CURRICULUM VITAE

I. Samuel Kinde Kassegne, PhD, PE

II. EDUCATION

A.

Institution	Year	Degree	Major Field
Anna University (Guindy)	1984	B.E. (**First Class Distinction**)	CE
Middle East Technical University	1987	M.S.	CE
Virginia Tech (VPI &SU)	1992	Ph.D.	Engineering Mechanics

B. Title of Dissertation

Layerwise Theory for FEA Analysis of Discretely Stiffened Laminated Cylindrical Shells, 1992. Advisor: Dr. JN Reddy.

III. TEACHING POSITIONS AND RANKS HELD

Institution	Rank	Date	Major Subject
NSF ERC (CSNE)	Deputy Director	2015-Present	------
San Diego State University	Professor	2015-Present	ME
San Diego State University	Associate Professor	2010-2015	ME
San Diego State University	Assistant Professor	2005-2010	ME
University of California, Irvine	Visiting Scientist/Lecturer	2003-2004	ME & Aerospace
UCSD Extension	PT Faculty & Instructor	1999-2002	FEA
Addis Ababa University	Adjunct Faculty	2001-2004	Computer Science

IV. INDUSTRIAL POSITIONS HELD

Company	Position	Date
Microfabrica (MEMS Start-up)	Senior FEA MEMS Engineer	2004-2005
Nanogen (BioTech Start-up)	Principal Engineer	2001-2003
RAM International (now Bentley)	FEA Software Devt. Manager	1993-2001

V. PROFESSIONAL GROWTH

Articles in Refereed Journals

1. M. Vomero, Castagnola, E., Ciarpella, F., Maggiolini, E., Goshi, N., Zucchini, E., Carli, S., Fadiga, L., **Kassegne**, S., Ricci, D., "*Highly Stable Glassy Carbon Interfaces for Long-Term Neural Stimulation and Low-Noise Recording of Brain Activity*", Science Reports, Vol. 7, 4033, DOI: 10.1038/srep40332, **2017**.
2. Goshi, N., Narenji, A., Bui, C., Mokili, J., **Kassegne**, S., "*Investigation of Effects of Nucleotide Content on Electrical Characteristics of DNA Plasmid Molecular Wires*", IEEE Transactions on NanoBioscience, Volume PP, Issue: 99, DOI: 10.1109/TNB.2016.2596243, **2016**.
3. Vomero, M, van Niekerk, P, **Kassegne**, S., et al, "*Novel Pattern Transfer Technique for Mounting Glassy Carbon Microelectrodes on Polymeric Flexible Substrates*", JMM (Journal of Micromechanics and Microengineering), Volume 26, Number 2, **2016.**
4. Vomero, M., Dryg, I., Maxfield, T., Shain, W., Perlmutter, S., and **Kassegne**, S., "*In-vivo Characterization of Glassy Carbon µElectrodes and Histological Analysis of Brain Tissue after Chronic Implants*", ECS Trans. volume 72, issue 1, 91-96, doi: 10.1149/07201.0091**, 2016**.

5. Goshi, N., Vomero, N., Dryg, I., and **Kassegne**, S., "*Modeling and Characterization of Tissue/Electrode Interface in Capacitive µECoG Glassy Carbon Electrodes*", ECS Trans. volume 72, issue 1, 83-90, doi: 10.1149/07201.0083**, 2016**.
6. Vomero, Castagnola, E., Maggiolini, E., Ciarpella, F., Rembado, I., Goshi, N., Fadiga, L., **Kassegne**, S., Ricci, D., "*A Direct Comparison of Glassy Carbon and PEDOT-PSS Electrodes for High Charge Injection and Low Impedance Neural Interfaces*", Advances in Science and Technology 102, 68-76, Trans tech Publications, **2016**.
7. Barr, J., Auro, R., Sam-Soon, N., **Kassegne**, S., Rohwer, F., *et al.* "*Subdiffusive Motion of Bacteriophage in Mucosal Surfaces Increases the Frequency of Bacterial Encounters*", Journal of Proceedings of the National Academy of Sciences of the United States of America (PNAS), DOI: 10.1073/pnas.1508355112, **2015.**
8. **Kassegne**, S., Vomero, M., Gavuglio, R., Hirabayashi, M., Özyilmaz, E., Nguyen, S., Rodriguez, J., Özyilmaz, E., van Niekerk, P., Khosla, A., "*Electrical Impedance, Electrochemistry, Mechanical Stiffness, and Hardness Tunability in Glassy Carbon MEMS µECoG Electrodes*", J. of Microelectronics Engineering, Volume 133, Pages 36–44, **2015**.
9. Hirabayashi, M., Mehta, B., Nguyen, B., and **Kassegne, S.,** *"DNA Immobilization on High Aspect Ratio Glassy Carbon (GC-MEMS) Microelectrodes for Bionanoelectronics Applications*", Journal of Microsystem Technologies, DOI 10.1007/s00542-014-2332-3, **2015**.
10. **Kassegne, S.,** Wibowo, D., Chi, J., Ramesh, V., Narenji, A., Khosla, A., Mokili, J., "*AC Electrical Characterization and Insight to Charge Transfer Mechanisms in DNA Molecular Wires through Temperature & UV Effects*", Journal of IET Nanobiotechnology, pp. 1–11, doi: 10.1049/iet-nbt.2014.0044, **2014**.
11. **Kassegne, S.,** Mehta, B, Khosla, A., "*Manufacturing of High Aspect-Ratio 3-Dimensional PolyFerroCNT Nanocomposite Polymer Electrodes*", Journal of Microsystem Technologies, Springer, DOI 10.1007/s00542-014-2250-4**, 2014.**
12. **Kassegne**, S., Khosla, A., Patel, D., Paramesh, N., Harwood, N., Arya, B., "*Coriolis Force for Facilitating DNA Molecular Migration and Hybridization in Compact Disk Microfuidic Platforms*", Journal of Microsystem Technologies, Springer, DOI: 10.1007/s00542-014-2087-x, **2014**.
13. Khosla, A., & **Kassegne**, S., "*Fabrication of NdFeB-Based Permanent Rare-Earth Micromagnets by Novel Hybrid Micromolding Process*", Journal of Microsystem Technologies, DOI: 10.1007/s00542-014-2331-4, Springer, **2014.**
14. Vahidi, N., Hirabayashi, M., Mehta, B, Khosla, A., and **Kassegne, S.,** *"Bionanoelectronics Platform with DNA Molecular Wires Attached to High Aspect-Ratio 3D Metal Microelectrodes*'', ECS Journal of Solid State Science and Technology 3 (3), Q29-36 **2014**.
15. Hirabayashi, M., Mehta, B, Vahidi, N, Khosla, A., and **Kassegne, S.,** *"Functionalization and Characterization of Pyrolyzed Polymer Based Carbon Microstructures for Bionanoelectronics Platform"*, JMM (Journal of Micromechanics and Microengineering), 23 (11), 115001, **2013**.
16. El-Desouky, A., Moon, K.S, **Kassegne**, S.K., and Morsi, K., "*Green Compact Temperature Evolution during Current-Activated Tip-Based Sintering (CATS) of Nickel*", Metals 3 (2), 178-187, **2013**.
17. El-Desouky, A., **Kassegne**, S.K., Moon, K.S., McKittrick, J., & Morsi, K., "*Rapid Processing & Characterization of Micro-scale Functionally Graded Porous Materials*", Journal of Materials Processing Technology, Volume 213, Issue 8, Pages 1251–1257, **2013**.
18. Numula, A., **Kassegne**, S., Moon, K.S., El-Desouky, Morsi, K., *"Reactive Current-Activated Tip-Based Sintering of Ni-Al Intermetallics*", ASM Journal Metallography, Microstructure, and Analysis, 2, 148-155, **2013**.

19. **Kassegne**, S., Moon, K., Martín-Ramos, P., Majzoub, M., Ozturk, G., Desai, K., Parikh, M., *et al*. "*Organic MEMS/NEMS-based High-Efficiency 3D ITO-less Flexible Photovoltaic Cells*", JMM (Journal of Micromechanics and Microengineering), 22 (11), 115015, **2012**.
20. **Kassegne**, S. Kinde, Engeda, S., Kebede, A., Tessema, E., "*Technical Notes: Notes and Proposed Guidelines on Updated Seismic Codes in ET-Implication for Large-Scale Infrastructures*", Zede Journal 28, 91-110. **2012.**
21. Patel, M., Moon, K.S., **Kassegne**, S.K., Morsi, K., "*Effects of Current Intensity and Cumulative Exposure Time on the Localized Current-activated Sintering of Titanium Nickelides*", Journal of Materials Science 46 (20), 6690-6699, **2011**.
22. Frank, M., Moon, K.S., **Kassegne**, S., "*A PMMA coated PMN-PT Single Crystal Resonator for Sensing Chemical Agents*", Smart Materials & Structures 19 (3), 035015, **2010**.
23. **Kassegne**, S.K., Arya, B., Yadav, N., "*Numerical Modeling of the Effect of Histidine Protonation on DNA Hybridization and pH Distribution in Electronically Active Microarrays",* Journal of Sensors and Actuators, Part B. Chemical, Elsevier Science B.V, **2009.**
24. Morsi, K., Moon, K.S., **Kassegne**, S.K., Ugle, R., Villar, E., "*Novel Current-Activated Tip-based Sintering (CATS): Localization of Spark Plasma Sintering*", Scripta Materialia, Volume 60, Issue 9, Pages 745-748, **2009**.
25. Chun, K.S. Wondimu, B., and **Kassegne**, S.K., "*Hybrid/Mixed Assumed Stress Element for Anisotropic Laminated Elliptical and Parabolic Shells",* Journal of Finite Elements in Analysis and Design, Volume 45 (2009), pp 766-781, **2009**.
26. **Kassegne**, S.K. and Chun, K-S **"***Buckling Characteristic of Multi-Laminated Composite Elliptical Cylindrical Shells*", ASC2008 Special Issue of Journal of Mechanics of Advanced Materials and Structures**, 2009.**
27. Nguyen, B. and **Kassegne**, S.K., "*High-Current Density DC Magnetohydrodynamics (MHD) Micropump with Bubble Isolation and Release System",* Journal of Microfluidics and Nanofluidics, Springer-Verlag, Volume 5, 383-393, January **2008**.
28. Zhou, L., Sharma, S., and **Kassegne**, S., "*Reconfigurable Microstrip Rectangular Loop Antennas Using RF MEMS Switches",* Microwave and Optical Technology Letters, Vol. 50, No. 1, pp 252-256, **2008**.
29. Chun, K.S. **Kassegne**, S.K., Park, W-T., "*Static Assessment of Quadratic Hybrid Plane Element Using Non-Conforming Displacement Modes and Modified Shape Functions",* Structural Engineering and Mechanics, Vol. 29, No. 6, 643-658, **2008**.
30. Lemma, F, Denko, M.K. Tan, J., and **Kassegne**, S.K, "*Envisioning a National E-Medicine Network Architecture in a Developing Country: A Case Study",* Int. J. of Healthcare Information Systems and Informatics, 3 (1), pp 44-62, Jan-Mar **2008**.
31. Patel, V, and **Kassegne**, S.K., "*Electroosmosis and Thermal Effects in Magnetohydrodynamic (MHD) Micropumps using 3D MHD Equations",* Journal of Sensors and Actuators B: Chemical, *Elsevier Science B.V*., Volume 122, Issue 1, pp 42-52, **2007**.
32. **Kassegne**, S., "*Development of a Closed-Form 3-D RBS Beam Finite Element and Associated Case Studies",* Journal of Engineering Structures, Elsevier, Volume 29, Issue 7, Pages 1580-1595, July **2007**.
33. **Kassegne**, S.K., "*Proposed Considerations for Revision of EBCS-8:1995 for Conservative Seismic Zoning and Stringent Requirements for Torsionally Irregular Buildings*", EACE Research Journal, **2006**.
34. Chun, K.S., **Kassegne**, S.K., and Park, Won-Tae, "A *New, Efficient 8-Node Serendipity Element with Explicit and Assumed Strains Formulations",* International Journal for Computational Methods in Engineering Science and Mechanics, Vol. 6, pp 285-292, Dec **2005**.

35. Chun, K.S. and **Kassegne**, S.K., "*Low-Velocity Impact Dynamic Behavior of Laminated Composite Nonprismatic Folded Plate Structures",* ASCE Journal of Engineering Mechanics, Vol. 131, Num 7, July **2005**.
36. **Kassegne**, S.K.., and Hailu, D.A., "*Multi-Point Constraint and Mixed Element Based Approach for RBS and Panel Zone Modeling*", EACE Research Journal, September **2004**.
37. Ying, H., Yang, JM., Hopkins, P., **Kassegne**, S.K., Marcus, T., Foster, A., and Howard, H., "*Separation of Simulants of Biological Warfare Agents from Blood by a Miniaturized Dielectrophoresis Device*", Journal of Biomedical Microdevices, Vol. 5, 217-225, July **2003***.*
38. **Kassegne**, S.K., Reese, H., Hodko, D., Yang, JM., Sarkar, K., Smolko, S., Swanson, P., Raymond, D., Heller, M.J., and Madou, M.J., "*Numerical Modeling of Transport and Accumulation of DNA on Electronically Active Biochips*", Journal of Sensors and Actuators B: Chemical, Volume 94, pp. 81–98, Elsevier Science B.V, **2003**.
39. **Kassegne**, S.K. and Reddy, J.N., "*Local Behavior of Discretely Stiffened Composite Plates and Cylindrical Shells*", Composite Structures, Volume 41, pp. 13-26, **1998**.
40. **Kassegne**, S.K. and Reddy, J.N., "*A Layerwise Shell Stiffener and Stand-Alone Curved Beam Element",* Asn. Journal of Structural Engineering, Volume 2, Nos. 1 and 2, pp 1-14, **1997**.
41. **Kassegne**, S.K., Wasti, T., "*Analysis of Box Girders by the Nodal Section Method*", METU Journal of Natural and Applied Sciences, Vol. 22, No 1, pp. 33-59, **1989**.

Book Chapters

1. S. Kassegne, M. Vomero, M. Hirabayashi, P. Van Niekerk, Invited review article: Micro Electronic Mechanical Devices Collection: Carbon: The Next Silicon? Book 2—Applications. Marc J. Madou, Victor H. Perez- Gonzalez, Bidhan Pramanick, Momentum Press Engineering, **2016**.
2. **Kassegne**, S.K. and Arya, B., "*Genomics and DNA Microarrays*", Invited Review Article, Microfluidics and Nanofluidics Handbook, Mitra, S.K., and Chakraborty, S. (editors), CRC Press/Taylor & Francis Group, **2009**.
3. Nguyen, B. and **Kassegne**, S.K., "*DNA Microarrays",* Invited Review Article, Encyclopedia of Microfluidics and Nanofluidics, Dongqing Li (editor), Springer-veritag, **2008**.
4. Wong, S. and **Kassegne**, S.K., "*Protein Microarrays",* Invited Review Article, Dongqing Li (editor), Springer-veritag, **2008**.

Conference Proceedings

1. Hirabayashi, M., **Kassegne**, S., "*Notes on Neuroplasticity Investigation using Coupled Electrical and Electrochemical Sensing through Carbon Electrodes*", 229th ECS Meeting, San Diego, CA, **2016**.
2. Narenji, A.G., Goshi, N., Coste, M., Burns, D., Lee, R., Ngo, K., Purse, B., and **Kassegne**, S., "*Electrochemical Characterization of Synthetic Hybrid DNA Molecular Wires***",** 229th ECS Meeting, San Diego, CA, **2016**.
3. Takamatsu, K., Yamada, N., Wada, M., Ahmed, K., Kawakami, M., Kassegne, S., Furukawa, H., Khosla, A., "*3D Printed Polymer MEMS*", ECS abstract MA2016-02 **3861, Issue 51, 2016.**
4. Narenji, A., Goshi, N., Bui, C., Mokili, J., and **Kassegne**. S., "*Effect of Temperature and UV Illumination on Charge Transport Mechanisms in DNA.*" In *SPIE Smart Structures and Materials+ Nondestructive Evaluation and Health Monitoring*, pp. 94340C-94340C. International Society for Optics and Photonics, **2015**.

5. **Kassegne**, S.K., Hirabayashi, M., Vomero, M., "*Coupled Electrical and Neurotransmitters Signal Sensing and Stimulations using Carbon Multi-Site Electrode Array,*" Symposium J: Materials for Neural Interfaces, MRS Fall 2013 Meet, Boston, MA, December, **2013**.
6. Hirabayashi, M., Mehta, B., **Kassegne**, S., and Khosla, A., '*Electrochemical Characterization of DNA Attachment on Graphitic Carbon Microelectrodes for Bionanoelectroics Platforms*', 224th ECS Meeting, San Francisco, CA, November, **2013**.
7. Vahidi, N., McDowell, T., and **Kassegne**, S., *'Carbon-MEMS Based Multi-Site Electrode Array Fabric for Neural Sensing & Recording*', 224th ECS Meeting, San Fran., CA, **2013**.
8. Khosla, A., Hirabayashi, M., **Kassegne**, S., and Silvestro, M., *'Fabrication and Application of World's Smallest Polymer Bonded Permanent Rare Earth Micro-magnets for MEMS/NEMS Devices',* 224th ECS Meeting, San Francisco, CA, November, **2013.**
9. Waynelovich, J., Seperi, A., Mehta, B., **Kassegne**, S., and Khosla, A., "*Low Cost UV Laser Direct Write Photolithography System for Rapid Prototyping of Microsystems*", ECS Meeting Abstracts, 3990-3990, Hawaii, HI, **2012**.
10. Khatri, A., **Kassegne**, S., Khosla, A., "*Characterization and Process Optimization of UV Patternable Electrically Conducting SU-8 Silver Nanocomposite Polymer*", ECS Meeting Abstracts, 4007-4007, Hawaii, HI, **2012**.
11. Patel, C., **Kassegne**, S., Khosla, A., "*Micropatternable, Electrically Conducting Polyaniline Photoresist Blends for MEMS Applications*", ECS Meeting, 4009-4009, Hawaii, HI, **2012**.
12. Hirabayashi, M., Mehta, B., **Kassegne**, S., Khosla, A., "*Functionalization of Pyrolyzed Carbon Structures for Bio-nano-electronics Platforms*", ECS Meeting, 3879-3879, Hawaii, **2012**.
13. Moon, K., Morsi, K., **Kassegne**, S., Sepehri, A., and Murray, T., "*Mechanical Vibration Induced Electro-spinning of Polyvinylidene Difluoride (PVDF)*", Proceedings of SPIE 8342, 834227, **2012**.
14. Moon, K., Patel, M., Morsi, K., **Kassegne**, S., "*Fabrication of TiNi Shape Memory Alloy Thin Films by Current Activated Tip-based Sintering (CATS*)", SPIE Smart Structures and Materials+ Nondestructive Evaluation and Health. **2010**.
15. Morsi, K., Moon, K., **Kassegne**, S., Ugle, R., Patel, M., "*Novel Current Activated Tip-based Sintering (CATS) of Advanced Materials*", 2010 TMS Annual Meeting & Exhibition, Proceedings Title: EPD Congress: Materials Processing Fundamentals, **2010**.
16. **Kassegne**, S.K., Wondimu, B., Mazjoub, M., and Shin, J., "*High-Efficiency Microarray of 3-D Carbon MEMS Electrodes for Pathogen Detection Systems",* SPIE-ISOT Conference Proceedings, San Diego, CA, November **2008**.
17. Frank, M., Nguyen, T.T., Makau, F.M., Moon, K.S., **Kassegne**, S.K., "*PMN-PT Single Crystal Resonators for Sensing Acetone Vapors",* SPIE-ISOT Conference Proceedings, San Diego, CA, November **2008**.
18. Moon, K, **Kassegne**, S., Morsi, K., Yi, J., Beyene, A., *"Low-cost Polymeric and Carbon-based Photovoltaic cells for Clean Energy Applications",* The 5th International Congress of Nano-Bio Clean Tech, San Francisco, CA, October, **2008**.
19. **Kassegne**, S.K., Kidane, T., Assefa, A., Denko, M., "*Mobile Text and Instant Messaging Solutions in Non-Latin Scripts for Commodity Price Information Management in Emerging Markets*", 2nd IFIP International Symposium on Wireless Communications and Information Technology in Developing Countries, Pretoria, South Africa, October, **2008**.
20. **Kassegne**, S., "*Lessons from Virtual Supervision of Engineering and Computer Science Graduate Students – Case of Addis Ababa Ababa University",* 36th ASEE/IEEE Frontiers in Education Conference, San Diego, CA, October 28 – 31, **2006**.

21. Lemma, F, Denko, M.K. and **Kassegne**, S.K, "*Hierarchical Model Based LAN Architecture & VSAT-based WAN for a National Telemedicine Network in a Developing Country",* Proceedings of WCIT 2006/WCC 2006, Santiago, Chile, August **2006**.
22. Wang, C., Taherabadi, L., Jia, G., **Kassegne**, S., Zoval, J., and Madou, M., "*Carbon-MEMS Architecture for 3D Microbatteries",* Proceedings of SPIE-Photonics Europe, Strasbourg, France, April **2004**.
23. **Kassegne**, S., Abebe, S., Seoum, T., Atnafu, S., "*Ethiopic Keyboard Mapping and Predictive Text Inputting Algorithm in a Wireless Environment*", ITEs-2004, Addis Ababa, Ethiopia, **2004**.
24. **Kassegne**, S.K. and Sarkar, K., "*Challenges in Computational Modeling of Gel Permeation Layers in BioMEMS Devices",* Proceedings of the SIAM Conference on Computational Science and Engineering (SIAM CSE03), San Diego, CA, February 10-13, **2003**.
25. **Kassegne**, S.K., "*Issues in Seismic Zoning and Proposed Reconsiderations in Seismic Building Codes in ET*", Proceedings of the Joint EACE-AAU International Conference on Computational Mechanics, Structures and Earthquake Engineering (ICCMSE-2003), Addis Ababa, Ethiopia, January 9-10, **2003**.
26. Hailu, D., Zekaria, A., **Kassegne**, S.K., "*A New Efficient Multiple-Node Constraint Approach for FEA Analysis of Radius-Cut RBS Moment Frames in Highly Seismic Areas*", Proceedings of the Joint EACE-AAU International Conference on Computational Mechanics, Structures and Earthquake Engineering (ICCMSE-2003), Addis Ababa, ET, January 9-10, **2003**.
27. **Kassegne**, S.K., Reese, H., Swanson, P., Sarkar, K, and Madou, M.J., "*A Micro Electro-Optical DNA Array Sensor",* Full Paper Published in the Proceedings of the SPIE Conference on Smart Structures and Materials, San Diego, CA, March 17-21, **2002**.
28. **Kassegne**, S.K., Zoval, J., Maher, B., Whitten, R., and Madou, M.J., "*Design Issues in SOI-Based High-Sensitivity Piezoresistive Cantilever Devices",* Full Paper Published in the Proceedings of the SPIE Conference on Smart Structures and Materials, San Diego, CA, March 17-21, **2002***.*
29. Sarkar, K, **Kassegne**, S.K., and Madou, M.J., "*Characterization of Porous Membrane Elements in Microfluidics Devices",* 14th US National Congress of Theoretical and Applied Mechanics Conference, Blacksburg, Virginia, June 23-28, **2002**.
30. **Kassegne**, S.K., Buriek, L., and Miller, A., *"Second Order Analysis of Building and Industrial Structures*", Structural Engineer, London, UK. February **2001***.*
31. **Kassegne**, S.K. and Quarshie, S., "*Architecturing Multiphysics FEA/BEA Simulation Software: A Case of Micro Devices Simulation*", Proceedings of the Sixth U.S. National Congress on Computational Mechanics*,* Dearborn, Michigan, August **2001**.
32. **Kassegne**, S.K. and Quarshie, S., "*Object-Oriented Interactive Optimization Tool for Analysis and Design of Plates and Shells*", Proceedings of Fifth U.S. National Congress on Computational Mechanics, Denver, Colorado, August **1999**.
33. **Kassegne**, S.K., "*Second Order Effects in Building Structures with Partial and Multiple Diaphragms*", Proceedings of the 12th Engineering Mechanics Conference, La Jolla, California, May 17-20, **1998**.
34. **Kassegne**, S.K. and Donnadieu, A., "*Seismic Analysis of Buildings using the RAM Structural System",* Presented at the Mexican Society of Seismic Engineering Meet in Mexico City, Mexico, April 22, **1998**.
35. **Kassegne**, S.K. and Somanath, N., "*Analysis of Plates and Shells with Cut-outs Using Layerwise Theory",* 34th Conference of Structures, Dynamics and Materials (SDM)*,* La Jolla, California, **1993**.
36. **Kassegne**, S.K. and Reddy, J.N., "Analysis of Discretely Stiffened Laminated Cylindrical Shells", *Proceedings of MEET'N'93*, Univ. of Virginia, Charlottesville, Virginia, June **1993**.

Funded Research Grants [Total External = ~$760K, Total External + Internal = ~$830K, Total as Member of Team = ~$40 Million]

External

1. **Co-PI (Deputy Director + Thrust Leader & Test-Bed Lead)** – National Science Foundation, **$18,500,000** (SDSU gets $0.5 million/year), As part of ERC - CSNE (Center for Sensorimotor Neural Engineering) led by UW, **2010 – 2015**. Extended to 2016 – 2020 **($38.5 mil total**).
2. **PI** – National Science Foundation, ERC–Center for Sensorimotor Neural Engineering (CSNE), **$100,000,** *"Carbon-Based Multi-tunable Microelectrode Array with Flexible & Perforated Substrate for Closed-Loop BCI"*, **2013 – 2015.**
3. **PI** – National Science Foundation, ERC–Center for Sensorimotor Neural Engineering (CSNE), **$100,000,** *"Investigation of Carbon-MEMS Based Multi-Site Electrode Array Fabric for Neural Sensing and Stimulations",* **2011 – 2013**.
4. **PI** – US Navy, ~**$90,000,** Space and Naval Warfare Center Pacific (SPAWAR, SSC-Pacific), SPAWAR - PAC: N66001-12-2, SSC-PAC Advanced MEMS Fabrication, **2013, 2014, 2015** (3-year Program).
5. **Co-PI** – National Science Foundation, CMMI, **$307,000**, "*Novel Current-Activated Tip-Based Sintering*", (Dr. Morsi is the PI. Dr. Moon is the other Co-PI). **2008 – 2011**.
6. **PI** – Department of Energy, CleanTech Initiative, **$45,000,** "*Innovative Production Line for Low-Cost Scale-Up of a Novel 3-D, Flexible, Organic Photovoltaic Cells"*, 2001 – 2012.
7. **PI** – San Diego Foundation, **$35,000**, "*New Enabling Technology for Building-Side-, Auto-, and Cloth-Mountable Flexible Solar Cells using All-Polymer Approach*", **2009 – 2010**.
8. **PI** – AlphaTec Spine Inc., $**37,933**, "*Epidural Thermal Posterior Annulplastic Treatment Device*", **2006 – 2007**.
9. **Co-PI** – AMO Co., Ltd. Kyungkido, Korea. **$40,000**, "*Polymer Light Emitting Diode Chip with 3-D Powder-Sintered Electrodes*", (Dr. Moon is the PI. Dr. Morsi is the other Co-PI), **2009 – 2010**.

Internal [Total = ~72.5K]

1. **PI** – President's Leadership Fund, SDSU, **$10,000**, "*Simultaneous Electrical & Neurotransmitter Electrochemical Signal Reading and Stimulation for Parkinson's Disease Treatment* ", **2013 - 2015**.
2. **PI** – SAGE Project, SDSU, **$7,500**, "*Pilot Project: Demonstration of Energy Saving and Sustainability through Building-Integrated Solar Cell for National City Library* ", **2014 - 2015**.
3. **PI** – University Grants Program, SDSU, **$10,000**, "*DNA-inspired Variable-Impedance Carbon Nanotubes for Molecular Electronics* ", **2014 - 2015**.
4. **PI** – University Grants Program, SDSU, **$10,000**, "*Building-Integrated All-Polymer Organic Photovoltaic Cells*". **2013 - 2014**.
5. **PI** – University Grants Program, SDSU, **$10,000**, "Investigation of New Generation of All-Polymer Organic Photovoltaic Cells". **2009 - 2010**.
6. **PI** – CSUPERB (Biotechnology Funding Program in California), **$15,000**, "*A New On-Chip Three-Dimensional Separator for High-volume and High-Efficiency Molecular Diagnostic Application & Pathogen Separations*", **2008 - 2009**.
7. **PI** – University Grants Program, SDSU, **$10,000**. "*A New Three-Dimensional Manipulator of Biomolecules for High-Efficiency Molecular Diagnostic Application & Pathogen Separations*", **2006 - 2007**.

Awards and Honors

1. 8 Patent Applications. 3 Patents.
2. Selected as **'2012 highlights of JMM' (J of Micr. & Microengg)** and featured at **IEEE MEMS** for "***Organic MEMS/NEMS-based high-efficiency 3D ITO-less flexible photovoltaic cells"*** paper. I am first author; the paper is based on work done in my Lab.
3. Successfully licensed Patent #8,629,462 developed in my Lab with my collaborators, to a commercial entity under two-sets of technologies (Solar & OLED). 2010 and 2012.
4. Company I founded (*Feedelix Wireless*) was invited to TEDTalk, Arusha, Tanzania, 2007.
5. 1st Place Award to my grad students in the "Annual CSU-Wide Student Research Competition," Long Beach, CA, 2012.
6. President's Award in Research & Scholarship to my grad students in SRS (Student Research Symposium) at SDSU, 2012 & 2014. (**Twice**).
7. AISC Hot Product of the Year (1997) – Awarded by AISC (American Institute of Steel Construction) for RAMFrame™, the FE simulation program I wrote.
8. CIDA (Canadian International Development Agency) Fellowship – For undergraduate studies 1980-1984. Ranked first among 80 applicants.
9. Registered Professional Engineer in the state of California (Reg. No. C59036). Valid in several states in the US.

Board Membership

1. Scientific Advisory Board Member, Tissuenetix, San Diego, CA. Since 2012.
2. Scientific Advisory Board Member, B.I Nanotech, Montreal, Canada. Since 2014.

IV. SERVICE TO THE UNIVERSITY AND THE COMMUNITY

Service to the University

1. Member of Board of Directors, SDSU Research Foundation (SDSURF), 2014 – Present.
2. Member, Finance & Investment Committee, SDSURF, 2014 – Present.
3. Member, URC – University Research Council Committee, January 2012 - Present.
4. Graduate Advisor, Bioengineering Program, SDSU, January 2013 - Present.
5. Member, UCPC – University Copyrights and Patents Committee, March 2007 - Present.
6. Member, Search Committee for Dean of College of Engineering, SDSU, 2013.
7. Chair, Design Faculty Search Committee, Mechanical Engineering, 2015.
8. Member, Search Committee for Bioengineering Faculty, 2015.
9. Member, Search Committee for Faculty Position for NSF - ERC, SDSU, 2013, 2014.
10. Member, Search Committee for Faculty Position in Controls & Dynamics, SDSU, 2014.
11. Member, Search Committee for Faculty Position in Design, ME Department, SDSU, 2014.
12. Doctoral Faculty in the Joint Doctoral Program with UCSD, April 2007 - Present.
13. Doctoral Faculty in the SDSU Computational Sciences Center, August 2007 - Present.
14. Mechanical Engineering MSME Graduate Program Committee, 2005 - Present.
15. College of Engineering, Student Learning Outcomes Assessment Committee, 06-08.
16. Mechanical Engineering, Faculty Search Committee, 06-07.

Service to the Community

Invited Lectures [7 Keynote Addresses]

1. **Keynote Lecture,** 3rd International Conference on Smart Systems Engineering, SmaSys, Yonezawa, Yamagata, Japan, "*New Generation of Neuroprosthetics Probes Using Glassy Carbon-Based Microelectrodes for Bi-directional Brain Computer Interfaces*", **2015**.
2. **Keynote Speech,** SPIE Photonics West, Microfluidics, BioMEMS, & Medical Microsystems XIII 2014, San Francisco, "*Mechanical Stiffness, Hardness, AC Impedance, and Electrochemical Tunability in Glassy Carbon MEMS Microelectrode Structures*", **2015.**
3. **Keynote Speech,** 2014 ECS and SMEQ Joint International Meeting, Cancun, Mexico, *"Long Term Effects in Electrical Property of DNA Molecular Wires: Temperature, Electric Field, and UV Irradiation",* October **2014.**
4. **Keynote Speech,** 7th National Congress of Biomechanics, Suleyman Demirel U, Isparta, Turkey, *"New Generation of Neural Prosthetics using Glassy Carbon-based Micromachined Microelectrode Arrays,"* October **2014.**
5. **Keynote Speech,** 13th Annual National Conference on Mechanical Engineering (SNTTM XIII), University of Indonesia, Jakarta, Indonesia, *"Recent Advances in BioMEMS – Neurochips to Bionanoelectronics,"* October **2014.**
6. **Invited Talk,** ITU (Istanbul Technical University) – Nanotechnology Research Center, Istanbul, Turkey, **"***System on Flexible Substrate*", October **2014.**
7. **Invited Talk,** DFG-NSF Workshop New Perspectives of Neurotechnology and Neuroengineering, NSF Headquarter, Arlington, Virginia, November **2014**.
8. **Invited Talk**, Denmark Technical University (DTU), Department of Micro & Nano-Technology, Lyngby, Denmark, "*AC Electrical Characterizations of DNA Molecular Wires: New Insights through AC Input, Temperature, and UV Oxidation Experiments*", **2014**.
9. **Keynote Speech,** 224th ECS Meeting, San Francisco, CA, *"Long-Term Viability of DNA-Based Bionanoelectronics: Studies in Transient Effects on Electrical Property of DNA Molecular Wires",* November **2013.**
10. **Keynote Speech,** SPIE Smart Structures/NDE 2013, San Diego, CA, "*Establishing Electrical Characteristics of DNA Molecular Wires in Carbon-Based Bionanoelectronics Platform*", **2013.**
11. **Invited Talk,** Organic Optoelectronics Group, Universidad Rey Juan Carlos and Materials Science Institute, Madrid, **"***Versatility of Organic MEMS/NEMS: From High-Efficiency 3D Flexible Photovoltaic Cells to Multi-Site Neural Sensing Chips*", July **2012**.
12. **Invited Talk,** IEEE EDS Technical Meeting on Mixed Potential Sensors, Bio-Nano-Electronics and Flexible Photovoltaic Cells, SFU, Vancouver, Canada, "*Versatility of Organic MEMS/NEMS: From High-Efficiency 3-D Flexible Photovoltaic Cells to Bio-Nanoelectronics.*" August **2012**.
13. **Invited Talk,** Mechanical Engineering Department, UC Riverside, "*Protonation and Buffering in Histidine and their Effect in Promoting Nucleic Acid Hybridization in Electronically Active Electrochemical Systems"*, April **2008**.
14. Mechanical and Electrical Engineering Departments, Bahir Dar University, Bahir Dar, ET, Seminar, "*MEMS Devices: Overview and Research and Commercialization Trends",* **2008**.
15. Civil Engineering Department, Addis Ababa University, Seminar, "*Closed-form 3-D Beam FEA for Modeling Steel Buildings with RBS Moment Connections*", July 15, **2007**.
16. Structural Engineers Association of California (SEAOC), Seismology Committee, Los Angeles, CA, Talk, "*Drift Increases in Special Moment Frames with RBS Elements and Stiffness Irregularities",* August 9, **2003**.

17. University of North Carolina at Charlotte, Civil Engineering Department, Structures and Materials Group, Charlotte, NC, "*Areas of Computational Interest in Panel Zone Deformation and RBS Connections*", Seminar, May 2, **2003**.
18. Mechanical and Civil Engineering Departments, Addis Ababa University, AA, ET, "*Trends in Computational Mechanics and Finite Element Methods*", Talk, January **2002**.
19. Eth. Civil Engineers Association, "*Recent Advances in Computer-Assisted Structural Dynamics and Seismic Design*", Talk, January **2002**.
20. Computer Science Department, Addis Ababa University, AA, ET, "*Extensible Markup Language (XML) Localization Issues*", Talk, January **2002**.
21. Electrical and Mechanical Engineering Departments, Addis Ababa University, AA, ET, "*Simulation Issues for MEMS and Nano Devices*", Talk, December **2000**.
22. Civil Engineering Department, Addis Ababa University, AA, ET, "*Computational Methods and Finite Element Analysis for Earthquake Engineering*", Talk, December **2000**.

Service on Panels

1. NSF Gen III ERC, Pre-Award SVT (Site Visit Team), **2016**.
2. NSF Gen III ERC, Pre-Award SVT (Site Visit Team), **2014**.
3. NSF Panel Member, Joint ECCS&DMR on EPMD, **2015**.
4. External PhD Examiner, DTU, Denmark, Department of Micro- and Nano-Technology, **2014**.
5. NSF SVT (Site Visit Team), Gen III, ERC Proposals, **2014.**
6. NSF Panel Member, ECCS-EPDT BioFLEX Proposals, **2012.**
7. NSF SVT (Site Visit Team), NERC – Nanosystems ERC Proposals, **2011.**
8. NSF Panel Member, NERC – Nanosystems ERC Proposals, **2011.**
9. NSF Panel Member, Gen 3 - ERC Proposals, **2011**.
10. NSF Panel Member, ECCS-EPDT Proposals, February **2008**.
11. NSF Panel Member, Renewal site visit to the NSEC *Center for Hierarchical Manufacturing* (CHM) at the University of Massachusetts, Amherst, **2007**.
12. NSF Panel Member for NIRT Proposals in Hierarchical Nanomanufacturing, **2007**.
13. US CRDF (Civilian Research & Development Foundation) Grants Program, **2001/07/08**.
14. CCAT Grants Program, **2007**, **2008**.

Service for Professional Conferences

1. Organizing Committee Member, SPIE Smart Structures/NDE 2014, San Diego, CA, **2014**.
2. Session Chair, SPIE Photonics West, San Francisco, CA, **2013**.
3. Session Chair, SPIE Smart Structures/NDE 2013, San Diego, CA, **2013**.
4. Session Chair, 224th ECS Meeting (October 27–November 1, 2013), San Francisco, CA.
5. Symposium Co-Chair, SPIE International Symposium on Optomechatronic Technologies, (ISOT 2008), San Diego, CA, U.S.A, 17-19 November **2008**.
6. Program Committee Member, International Symposium on Ubiquitous Multimedia Computing (UMC-08), Hobart, Australia, October 13 - 15, **2008.**
7. Program Committee Member, IFIP World IT Forum (WITFOR), Addis Ababa, ET, **2007**.
8. Co-organizer and Program Co-chairman, Mini-symposia on Computational Modeling of BioMEMS, SIAM Conference on Computational Science and Engineering (SIAM CSE03), San Diego, CA, February 10-13, **2003**.
9. Session Chair, "Smart Structures and Integrated Systems - Control of Smart Structures", SPIE Conference on Smart Structures and Materials, San Diego, CA, March 20, **2002**.

Service in Journal Reviews

1. ECS (Electrochemical Society) Journal
2. Applied Physics Review
3. Journal of Micromechanics and Microengineeing, JMM
4. SPIE Journal of Micro/Nanolithography, MEMS, and MOEMS
5. Journal of Sensors and Actuators, Part B. Chemical
6. Journal of Microfluidics and Nanofluidics
7. IEEE Journal of Selected Topics in Quantum Electronics
8. Journal of Materials Processing Technology
9. Journal of Engineering Structures
10. International Journal of Energy Research

Thesis Advisees [Past 10 years: Graduated > 65 graduate students; > 20% women]

ME/BioE: Maria Vomero**,** Noah Goshi**,** Chris Bui, Roberto Gavuglio, Scott Seidman, Barry Tidmore, Nick Gong, Vivian Nguyen, Ali Moghadasi, Sebastien Nguyen, Jasmeet Singh, Michael Cao, Michael Quincena, Pieter van Niekerk, Varsha Ramesh, James Chi, Denni Wibowo, Beejal Mehta, Neha Chowdhry, Nasim Vahidi, Mieko Hirabayashi, Kadir Toksoy, Nick Sam-soon, Shanel Miller, Ashish Gaikwad, Mihir Parikh, Chintan Patel, Abhishek Khatri, Krishna Desai, Anson Hu, Nitesh Paramesh, Nitin Harwood, Neeraj Yadav, Namrata Tata, Vinot Vijayaraghavan, Bhuvnesh Arya, Gunay Ozturk, Mohammad Majzoub, Jiae Shin, Saravana Pichaikani, Bao Nguyen, Steve Wong, Zaid Karim, Vaibhav Patel, Sahil Patel, Alex Teeter, Berhanu Wondimu, Amandeep Singh, Mike Frank.

EE: Dr. Lei Zhou, MS, EE SDSU, Anurag Kaushik.

CS: Ashish Gupta (CS), Gaurav Kumar (CS), Dhruv Basin (CS), Aditya Kappagantula (CS)

AoE: Dhruv Patel.

PhD Students: Currently advising 2 PhD students: Alaleh Narenji and Mieko Hirabayashi.
2 more visiting PhD students from ITU for 1 year (Emre & Eda Özyilmaz)

AAU:

Dawit Hailu, PhD, Completed MS Thesis at AAU in 2004, Shiferaw Abebe, MSc, 2004, Fikreyohannes Lemma, MSc, 2004.

Visiting Scientists/Professors: Dr. Ajit Khosla, Dr. Hidemitsu Furukawa