell injury during TBI and the mechanisms that couple the mechanical stimulus to cellular processes.

Role: PI

NSF/CMMI-1537239 Hua (PI) 09/01/15-08/31/18

Title: Force transduction mechanisms at adherens junctions

This work aims to explore how forces due to fluid flow are transmitted between the cytoskeleton and E-cadherin that drives the dynamic remodeling of adherens junctions in epithelial cells.

Role: PI

NSF/CBET-1503109 Hua (PI) 04/15/15-03/31/16

Title: EAGER: Calibration of novel FRET based force sensors in vitro

This work aims to quantitatively calibrate the forces in the newly developed FRET based sensors *in vitro*.

Role: PI

Completed Research Support (last 3 years)

K25 DK077302 Hua (PI) 03/01/07-01/12/13

Title: Time resolved studies of transport in renal epithelial cells

This is a mentor assisted training grand to train PI in biomedicine. The project is focused on studies of ion transport and cell volume regulation of renal epithelial cells.

Role: PI

NSF-CMMI-0825707 Hua (PI) 12/01/08-11/30/13

Title: Sensor for Probing Intercellular Communications

This work is aimed at developing microfluidic sensors to detect the chemical diffusion and electrical conductance across gap junction channels between single cells.

Role: PI

Professional Services

Reviewer/Panelist, NIH-EBIT study section

Reviewer/Panelist, NIH-SBIR/STTR-Bioengineering

Reviewer/Panelist, NSF-CMMI

Reviewer/Panelist, NSF-IRES

Reviewer, Biotechnology and Biological Sciences Research Council (BBSRC), UK

Reviewer, ACS Petroleum Research Fund

Reviewer/Panelist, NIH-Bioengineering

Reviewer/Committee Member of NSF's Nanoscale Science and Engineering Centers (NSEC)

Reviewer, Technology Foundation STW, Netherland

Reviewer/Panelist, NSF "Sensor Initiative"

Reviewer, Nanotechnology Institute (NTI)

Reviewer/Panelist, NSF-DMR

Reviewer/Panelist, NSF SBIR

Reviewer for various journals including: Biomicrofluidics (BMF); American Journal of Physiology: cell physiology; Biophysical Journal; Analytical Chemistry; Langmuir; Nature protocol; Cell Biochemistry and Biophysics (CBB); Sensor & Actuators A (Physical); Sensor & Actuators B (Chemical); Journal of Microelectromechanical Systems (JMEMS); Journal of Micromechanics and Microengineering; Journal of Applied Physics; Colloids and Surfaces; Analyst; Sensors; Sensors and Materials; International Journal of Environmental Analytical Chemistry; IEEE Intermag