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EDUCATION

University of California, Los Angeles

Ph.D. in Biomedical Engineering, January 2005

Thesis: Fabrication and Characterization of Biomolecule-Copolymer Hybrids as Energy Conversion Systems

M.S. in Biomedical Engineering, June 2003

Thesis: Hybrid Protein /Polymer Biomimetic Valves

B.S. in Physiological Sciences, December 2001

ACADEMIC POSITIONS

2006-Present

Assistant Professor

Northwestern University

Departments of Biomedical Engineering and Mechanical Engineering

Research Areas: Nanoscale devices for cellular gene program and neural interrogation; biotic-abiotic interfacing; Hybrid polymeric materials for cellular and protein functionalization

2006-Present

Full Member

Robert H. Lurie Comprehensive Cancer Center

Feinberg School of Medicine

Northwestern University

Research Areas: Elution of glucocorticoid and liver x receptor (LXR)/peroxisome proliferation activated receptor (PPAR γ) agonists via biologically inert thin films for the attenuation of inflammatory gene programs

2007-Present

Visiting Professor

Department of Biomedical Engineering

Peking University, Beijing China

Research Areas: RNAi-functionalized nanoparticles for controlled gene silencing.

2008-Present

Resident Faculty Member

Institute for Bionanotechnology in Medicine (IBNAM)

Northwestern University

Research Area: Nanodiamond-based Pericardial Devices for Anti-Inflammation

2005-2006

Research Associate

California Institute of Technology (Caltech)

Department of Bioengineering/Electrical Engineering

Research Topic: Using nano/micro technologies and bio-cloaking materials for improving biotic-abotic compatibility and enhancing of implant efficiency

2005-2006

California Nanosystems Institute/Hewlett-Packard Postdoctoral Research Fellow

University of California at Los Angeles (UCLA)

Department of Mechanical Engineering

Research Topic: Interfacing nanofabricated electrode arrays with neurons and cardiomyocytes for nanoscale interrogation applications

KEY CONTRIBUTIONS

1. Developed First Nanodiamond Hydrogel-Based Drug Delivery System:

- Platform technology that could be functionalized with virtually any drug
- Delivery of therapeutic proteins, antibodies, water insoluble drugs, and nucleic acids
- Chemotherapeutic activity could be switched on/off based on drug desorption and adsorption to the nanodiamond surface
- Easily dispersible in water
- Comprehensive animal model studies show *unaffected* liver function and *unaffected* animal survival
- Multiple cancer model *in vivo* studies underway with Bishop Laboratory-UCSF (*Nobel Laureate in Medicine, 1989 for the discovery of the retroviral oncogene*)
- Featured on CNN Homepage, Popular Science, United Press International, Cancer Research UK, NSTI, Nanotechweb, Yahoo/Reuters affiliates, and over 100 international news outlets

2. Developed Nanodiamond-Embedded Patch Device as a Localized Drug Delivery Implantable Microfilm:

- Device resembles 'plastic wrap' and is embedded with slow release nanodiamonds
- Extraordinary drug loading capacity of the nanodiamonds enables orders of magnitude increase in drug carrying ability with no impact on device dimensions-microfilm architecture retained for facile implantation while being non-invasive
- Technology is scalable and is developed for multi-therapeutic delivery
- Technology currently undergoing animal testing for broad applicability in cardiovascular anti-inflammation, local chemotherapy, wound healing, and pain management
- Technology has been transitioned into the founding of Biotic Laboratories, Inc., which is backed by a globally-recognized team of academician-entrepreneurs as well as thought leaders. **Technology has been featured on Reuters, Yahoo News, MSNBC, CNBC, Scientific American, and over 100 international news outlets.**

3. Developed Nanocloak Film Technology for Non-Invasive Localized Drug Delivery:

- 10,000 times thinner than existing drug delivery technology with better efficacy, demonstrated *in vivo* (Published as Cover Article in ACS Nano, Featured in Chicago Tribune and USA Today)

- Technology suppressed *in vivo* inflammation for >2 weeks with nanoscale dimensions
- No animal toxicity observed (10,000x injection of polymer yielded normal liver function)
- Degree of activity tunable depending on the number of Nanocloak layers applied

4. **Research achievements have resulted in Plenary, Keynote, and Invited Lectures at all of the major Nanodiamond/Diamond international conferences including Nanodiamond 2008 (St. Petersburg Russia), Diamond 2008 (Barcelona, Spain), and Fullerene/Nanotube Research Society meeting (Nagoya, Japan).**

HONORS AND AWARDS

- National Science Foundation CAREER Award, 2009
- Society for Manufacturing Engineering John G. Bollinger Outstanding Young Manufacturing Engineer Award, 2009
- Wallace H. Coulter Foundation Early Career Award in Translational Research, 2008
- Distinguished Young Alumnus, School of Engineering and Applied Science, UCLA, 2008
- V Scholar, V Foundation for Cancer Research (1 of 15 selected in the nation), 2008
- Plenary Speaker, 34th Fullerene-Nanotube Research Society International Meeting, Nagoya, Japan, 2008
- Invited Speaker, Diamond 2008, Barcelona, Spain, 2008
- Invited Speaker, Nanodiamond 2008, St. Petersburg, Russia, 2008
- Invited Speaker, IMEC Visionary Symposium, Leuven, Belgium, 2008
- Searle Fellow, Northwestern University, 2008
- Keynote Speaker, IEEE International Conference on Nano/Molecular Medicine and Engineering (IEEE-NANOMED), 2007
- Visiting Professor, Peking University Department of Biomedical Engineering
- IEEE *New Faces of Engineering* Honoree, (Featured on National Engineers Week website), 2007

ARCHIVED PAPERS

Published or Accepted

Publication at Northwestern University

***(82 Citations in 3 years from Papers Published at Northwestern University)**

1. X. Zhang, M. Chen, R. Lam, X. Xu, E. Osawa, and **D. Ho*** "Polymer-Functionalized Nanodiamond Platforms as Vehicles for Gene Delivery," *ACS Nano*, Epub head of print: DOI: 10.1021/nn900865g 2009.
2. M. Chen, E. Robinson, H. Huang, E. Pierstorff, and D. Ho* "Parylene-Encapsulated Copolymeric Membranes as Localized and Sustained Drug Delivery Platforms," *Annals of the Biomedical Engineering Society*, Epub ahead of print DOI: 10.1007/s10439-009-9662-9, 2009.
3. O. Loh[^], R. Lam[^], **D. Ho***, E. Espinosa*, "Nanofountain Probe-Based High Resolution Patterning and Single Cell Injection of Functionalized Nanodiamonds," Epub ahead of print; DOI: 10.1002/smll.200900361, *Small*, 2009. Selected as **Cover Article**; *Co-corresponding Authors, [^] Co-First Authors

4. M. Chen, E. Pierstorff, R. Lam, R. Chatterton, S. Khan, E. Osawa, and **D. Ho*** "Nanodiamond-Mediated Delivery of Water-Insoluble Therapeutics," *ACS Nano*, 3, 2016-2022, 2009.
5. R. Shimkunas, E. Robinson, X. Zhang, R. Lam, X. Xu, E. Osawa, and **D. Ho*** "Nanodiamond-Insulin Complexes as pH-dependent Protein Delivery Vehicles," *Biomaterials*, 30, 5720-5728, 2009.
6. R. Lam and **D. Ho*** "Nanodiamonds as Vehicles for Systemic and Localized Drug Delivery", *Expert Opinion on Drug Delivery*, 6, 883-895, 2009.
7. R. Lam, M. Chen, E. Pierstorff, H. Huang, E. Osawa, and **D. Ho***, "Nanodiamond-Embedded Microfilm Devices for Localized Chemotherapeutic Elution," *ACS Nano*, 2, 2095-2102, 2008. **(7 Citations)**
8. E. Robinson, R. Lam, E. Pierstorff, and **D. Ho***, "Localized Therapeutic Elution via an Amine Functionalized Poly-P-Xylene Microfilm Device" *J. Phys. Chem. B*, 112 (37), 11451-11455, 2008.
9. A. Fung, V. Kapadia, E. Pierstorff, **D. Ho***, Y. Chen, "Induction of Cell Death by Magnetic Actuation of Nickel Nanowires Internalized by Fibroblasts," *J. Phys. Chem. C*, (39), 15085-15088, 2008.
10. E. Pierstorff, R. Lam, and **D. Ho***, "Nanoscale Architectural Tuning of Parylene Patch Devices to Control Therapeutic Release Rates," *Nanotechnology*, 19 445104 Epub ahead of print DOI: 10.1088/0957-4484/19/44/445104, 2008.
11. H. Huang, E. Pierstorff, and **D. Ho*** "Protein-Mediated Assembly of Nanodiamond Hydrogels into a Biocompatible and Biofunctional Multilayer NanoFilm," *ACS NANO*, 2(2), 203-212, 2008. **(16 Citations)**
12. E. Chow, E. Pierstorff, G. Cheng, and **D. Ho*** "Nanofilm copolymer platform for controlled drug delivery", *ACS Nano*, 2, 33-40, 2008. **Cover Article, (9 Citations)**
13. E. Chow, B. Chu, G. Cheng, and **D. Ho***, "Utilizing Block Copolymers to Fabricate Versatile Electro-Active and Inflammation Attenuating Substrates for Biological Interrogation," *NANO*, 2(6), 351-359, 2007. **Cover Article**
14. H. Huang, E. Pierstorff, E. Osawa, and **D. Ho*** "Active Nanodiamond Hydrogels for Chemotherapeutic Delivery", 7, 3305-3314, *Nano Letters*, 2007. **(38 Citations in ~2 years)**
15. E. Osawa, **D. Ho**, H. Huang, M. Korobov, N.N. Rozhkova, "Consequences of strong and diverse electrostatic potential field on the surface of detonation nanodiamond particles," *Diamond and Related Materials*, 18, 904-909, 2009.
16. H. Huang, M. Chen, P. Bruno, R. Lam, E. Robinson, D. Gruen, and **D. Ho***, "Ultrananocrystalline Diamond Thin Films Functionalized with Therapeutically Active Collagen Networks," *J. Phys. Chem. B*, 113, 2966-2971, 2009.
17. E. Shin, M. Chen, S. Daram, S. Samuel, S. Gupta, E. Robinson, E. Pierstorff, and **D. Ho***, "Dynamic Cellular Adhesion Mediated by Copolymeric Nanofilm Substrates," *J. Assoc. Lab. Automat. (JALA)*, 13 (4) , 206-214, 2008.

18. D. S. Choi, A. O. Fung, H. Moon³, G. Villareal, Y. Chen, **D. Ho**, N. Presser, G. Stupian, and M. Leung, "Detection of neural signals with vertically grown single platinum nanowire – nanobud" *J. Nanosci. Nanotech.*, *accepted*, 2009.
19. E. Pierstorff, M. Krucoff, and **D. Ho*** "Apoptosis induction and attenuation of inflammatory gene expression in murine macrophages via multitherapeutic nanomembranes" *Nanotechnology*, 19, 265103, 2008.
20. R. Lam and **D. Ho***, The Coalescence of Nanotechnology with Systems Biology for Optimized Drug Delivery, *J. Nanotech. Law and Bus.*, 5(2), 2008 **Cover Article**
21. K. Liu, R. Lam, S. Samuel, S. Gupta, J. Leuthner, E. Pierstorff, and **D. Ho*** "Synaptotagmin – Functionalized Neuromimetic Nanomembranes ," *J. Assoc. Lab. Automat. (JALA)*, 13(4), 198-205, 2008.
22. P.K. Wong, and **D. Ho*** " Emergent Diagnostic and Therapeutic Technologies for Nano-Engineered Medicine," *Nanoengineered Medicine Special Focus-IEEE Nanotech. Mag.*, 2(2), 9-13, 2008, **Cover Article.**
23. M Liu, **D. Ho**, and Y.C. Tai, "Monolithic fabrication of three-dimensional microfluidic networks for constructing cell culture array with an integrated combinatorial mixer, *Sens. Actuators B: Chem.* 129, 826-833, 2007.
24. E. Pierstorff and **D. Ho***, "Monitoring, Diagnostic, and Therapeutic Technologies for Advanced Medicine at the Intersection of Life Science and Engineering," *Journal of Nanoscience and Nanotechnology*, 7, 2949–2968, 2007. **Cover Article**
25. D. Choi, A. Fung, H. Moon, E. Kan, **D. Ho**, Y. Chen, E. Khan, Y. Rheem, B. Yoo, and N. Myung, "Transport of living cells with magnetically assembled nanowires," *Biomed. Microdev.*, 9 (2),143-148, 2007.
26. E. Pierstorff and **D. Ho***, "Nanomembrane-Driven Co-elution and Integration of Active Chemotherapeutic and Anti-inflammatory Agents, *Int. J. Nanomedicine*, 3(4), 425-433, 2008.
27. **D. Ho***, "Nano-engineering changes to cancer therapy through translationally relevant materials" *Therapy*, 6 (1), 99 2008.

Submitted

28. L. Manus, D.J. Mastarone, E.A. Waters, X.-Q. Zhang, E.A. Schultz-Sikma, **D. Ho**, and T.J. Meade, "Gd(III)-nanodiamond conjugates for MRI contrast enhancement," *submitted*, 2009.
29. E. Robinson and **D. Ho*** "Implantable microfilm devices as scalable platforms for multi-therapeutic release," *submitted*, 2009.
30. B. Huang, E. Pierstorff, and **D. Ho*** "Collagen-Copolymer Nanofilm Active Substrating for Cellular Architecture Manipulation" *submitted*, 2009.
31. E. Schopf, Y. Chen, and **D. Ho*** "Autonomous Alignment of C2C12 Murine Myoblasts Via Hybrid Cellular Adhesion Promoter Activated Copolymers", *submitted*, 2009.

Publication Prior to Northwestern University

32. H. Lee, **D. Ho***, and C.D. Montemagno, "Fluorometric Measurement of Vectorially-Inserted Purple Membrane Activity Across Block Copolymer Thin Films," *Polymer* 47:2935-2941, (2006).
33. **D. Ho***, S. Chang, and C.D. Montemagno, "Fabrication of biofunctional nanomaterials via *Escherichia coli* OmpF protein air-water interface insertion/integration with copolymeric amphiphiles," *Nanomedicine*, 2: 103-112, (2006).
34. **D. Ho***, D. Garcia, and C.M. Ho, "Using Advanced Nanomanufacturing and Characterization Modalities Towards the Realization of Bio-Nano-Informatics Systems," *Journal of Nanoscience and Nanotechnology*, 6 (4), 1-17, 2006.
35. **D. Ho***, A. Fung, and C.D. Montemagno, "Engineering Novel Diagnosis Modalities and Implantable Cytomimetic Nanomaterials for Next Generation Medicine," *Biology of Blood and Marrow Transplantation*, 12 (1), 92-99, 2006. **Invited Paper**
36. J. Xi, **D. Ho**, B. Chu, and C.D. Montemagno, "Lessons Learned From Engineering Biologically-Active Hybrid Nano/Micro-devices," *Advanced Functional Materials* 15 (8), 1233-1240, 2005. **Feature Article**
37. **D. Ho**, B. Chu, H. Lee, and C.D. Montemagno, "Protein-driven Energy Transduction Across Polymeric Biomembranes," *Nanotechnology* 15 (8), 1084-1094, 2004
38. **D. Ho**, B. Chu, J.J. Schmidt, J., Brooks, E., Montemagno, C.D., "Hybrid Protein/Polymer Biomimetic Membrane," *IEEE Trans. Nanotechnology*, 3 (2), 256-263, 2004.
39. **D. Ho***, B. Chu, H. Lee, E.K. Brooks, K. Kuo, and C.D. Montemagno, "Light-Dependent Current Generation Based on Coupled Protein Functionality," *Nanotechnology* 16 (12), 3120-3132, 2005. **Cover Article**
40. **D. Ho**, and C.D. Montemagno, "The Advent of Innovation-Societal Perspectives of the Integrative Nanotechnology Revolution," published online at Institute of Physics website, www.nanotechweb.org; published online, *Nanotechnology*, 2005.

***Corresponding Author**

PEER-REVIEWED PROCEEDINGS PAPERS and SYMPOSIA CONTRIBUTIONS
(EI Indexed Publications are peer-reviewed by minimum of 2 referees with competitive acceptance rates often < 40% and published as Full Length Manuscripts)

Publication at Northwestern University

41. **Ho, D.***, "Engineering Intelligent Materials for the Interrogation of Bio-robotic Architectures and Regulatory Networks." Proceedings of the 2006 IEEE/RSJ, International Conference on Intelligent Robots and Systems, 1849-1854, 2006. DOI: 10.1109/IROS.2006.282306
42. **Ho, D.***, Chow, E. K.-H., and Cheng, G., "Examination of Basal and Lipopolysaccharide-Induced Cellular Stress Response to Chemical and Topographical Stimuli from Biotic-Abiotic Functionalized Materials." *Bio-Nano-Information Fusion Proc.*, 2:1-4 (2006).

43. Chow, E. K.-H., **Ho, D.**, and Cheng, G., "MEMS-based Detection and Evaluation of Distinct Immune Responses," *Bio-Nano-Information Fusion Proc.*, 2:5-8 (2006).
44. Chu, B., Pierstorff, E., and **Ho, D.***, "Polymer-Enabled Carbon Nanotube Deposition for Cellular Interrogation Applications," *Proc. of the 2nd IEEE International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)*, 2, 1034-1038, 2007.
45. Chow, E., Pierstorff, E., Cheng, G., Tai, Y.-C., and **Ho, D.***, "Attenuation of Cellular Inflammation Using Glucocorticoid-Functionalized Copolymers." *Proc. Of the 2nd IEEE International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)*, 1039 – 1043, 2007.
46. Pierstorff, E., and **Ho, D.***, "A Combinatorial Approach of Functionalizing Copolymers with Effector Molecules That Attenuate Cyto-inflammatory Responses at the Biotic-Abiotic Interface," *Proc. Mat. Res. Soc.*, 1009-U05-06, 2007. **Nominated by peer committee for outstanding presentation**
47. Shah, G.J., Pierstorff, E., **Ho, D.**, and Kim, C.-J., "Meniscus-Assisted Magnetic Bead Trapping on EWOD-Based Digital Microfluidics for Specific Protein Localization," *Proc. Transducers*, 707-710, 2007. DOI: 10.1109/SENSOR.2007.4300228
48. Liu, M.-C., **Ho, D.**, and Tai, Y.-C., "Monolithic 3-D Microfluidic Device for Cell Assay with an Integrated Combinatorial Mixer," *Proc. Transducers*, pp. 787-790, 2007. DOI: 10.1109/SENSOR.2007.4300248
49. Pierstorff, E., Krucoff, M., and **Ho, D.***, "Nanopolymeric Substrates for Cyto-Regulatory Gene Program Interrogation," *Proc. of the 7th IEEE International Conference on Nanotechnology*, 574-577, 2007. DOI:10.1109/NANO.2007.4601257, *Selected as Oral Presentation*
50. Huang, H., Pierstorff, E., Osawa, E., and **Ho, D.***, "Functionalized Nanodiamonds as Efficient Transmembrane Drug Carriers," *Proc. of the 7th IEEE International Conference on Nanotechnology*, 570-573, 2007. DOI:10.1109/NANO.2007.4601256, *Selected as Oral Presentation*
51. M. Chen, H. Huang, E. Pierstorff, E. Robinson, and **D. Ho***, "Active Parylene-Encapsulated Copolymer Membranes," *IEEE Nanomedicine*, August 6-9, 2007. *Selected as Oral Presentation*
52. Robinson, E., Huang, H., Pierstorff, E., and **Ho, D.***, "Investigation of Nanostructured Parylene-Induced Cyto-Regulatory Network Activation," *IEEE Nanomedicine*, August 6-9, 2007. *Selected as Oral Presentation*
53. Shin, E., Pierstorff, E., and **D. Ho***, "Copolymer Nanofilms as Anti-Adsorbent Cellular Substrates", *IEEE Nanomedicine*, August 6 – 9, 2007. *Selected as Oral Presentation*
54. Huang, B., Pierstorff, E., and **Ho, D.***, "Hybrid Material-Dependent Dynamic Cell Adhesion" *IEEE Nanomedicine*, August 6-9, 2007. *Selected as Oral Presentation*
55. Pierstorff, E., Krucoff, M., and **Ho, D.***, "Multifunctional Bio-Carrier Technology for Localized Inflammation Suppression," *IEEE Nanomedicine*, 1-3, August 6-9, 2007. *Selected as Oral Presentation*

56. Huang, H., Pierstorff, E., Osawa, E., and **Ho, D.***, “Nanodiamond-Based Hydrogels for Chemotherapeutic Delivery, *IEEE Nanomedicine*, August 6 – 9, 2007. *Selected as Oral Presentation*
57. Pierstorff, E., and D. Ho*, “Mimicry of Neural Membranes: Towards Bio-Active Substrates for Medical Diagnostics”, *IEEE Nanomedicine*, 2007. *Selected as Oral Presentation*
58. Chen, M., Huang, B., Shin, E., Robinson, E., Pierstorff, E., Huang, H., and **Ho, D.***, “Engineering Multifunctional Biologically-Amenable Nanomaterials for Interfacial Therapeutic Delivery and Substrate-Based Cellular Interrogation,” *IEEE Proc. BIBE*, 517-523, 2007. DOI: 10.1109/BIBE.2007.4375610, *Invited Manuscript-Only 65 full-length manuscripts selected from over 500 submissions, presented at Harvard University School of Medicine.*
59. M. Chen, H. Huang, E. Pierstorff, and **D. Ho***, ” Active Parylene-encapsulated Copolymer Membranes”, in press, *IEEE Adv. Micro, Nano, Mol. Sys.*, 2009.
60. E. Pierstorff, M. Krucoff, and **D. Ho***, “Multifunctional bio-carrier technology for localized inflammation suppression,” in press, *IEEE Adv. Micro, Nano, Mol. Sys.*, 2009.
61. Kapadia, V., Huang, H., Pierstorff, E., Chen, M., **Ho, D.***, “Magneto-Therapeutic Functionalized Carbon Nanoparticles for Interrogative Medicine,” *Proceedings of the 3rd IEEE International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)*, 3, 1074-1078, 2008.
62. Pierstorff, E., Krucoff, M., and **Ho, D.***, “Multitherapeutic Hybrid Material Platforms for Nanoengineered Medicine,” *Proceedings of the 3rd IEEE International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)*, 3, 1079-1083, 2008.
63. Liu, M.C., **Ho, D.**, and Tai, Y.-C., “A Monolithically Fabricated Combinatorial Mixer for Microchip-Based High-Throughput Cell Culturing Assays,” *Proceedings of the 2nd IEEE International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)*, 2, 1039-1043, 2007.
64. Lam, R., Chen, M., Huang, H., and **Ho, D.***, “Nanodiamond-Embedded Polymer Microfilms for Localized Therapeutic Release,” *Nanodiamond*, 3, 29-36, 2008.
65. Lam, R., Chen, M., Pierstorff, E., Huang, H., Osawa, E., and **Ho, D.***, “Nanodiamond-Parylene Hybrid Microfilms for Localized Slow Release, *Proc. IEEE-NANOMED*, 2008.
66. Lam, R., Chen, M., Osawa, E., and **Ho, D.***, “Immobilization of Drug-Nanodiamond Conjugates Within Poly(Ethylene Glycol) Diacrylate Hydrogels for Sequestration and Slow Release,” *Proc. IEEE-NANOMED*, 2008.
67. Lam, R., Chen, M., Pierstorff, E., Huang, H., Osawa, E., and **Ho, D.***, “Modulation of Localized Therapeutic Elution via Nanodiamond-Based Polymeric Devices,” *Proc. Diamond*, 2008, **Invited Presentation**
68. Choi, D., Fung, A., Moon, H., Villareal, G., Chen, Y., **Ho, D.***, Presser, N., Stupian, G., and Leung, M., “*In vitro* Detection of Neural Activity with Vertically Grown Single Platinum Nanowire,” *Proc. IEEE MEMS*, 360-362, 2009. DOI:10.1109/MEMSYS.2009.4805393. **33% Acceptance Rate**

69. Khan, S.A., Ivancic, D.Z., Zaichuk, T., Huang, H., Chen, M., Lam, R., Zhang, M., Chatterton, R.T., and **Ho, D.**, "Internalization and Retention of Nanodiamonds by MCF-7 Cells in vitro: A Potential Drug Delivery Platform," Presented at San Antonio Breast Cancer Symposium, Abstract # 2134, *Cancer Res* 2009; 69 (Suppl.): (2) page 198s. January 15, 2009.
70. Liu, W.K., Adnan, A., Kopacz, A., **Ho, D.**, and Lam, R., "Multiscale Design of Nanodiamond-Based Drug Delivery System for Engineered Medicine," *Proc. Conference on Computational Methods for Coupled Problems in Science and Engineering – COUPLED PROBLEMS 2009*.
71. Osawa, E., **Ho, D.**, Huang, H., Korobov, M.V., and Rozhkova, N.N., "Consequences of Multi-Pole Electrostatic Potential Fields on the Surface of Single-Nano Buckydiamond (SNBD) Particles," *Proc. Fullerene/Nanotube Res. Soc. Conf.*, 2009.
72. Chow, E., Huang, H., Chen, M., Zhang, X., Lam, R., Osawa, E., Bishop, M., and **Ho, D.***, "Nanodiamond-Based Therapeutic Vehicles for Treatment of Hepatocarcinoma," *IUMRS/ICMAT International Symposium*, 2009. A02367-04044
73. **Ho, D.**, "Drug Delivery for the Treatment of Cancer, Inflammation, and Wound Healing Enabled by Nanodiamond-Based Devices and Materials," *IUMRS/ICMAT International Symposium*, 2009. A02367-04379
74. Lam, R., Zhang, X., Chen, M., Huang, H., Adnan, A., Liu, W.K., Osawa, E., and **Ho, D.***, "Simulation and Experimental Validation of Nanodiamond Platforms as Sustained Therapeutic Delivery Agents', *Proc. USNCCM10*, 2009.

Prior to Northwestern University

75. **Ho, D.**, Chu, B., Lee, H., Brooks, E.K., Kuo, K., and Montemagno, C.D., "Light-Dependent Current Production Using Biofunctional ABA Triblock Copolymers," *Bio-Nano-Information Fusion*, Marina Del Rey, California, July 20, 2005.
76. Chu, B., **Ho, D.**, Lee, H., Kuo, K., and Montemagno, C.D., "Coupled-Protein Functionality for Energy Conversion in Biomimetic Systems," accepted to *IEEE Robio Conference*, Hong Kong, June 28-July 3, 2005.
77. **Ho, D.***, and Chen, Y., "Interfacing Cellular Systems with Abiotic Materials Using Composite Collagen-Block Copolymer Thin Films," *Bio-Nano-Information Fusion*, Marina Del Rey, California, July 20, 2005.
78. **Ho, D.**, Chu, B., Lee, H., and Montemagno, C.D., "Nanoscale Hybrid Protein/Polymer Functionalized Devices," *Proc. SPIE Int. Soc. Opt. Eng.* 5389, 192 (2004)
79. **Ho, D.**, Chu, B., Lee, H., and Montemagno, C.D., "Block Copolymer-Based Biomembranes Functionalized with Energy Transduction Proteins," *Proc. of the Mat. Res. Soc.* 823, W11.8.1-W11.8.6, 2004
80. **Ho, D.**, Chu, B., Lee, H., Kuo, K., and Montemagno, C.D., "Fabrication of Hybrid Bionanodevices Based on Coupled Protein Functionality," *Proc. ASME NANO*, DOI:10.1115/NANO2004-46012, p. 1-6, 2004.
81. **Ho, D.**, Chu, B., Lee, H., Kuo, K., and Montemagno, C.D., "Electrochemical Measurement of Coupled Protein Functionality Across Polymer Membranes," Accepted to *Proc. Electrochem.*

Soc.- Intl. Symp. on Nanoscale Devices, Materials, and Biological Systems: Fundamentals and Applications, Vol. AH1, 2636, 2004.

82. Chu, B., **Ho, D.**, Lee, H., Kuo, K., and Montemagno, C.D., "Enhancing Proton Exchange Membrane Functionality with Biomolecules," Accepted to *Proc. Electrochem. Soc.- Intl. Symp. on Nanoscale Devices, Materials, and Biological Systems: Fundamentals and Applications*, Vol. AH1, 2635, 2004.
83. Chu, B., **Ho, D.**, Lee, H., Kuo, K., and Montemagno, C.D., "Protein-Functionalized Proton Exchange Membranes," *Proc. ASME Nanotechnology Institute: Integrated Nanosystems: Design, Synthesis & Applications*, DOI:10.1115/NANO2004-46018, p. 1-5, 2004.
84. Lee, H., **Ho, D.**, Chu, B., Kuo, K., and Montemagno, C.D., "Reconstituting Membrane Proteins into Artificial Membranes and Detection of their Activities," *Proc. ASME NANO*, DOI:10.1115/NANO2004-46016, p.1-6, 2004.
85. Lee, H., **Ho, D.**, Chu, B., Kuo, K., and Montemagno, C.D., "Membrane Proteins in Biomimetic Systems," Accepted to *Proc. Electrochem. Soc.- Intl. Symp. on Nanoscale Devices, Materials, and Biological Systems: Fundamentals and Applications*, Vol. AH1, 2637, 2004.
86. **Ho, D.**, B. Chu, H. Lee, K. Kuo, and C.D. Montemagno, "Synthesis and Characterization of Biomolecular Hybrids as Energy Conversion Systems," *International Symposium on Environmental Nanotechnology 2004*, Taipei, Taiwan, December 1st, 2004.
87. **Ho, D.**, Schmidt, J.J., and Montemagno, C.D., "Protein/Polymer Hybrid Biomimetic Valves," *Proceedings of the Materials Research Society*, 735 C.4.5.1-C.4.5.4 (2003)
88. **Ho, D.**, Chu, B., Schmidt, J.J., Brooks, E.K., and Montemagno, C.D., "Hybrid Protein/Polymer Biomimetic Membranes," *IEEE Proceedings on Nanotechnology* (1), 379-382, 2003
89. H. Lee, **D. Ho**, J.J. Schmidt, and C.D. Montemagno, "Biosolar Powered Fabric," *IEEE Proceedings on Nanotechnology* (2), 733 –736, 2003
90. **Ho, D.**, Chu, B., Lee, H., and Montemagno, C.D., "Directed Protein Orientation by Site-Specific Labeling," *IEEE Proceedings on Nanotechnology* (2), Special Paper Session Paper Suppl. 2003
91. Huang, T., Shalchi, A., **Ho, D.**, Zhang, Y.-H., McCabe, E.R.B., and Ho, C.-M., "Rapid Bacterial Diagnosis: MEMS-Based DNA Detection," *Pediatric Research* 51 (4) 1610 Part 2 Suppl. (2002)

PEER-REVIEWED ENGINEERING CONFERENCE ABSTRACTS

92. E. Robinson, P. Bruno, D. Gruen, and **D. Ho***, "Para-Xylylene-Encapsulation of Ultrananocrystalline Diamond-Based Microchip Platforms for Controlled Multi-therapeutic Delivery", accepted to Materials Research Society Fall Meeting, SS9.4, 2009. (*Oral Presentation*)

93. R. Lam, X. Zhang, E. Osawa, and **D. Ho***, "Internalization Mechanisms of Nanodiamonds is Dependent Upon Surface Functional Groups", accepted to Materials Research Society Fall Meeting, YY2.2, 2009. (*Oral Presentation*)
94. Zhang, X.-Q., Chen, M., Lam, R., Xu, X., Osawa, E., and **Ho, D.***, "A Platform Approach to Gene Delivery Mediated by Nanodiamond-Based Vectors", accepted to Materials Research Society Fall Meeting, SS9.3, 2009. (*Oral Presentation*)
95. Chen, M., Lam, Huang, H., Osawa, E., and **Ho, D.***, "Nanodiamond-Therapeutic Complexes for Water-Insoluble Drug Delivery," accepted to Materials Research Society Fall Meeting, J17.34, 2009.
96. Chen, M., Yim, B., Oroskar, G., Lam, R., and **Ho, D.***, "Poly(ethylene glycol) Diacrylate Hydrogels for Sustained Sequential Release of Combinatorial Therapeutics," *Mat. Res. Soc.*, NN11.28, 2009.
97. R. Lam, M. Chen, E. Pierstorff, H. Huang, E. Osawa, and **D. Ho***, "Parylene Bilayer Encapsulated Drug-Nanodiamond Complexes as Chemotherapeutic Microfilm Devices," *Mat. Res. Soc. Spring*, NN10.4, 2009. (*Oral Presentation*)
98. Chen, M., Pierstorff, E., Lam, R., Huang, H., Zhang, X.-Q., and **Ho, D.***, "Nanodiamonds as Platforms for Intracellular Delivery of Water-Insoluble Chemotherapeutics and dsRNA," *Mat. Res. Soc.*, NN11.24, 2009.
99. Lam, R., Chen, M., Osawa, E., and **Ho, D.***, "Nanodiamond-Embedded Hydrogels as Therapeutic Sequestering Matrices for Localized and Sustained Bioactivity," *Mat. Res. Soc.*, MM3.12, 2009.
100. Huang, H., Chen, M., Bruno, P., Lam, R., Gruen, D., and **Ho, D.***, "Hard Meets Soft: Collagen and Therapeutic-Functionalized Ultrananocrystalline Diamond Thin Films for Anti-inflammatory Implant Coating Applications," *Mat. Res. Soc. Spring*, CC4.20, 2008.
101. Huang, H., Pierstorff, E., Osawa, E., and **Ho, D.***, "Engineering a Targeted and pH-sensitive Nanodiamond Chemotherapeutic Delivery System," *Mat. Res. Soc.*, EE4.8, 2008. *Selected as Oral Presentation*
102. Pierstorff, E., Chen, M., and **Ho, D.***, "Parylene Encapsulated Copolymer Patch Devices for Sustained and Localized Therapeutic Delivery," *Mat. Res. Soc.*, EE8.9, 2008.
103. Pierstorff, E., Chen, M., and **Ho, D.***, "Triblock Copolymer Based Platform for Multi-Physiological Targeting," *Mat. Res. Soc.*, CC5.4, 2008.
104. **Ho, D.***, and Chen, Y., "Induction of Muscle Cell Alignment Using Copolymer-Collagen Type I Biofilm," *Mat. Res. Soc.*, AA4.2, 2005.
105. **Ho, D.***, and Tai, Y.-C. "Dexamethasone-Triblock Copolymer Composites as Immune-Suppressing Materials for Enhancement of Implant Biocompatibility." *Mat. Res. Soc. CC3.5*, October 2005. *Oral Presentation*

OTHER PROCEEDINGS/SYMPOSIA PRESENTATIONS

1. **D. Ho**, J.J. Schmidt, E.K. Brooks, and C.D. Montemagno, Engineering Pore Proteins as Nanoscale Microfluidic Valves, *NM2- Conference on Molecular Mechanics*, **Scholarship Recipient**, Poster Presentation, Maui, HI, May 12-17, 2002
2. **D. Ho**, J.J. Schmidt, E.K. Brooks, and C.D. Montemagno, Engineering Pore Proteins as Nanoscale Microfluidic Valves, *California Nanosystems Institute (CNSI) Poster Symposium*, 2002
3. **D. Ho**, B. Chu, J.J. Schmidt, E.K. Brooks, and C.D. Montemagno, "Engineering Pore Proteins as Nanoscale Macromolecule Sensors", University of California Systemwide Bioengineering Symposium, San Diego, CA, June 21-23, 2003.
Best Poster Presentation Award Winner
4. **D. Ho**, B. Chu, and C.D. Montemagno, "Nanoscale Hybrid Protein/Polymer Functionalized Devices," SPIE Meeting on BioMEMS and Nanotechnology. March 2004.
5. A.O. Fung, G. Villareal, D.L. Glanzman, **D. Ho***, and Y. Chen, "Neurite response to micro/nano-patterned topographical and biochemical cues," *Society for Neuroscience Meeting*, October 14, 2006. *Corresponding Author.
6. H. Huang, E. Pierstorff, E. Osawa, and **D. Ho***, "Functionalized Nanodiamond Hydrogels as Platform Therapeutic Delivery Systems," *Proc. BMES National Meeting*, 2007. **Katten Muchin Rosenman Travel Scholarship Awarded to H. Huang from Lurie Comprehensive Cancer Center.**
7. E. Pierstorff, E. Chow, G. Cheng, and **D. Ho***, "Anti-inflammatory Polymer Nanofilms as Robust and Versatile Implant Coatings," Northwestern University Applied Research Poster, Feb. 21, 2007.
8. H. Huang, E. Pierstorff, and **D. Ho***, "Exploration of Nanodiamonds in Biomedical Applications: Chemotherapeutic Delivery and Anti-inflammatory Implant Coatings," Robert H. Lurie Comprehensive Cancer Center Poster Session, June 13, 2007.
9. **D. Ho**, B. Chu, H. Lee, and C.D. Montemagno, "Synthesis and Characterization of Biomolecule-Copolymer Hybrids as Energy Conversion Systems," *CESASC Annual Convention*, April 22, 2005.
10. **D. Ho**, B. Chu, H. Lee, and C.D. Montemagno, Functionalizing Nanoscale Polymeric Biomimetic Membranes with Energy Transduction Proteins, *CESASC Annual Convention*, May 22, 2004.

BOOKS

1. Editor, *Nanodiamonds: Applications in Biology and Medicine*, Springer-Verlag, 2009 (in pre)

BOOK CHAPTERS

1. D. Garcia, **D. Ho***, and C.M. Ho, "Bio-Nano-Information Fusion," in *Nanotechnology: Science, Innovation, and Opportunity*, 209-222, 2005.
(Includes contributions by Richard E. Smalley, Winner of the 1996 Nobel Prize in Chemistry; Mihail Roco, Director of the National Nanotechnology Initiative)

2. **D. Ho***, D. Wendell, and C.D. Montemagno, "Developing Hybrid Bionanosystems Using Synthetic Biology," in The Springer Handbook of Nanotechnology, 2, 323-343, 2005. **(Includes contributions by Gerd K. Binnig, Winner of the 1986 Nobel Prize in Physics)**

PATENTS

1. Y. Chen, R. Sun, and **D. Ho**, "Micro/Nano Optical Detection Devices for Medical Applications," pending-UCLA 2005-732, 2005.
2. **D. Ho**, E. Pierstorff, E. Chow, G. Cheng, Y.C. Tai, "Anti-Inflammatory Polymer Nanofilms as Robust and Versatile Implant Coatings,"-NU27023 Patent Disclosure, 2007. US Prov. Patent 60/942,885 Filed June 8, 2007, **Utility Patent filed 8/08.**
3. H. Huang, **D. Ho**, and E. Osawa," Nanodiamond Hydrogels as Efficient and Biocompatible Trans-membrane Drug Carriers,"-NU27051, 2007.
4. **D. Ho**, M. Chen, E. Robinson, and E. Pierstorff, "Active Parylene-Encapsulated Copolymeric Membranes (APC) for Post-Cardiovascular Surgery Suppression of Inflammation," NU patent disclosure 27095, 2007. **Utility Patent filed 8/08.**
5. **D. Ho**, R. Lam, M. Chen, H. Huang, E. Osawa, "Parylene-Nanodiamond Hybrids as Patch Devices for Localized Therapeutic Delivery, " NU patent disclosure, 2008. **Prov. Patent Filed 8/08; U.S. Provisional Patent Application Serial Number 61/059,976**
6. **D. Ho**, E. Robinson, E. Pierstorff, "Dix-A as a Platform Plastic Microfilm for Platform Drug Delivery, " NU patent disclosure, 2008. **Prov. Patent Filed 8/08**
7. **D. Ho**, X. Zhang, E. Chow, and J.M. Bishop, "Functionalized Nanodiamond Vehicles for In Vivo Tracking of Localization/Distribution and Efficacy of Activity," NU29152, 2009.
8. **D. Ho**, R. Shimkunas, E. Robinson, R. Lam "Nanodiamond-based delivery of therapeutic proteins, 2009.
9. L. Manus, D. Mastarone, **D. Ho**, T. Meade "Gd(III)-Nanodiamond Conjugates as Molecular Imaging Probes" NU 29151, 2009.
10. **D. Ho**, E. Pierstorff, M. Chen, and R. Lam, "Nanodiamond-Mediated Delivery of Water Insoluble Therapeutics," NU Patent Disclosure, NU29042, 2008.
11. **D. Ho**, R. Lam, M. Chen "A Broadly Applicable Strategy for the Potent Functionalization of Nanodiamond Surfaces with Therapeutic Compounds and Subsequent Sustained Delivery with Preserved Activity" NU29153, 2009.
12. **D. Ho**, X. Zhang, R. Lam, M. Chen, "Nanodiamond-based delivery of nucleic acids with enhanced efficiency and maintained biocompatibility," 2009.

INVITED TALK/SEMINAR PRESENTATIONS

1. "Light-Dependent Current Generation from Biofunctionalized ABA Triblock Copolymers"
Academia Sinica
Taipei, Taiwan, June 22, 2005.
2. "Realizing Cytomimicry Through Biotic-Abiotic Interfacing"

- Keck Graduate Institute Special Seminar
Claremont, CA Nov. 3rd, 2005.
3. "Fabrication of Micro/Nano Systems Through Biotic-Abiotic Interfacing"
University of California, Santa Barbara
Santa Barbara, California, Feb. 18th, 2005.
 4. "Hybrid Materials for Bioelectronic and Cellular Interrogation Technologies"
Electrical Engineering Research Colloquium
University of California, Irvine, May 3rd, 2006.
 5. "Nanobiotechnology and its Prospects for Healthcare and Medicine"
SCMJ Biotechnology Workshop
California Institute of Technology, August, 19th, 2006.
 6. "Tailored Biology : Examination of Basal and Lipopolysaccharide-Induced Cellular Stress Response to Chemical and Topographical Stimuli from Biotic-Abiotic Functionalized Materials"
Peking University Department of Biomedical Engineering
Beijing, China, October 9th 2006.
 7. "Functional Materials/Engineering Mechanics of Motor Proteins"
Association for Laboratory Automation Annual Meeting
Palm Springs, California, January 21st, 2006
 8. "Nanoscale Characterization Modalities/Advanced Materials for Medical Applications"
Association for Laboratory Automation Annual Meeting
Palm Springs, California, January 26th, 2006
 9. "Micro/Nanotechnology and its Applications towards Biology and Medicine"
National Science Foundation Summer Institute
Los Angeles, California, July 16th, 2007
 10. "Recent Advancements at the Intersection of Micro/Nanotechnology and Medicine"
Institute for Food Technologists Annual Meeting
Chicago, Illinois, July 28th, 2007
 11. **INVITED SPEAKER-** "Nanoscale and Molecular Engineering for Biomedical Applications- Fundamentals, Technology, and Applications"
IEEE-NANO International Conference Workshop
Hong Kong, China, Aug. 2, 2007
 12. **KEYNOTE PRESENTATION-** "Nanomaterial-Based Chemotherapeutic Delivery"
IEEE-Nanomedicine International Conference
Hong Kong, China, Aug.7, 2007
 13. "NanoCloak: Functionalized Nanomaterials for Cellular Interrogation and Nanoscale Medicine"
Biomedical Engineering Society National Meeting
Los Angeles, CA, 2007
 14. "Invisible Drug Delivery Technologies for Targeted Chemotherapy"
James Franck Institute-University of Chicago Computations in Science Series

Chicago, IL 2007

15. "Targeted Chemotherapy via Multifunctionalized Bio-Amenable Platforms"
Bio-Nano-Info Integration for Personalized Medicine: IEEE BIBE Nanomedicine Workshop
Harvard Medical School, Boston, MA, 2007
16. "Multifunctional Nanomaterials at the Interface of Technology and Biology"
Nanomedicine/Nanotechnology SIG
National Institutes of Health (NIH)-NIAMS, 2007
17. "Advanced Drug Delivery Empowered by Technology and Biology"
National Science Foundation SBE&S International Workshop
Institute for Innovative and Advanced Studies, National Cheng Kung University, Feb. 19, 2008.
18. "Nanomaterial-Enabled Translational Multitherapeutic Devices for Nanomedicine"
CESASC Symposium on Nano-Engineered Medicine
Los Angeles Airport Hilton, Los Angeles, April 26, 2008.
19. **SPECIAL SESSION INVITED SPEAKER**
"Engineering Carbon-Based Therapeutic Agents for Emboldened Treatment Efficacy"
IEEE NEMS Special Session on Nano-Engineered Therapeutics
Sanya, China, 2008.
20. **SPECIAL SESSION INVITED SPEAKER**
"Multifunctional Polymeric Nanofilms for Therapeutic Applications"
IEEE NEMS Special Session on Nano-Engineered Diagnostics
Sanya, China, 2008.
21. ***PLENARY SPEAKER*** "Applications of Nanodiamonds Toward Nanomedicine"
34th Fullerene-Nanotube Research International Meeting
Meijo University, Nagoya, Japan, 2008.
22. Panelist, "Biomaterials and Biotechnology"
Midwest Biomedical Engineering Council Annual Meeting
Illinois Institute of Technology, April 2008
23. "Nanocarbon-Based Microfilms for Targeted Drug Elution"
Johnson&Johnson-Ethicon
Somerville, New Jersey, April 7, 2008
24. "Transformative Drug Elution Via Nanodiamond Hydrogels"
Department of Bioengineering-The Ohio State University
Columbus, Ohio, April 16th, 2008
25. ***INVITED SPEAKER***
"Emboldened Chemotherapeutic Strategies Enabled by Nanodiamond Hydrogels"
Nanodiamond 2008
St. Petersburg, Russia, 2008.
26. ***INVITED SPEAKER***
"Nanodiamond-Based Microfilm Devices for Localized Multitherapeutic Delivery"
Diamond 2008

Barcelona, Spain, 2008.

27. * **INVITED SPEAKER**
“Nanodiamond-Based Materials at the Intersection of Technology and Drug Delivery”
IMEC-Biomaterials Symposium
Leuven, Belgium, 2008
28. “Nanomedicine and Nanodiamonds: Transformative Systemic and Localized Therapeutics”
Institute for Atomic and Molecular Sciences
Academia Sinica, December 2008
29. “Nanodiamond-Mediated Release of Combinatorial Therapeutics”
6th Foundations of Nanoscience, Self Assembling Architectures & Devices Conference (FNANO09)
Snowbird, Utah, 2009
30. “Nanocarbon-Embedded Hydrogel Devices for Therapeutic Sequestering”
International Conference on Materials for Advanced Technologies (ICMAT 2009)
International Union of Materials Research Societies (IUMRS 2009)
Singapore, 2009
31. “Emerging Therapeutic Strategies Driven By Nanomaterial Platforms”
Annual Conference-Special Session on Nanomedicine
Society of Chinese Bioscientists in America (SCBA)
Academia Sinica, Taipei, Taiwan, 2009
32. “Nanodiamond Platforms for Cancer Therapy, Inflammatory Suppression, and Wound Healing”
Summer Institute of Nanomechanics, Nanomaterials, and Nanomanufacturing
National Science Foundation
Evanston, IL, 2009
33. “Nanodiamond Platforms for Sustained Molecular Delivery”
National Science Foundation Scalable and Integrated NanoManufacturing Workshop
UC Berkeley
Berkeley, CA, February 27, 2009
34. “Polymer-Functionalized Nanodiamonds as Vehicles for Therapeutic Delivery”
IEEE-NANOMED
National Cheng Kung University, Taiwan, 2009
35. “Experimental and Modeling/Simulation Validation of Nanodiamond-Based Medical Devices”
ASME Nanoengineered Medicine Congress
Houston, Texas 2009
36. “Nanodiamond-Based Materials and Devices for the Treatment of Cancer”
University of Illinois, Chicago
Chicago, IL, Dec. 2, 2009
37. “Nanodiamond-Mediated Multi-Therapeutic Delivery of Chemotherapeutic and Wound Healing Agents”
Case Western Reserve University
Cleveland, Ohio, Nov. 3, 2009

38. "The Application of Nanodiamond Particle and Devices for Drug Delivery"
Argonne National Laboratory-Center for Nanomaterials
Argonne, IL, 2009
39. "Chemotherapeutic Treatment of Drug Resistant Tumors Mediated by Nanodiamond Hydrogels"
American Society of Nanomedicine Conference
Potomac, MD, Oct 23rd, 2009
40. "Treatment of Drug-Resistant Liver and Breast Cancer via Nanodiamond-Based Drug Delivery Agents"
Karolinska Institutet, Institute for Neuroscience
Stockholm, Sweden, Dec. 2, 2009
41. "Pre-Clinical Evaluation of Nanodiamond Chemotherapeutic Delivery Agents"
Association for Laboratory Automation-Drug Delivery Section
Palm Springs, CA 2010

OTHER TALKS/SEMINAR PRESENTATIONS

1. Biotechnology Program Seminar
Northwestern University, Evanston, IL 2007
2. "Sustained Therapy via Nanodiamond-Polymer Hybrid Platforms"
McCormick Graduate Leadership Council Interdisciplinary Seminar
Northwestern University
Evanston, IL 2009
3. "Crosstalk: It's Not Just for Proteins and Pathways"
Applied Research Day Awards Dinner
Northwestern University, Evanston, IL 2007
4. "Multifunctional Materials at the Interface of Technology and Biology"
Engineering Science and Applied Math Colloquium
Northwestern University, Evanston, IL Dec. 3rd, 2007
5. "Polymeric Nanofilms for Therapeutic Applications"
Mornings at McCormick-Featured Speaker
Evanston, Illinois, June 8, 2007.
6. "Advanced Devices Fabricated by the Coalescence of Technology and Biology"
National Science Foundation NCLT Seminar
National Center for Learning and Teaching, Northwestern University, Dec. 7th, 2007.

RESEARCH SUPPORT

Current Research Support (Total: ~\$3,120,733 as PI/my portion)

1. Project/Proposal Title: Integrative Modeling/Simulation and Experimental Validation of Nanodiamond Devices for Drug Delivery
Source of Support: National Science Foundation, Collaborative Research Program-CMMI
Total Award Amount: \$1,131,200 Total Award Period Covered: 6/1/09-5/31/12

Principal Investigator: Dean Ho

2. Project/Proposal Title: CAREER: Scalable Fabrication of Nanodiamond Patch Platforms for Sustained Drug Release
Source of Support: National Science Foundation CAREER Award
Total Award Amount: \$425,367 Total Award Period Covered: 1/9/09-12/31/13
Principal Investigator: Dean Ho
3. Project/Proposal Title: Nanodiamond-Based Microfilms for the Suppression of Pericardial Inflammation
Source of Support: Wallace H. Coulter Foundation Early Career Translational Research Award
Award Amount: \$240,000 (D. Ho) Total Award Period Covered: 8/1/08-7/31/10
Principal Investigator: Dean Ho
4. Project/Proposal Title: Active Nanodiamond Hydrogels for Chemotherapeutic Delivery
Source of Support: V Foundation for Cancer Research V Scholar Award
Award Amount: \$100,000 Total Award Period Covered: 11/01/07-10/31/09
Principal Investigator: Dean Ho
5. Principal Investigator: Dean Ho Project/Proposal Title: (Recommended)-DEVELOPMENT OF DIAMOND INTRACELLULAR NANOPROBES FOR ONCOGEN TRANSFORMATION DYNAMICS MONITORING IN LIVING CELLS (DINAMO)
Source of Support: European Commission (EU)
Total Award Amount: \$5,357,948 (My portion: \$460,733, salary cost share included) Award Period Covered: 1/9/09-12/31/13
Principal Investigator: Milos Nesladek (D. Ho; Co-PI and US Representative)
6. Project/Proposal Title: Protein/Surface Functionalization-Induced Assembly of Nanodiamond Particles
Source of Support: National Science Foundation-Center for Scalable and Integrated Nanomanufacturing
Award Amount: \$550,000 (D. Ho portion) Total Award Period Covered: 10/1/08-9/31/14
Principal Investigator: Xiang Zhang

Other Research Support

1. Project/Proposal Title: Parylene-Based Microfilm Devices for Breast Cancer Therapy
Source of Support: National Science Foundation SBIR Phase I
Total Award Amount: \$100,000 Total Award Period Covered: 6/1/09-5/31/12
Principal Investigator: Erik Pierstorff
Role: Collaborator/Consultant

Completed Research Support

1. Project/Proposal Title: Pacific-Southwest Center for Biodefense and Emerging Infectious Diseases Research-“Micro/Nano Optical and Electrochemical Diagnostic Systems for Biodefense and Emerging Infections”
Source of Support: NIH / National Institute of Allergy and Infectious Diseases
Award Amount: \$250,000 (D. Ho portion) Total Award Period Covered: 5/20/05 – 4/30/09
Principal Investigator: Alan Barbour Role: Dean Ho: Co-Investigator

2. Project/Proposal Title: Active Orientation/Encapsulation of Bacteriorhodopsin-Driven Photoenergy Transduction in Copolymer Shells
 Source of Support: American Chemical Society Petroleum Research
 Award Amount: \$40,000 (D. Ho) Total Award Period Covered: 9/01/07-8/31/09
 Principal Investigator: Dean Ho

3. Project/Proposal Title: Hydroxytamoxifen-Functionalized Nanoparticle Hydrogels for the Treatment of Breast Cancer
 Source of Support: Avon Foundation for Cancer Research
 Total Award Amount: \$25,000 Total Award Period Covered: 3/1/08-2/28/09
 Principal Investigator: Dean Ho

4. Project/Proposal Title: Local therapy of non--invasive breast cancer using nano-particle bound tamoxifen metabolites
 Source of Support: Lynn Sage Cancer Research Foundation
 Total Award Amount: \$75,000 Total Award Period Covered: 9/1/08-8/31/09
 (Extended)
 Principal Investigator: Seema Khan

5. Project/Proposal Title: Bionanotechnology and Drug Delivery Nanoeducation Modules
 Source of Support: National Science Foundation
 Total Award Amount: \$50,000 Total Award Period Covered: 10/1/08-9/31/09
 Principal Investigator: Robert Chang

TEACHING EXPERIENCE

University of California, Los Angeles-Graduate Level

Teaching Assistant, Dept. of Bioengineering Fall 2003

Cell Biology of Motor Proteins:

Provided class lectures, developed course structure, testing protocol

Northwestern University

Instructor

Biomedical Engineering 344 (Rating 5.34/6) (Winter, 2007, 2008, 2009)

Biological Performance of Materials; Development of laboratory and curriculum for undergraduate and graduate level course pertaining to interface of biology with micro/nanofabricated technology, as well as biomedical materials. Students were comprised of mostly senior Biomedical Engineering undergraduates and first-year Biomedical Engineering M.S. and Ph.D. students.

Mechanical Engineering 385 (Rating 5.31/6) (Spring 2008, Winter, 2009)

Nanotechnology; This course addressed a spectrum of principles and emerging developments in the field of nanotechnology as it pertained to sensing, actuation, materials, device, and medicine. Students were comprised of freshman-senior Mechanical, Chemical and Biomedical Engineering undergraduates and first-year and second-year Mechanical Engineering, Biomedical Engineering, and Materials Science and Engineering M.S. and Ph.D. students.

Mechanical Engineering 495 (Rating: 5.22/6) (Fall 2008)

Nanoengineered Materials for Mechanobiology; This course addressed the use of actuators to manipulate and control signaling pathways. This was a cross-disciplinary course that covered the fundamentals of micro/nanofabrication as well as molecular biology for graduate students.

Short courses

Instructor

Association for Laboratory Automation

Introduction to Nanobiotechnology, January 2009

Instructor

Kellogg School of Management

Science for Managers Course, September 2008

Instructor

Association for Laboratory Automation

Introduction to Nanobiotechnology, January 2008

Instructor

Association for Laboratory Automation

Introduction to Nanobiotechnology, January 2007

Lead Instructor

National Science Foundation Summer Institute

Micro/Nanotechnology for Applications in Biology and Medicine, July 2007

Instructor

Association for Laboratory Automation

Introduction to Nanobiotechnology, January 2006

Instructor

Kellogg School of Management

Science for Managers Course, September 2009

PROFESSIONAL SERVICES

Editorships

Editor-in-Chief, Journal of the Association for Laboratory Automation (JALA)

- Since appointment as the Editor-in-Chief, the journal submissions pipeline has increased to its highest levels since 2006.
- Multidisciplinary Journal in 14th year of publication pertaining to technologies for diagnostics and drug delivery/screening (<http://www.labautomation.org/news/pr111308c.pdf>)
- Re-developed the JALA Advisory Board which currently includes Prof. Lee Hood (NAE, NAS, IOM), Prof. Eiji Osawa (First to theoretically predict C60 (buckminsterfullerene) in 1970), Prof. Chad Mirkin (NAE, Co-Founder of Nanosphere and NanoInk), Prof. Jing Cheng (President/CEO of Capital Biochip), Prof. Nicolaas Di Rooij (Director, Institute for Microelectronics, Neuchatel, Switzerland); and Prof. Raymond Dessy (Distinguished Professor Emeritus of Chemistry, Virginia Tech University).

Associate Editor, Journal of Experimental and Applied Nanomedicine

Associate Editor, Journal of Biomedical Nanotechnology

Associate Editor, Advanced Science Letters

Focus Section Editor, IEEE Nanotechnology Magazine
Guest Editor, IEEE Nanotechnology Magazine-Nanoscale Medicine Focus
Guest Editor, Journal of the Association for Laboratory Automation
Associate Editor, Journal of Nanotechnology Law and Business
Editor, Associate Editor - UCLA Scientific Review, 2004-2005
Editor, CESASC Technical Symposium Proceedings, 2005

Reviewing

Funding Programs/Panels

National Institutes of Health NANO Study Section Panel-Nanotechnology in Biology and Medicine
Nanomanufacturing Panel-National Science Foundation
ARL/ARO 2007 Chemical and Biological Defense Basic Research Program
Air Force Office of Scientific Research
Research Grants Council-Hong Kong
National Science Foundation Remote Reviewing

Journals/Scholarly Publications

Proceedings of the National Academy of Sciences of the United States of America
Nano Letters
Small
Expert Opinion in Drug Delivery
Journal of the American Chemical Society
ACS Nano
Journal of Controlled Release
Angewandte Chemie Int'l. Ed.
Advanced Functional Materials
Advanced Engineering Materials/Advanced Biomaterials
Biomaterials
Annals of Biomedical Engineering
Journal of Biomedical Materials Research
RNA
Acta Biomaterialia
Nanotechnology
Nanoscale Research Letters
Macromolecular Rapid Communications
Journal of Biomedical Optics
Biomedical Microdevices
Journal of Micromechanics and Microengineering
Sensors and Actuators A: Physical
Journal of Nanoscience and Nanotechnology
Artech House Book Proposal- Engineering in Medicine and Biology
Journal of Microelectromechanical Systems (JMEMS)
Smart Materials and Structures
MRS Bulletin
Journal of Applied Physics
Applied Physics Letters
Nanomedicine
Pediatric Research
Thin Solid Films
Journal of Nanotechnology Law and Business
Journal of Biomedical Nanotechnology
Diamond and Related Materials
Colloid and Surfaces B: Biointerfaces

Biomedical Materials

Committee Memberships

Co-Chairman, CESASC Technical Symposium, 2005
Co-Chairman, CESASC Technical Symposium Poster Session, 2006
Co-Chairman, SCMJ-Caltech Biotechnology Workshop, August 19, 2006 Caltech
Member, Technical Program Committee, IEEE NEMS International Conference, 2007
Member, Technical Program Committee, IEEE NANO International Conference, 2007
Member, Awards Committee, IEEE NEMS International Conference, 2007
Member, Technical Program Committee, IEEE NEMS International Conference, 2008
Co-Chairman, Medical Micro/Nanotechnology Workshop, IEEE-NANO International Conference, 2007
Track Co-Chair, Micro/nano systems track, ASME IMECE Congress, Seattle, WA 2007
Member, Chinese International NEMS Network
Lead Instructor, National Science Foundation Summer Institute on Nanomechanics and Materials, 2007
Chairman, Invited Session, IEEE-NEMS 2008
Chairman, Nano-Engineered Medicine Symposium, CESASC Annual Convention, 2008
Co-Chairman, Invited Session, IEEE-NEMS 2009
Member, Technical Program Committee, IEEE NEMS International Conference, 2009
Session Chair, Plenary Session, IEEE NEMS International Conference, 2009
Session Chair, Drug Delivery, American Society of Nanomedicine Conference, 2009
Track Chair, Design and Manufacturing of Medical Devices, NanoEngineering for Medicine and Biology Congress, 2010

University Committee Memberships

Northwestern University Faculty Committees

MD-PhD Admissions Committee Member (Medical Scientist Training Program-MSTP)(Winter 2009, Spring 2009)
Coordinator-Mechanical Engineering Department Seminar (2008-2009)
Coordinator-Biomedical Engineering Department Seminars (Fall 2009)
Biomedical Engineering Society Chapter Advisor (Fall 2009-Current)
Member-Northwestern University Hearing and Appeals System Board (Spring 2009)
Member-Northwestern University Fraternity and Sorority Advisory Board (Fall 2006)

PROFESSIONAL EXPERIENCE

May 2007- Present

Board of Directors, Co-Founder, Biotic Laboratories, Inc., Culver City, CA

- *As of July of 2008 Biotic Laboratories is capitalized and operating out of 8,000 sq. ft. facility with full-time employees in place performing basic R&D as well as translational development.*
- Developed NanoCloak and Promeric technologies for implant coatings and standalone drug delivery devices-Collaborators include faculty and researchers from the UCSF School of Medicine, UCLA School of Medicine, and Northwestern University
- Platform drug delivery system capable of 'cloaking' implants, demonstrated in *in vivo* model/pre-clinical trials of inflammation suppression completed
- Development of partnerships with government agencies and industry leaders for technology development
- www.bioticlabs.com

January 2005-January 2006

Consultant, Biosolar Energia, Inc., Los Angeles, CA

- Demonstrated core company technology during doctoral studies (lead author)
- Acquired seed capital from one of Europe's largest energy conglomerates

January 2000-2001

Director-at-Large, Board of Directors, University Camps, Inc., Los Angeles, CA

- Only student member during term to serve on board of directors of 70 year-old UCLA philanthropy
- Board honorary chairman, Los Angeles District Attorney, Gil Garcetti. Members: John Wooden, Peter J. Taylor, Albert Carnesale, Jamaal Wilkes

PROFESSIONAL MEMBERSHIPS

Materials Research Society
 Institute of Electrical and Electronics Engineers, Inc. (IEEE)
 American Society of Mechanical Engineers (ASME)
 Society for Optical Engineering (SPIE)
 American Association for the Advancement of Science (AAAS)
 Member, Biomedical Engineering Society
 Founding Member, American Academy of Nanomedicine
 Member, Society for Neuroscience
 Full Member, Sigma Xi Research Society

STUDENT AND POSTDOCTORAL ADVISEES

Postdoctoral Researchers

Erik Pierstorff, Ph.D.
 Houjin Huang, Ph.D.
 Xueqing Zhang, Ph.D.

Graduate Students

Robert Lam (Recipient of Ryan, PSED, and Biotechnology Cluster Fellowships, 4 First-authored journal papers, 5 co-authored journal papers, 12 peer-reviewed conference abstracts, 5 patent filings), Ph.D. expected 2011
 Erik Robinson (Murphy Fellow, 2 First-authored journal papers, 3 co-authored journal papers), Ph.D. expected 2012
 Michelle Hallikainen (Ph.D. Co-Advisee), Ph.D. expected 2012
 Brian Lam, M.S. 2008
 Karen Liu, M.S. 2008
 Rafael Shimkunas (1 First-authored journal paper), M.S. 2009
 Sonia Wu, M.S. 2008
 Jessica Lee, M.S. 2008
 Justin Derbas, M.S. 2009

Medical Students

Charles Chaney
 Adrienne Smith
 Laura Moore

Undergraduate Students

Mark Chen^{1,2,4}
 Brian Mikolajczyk (National Cancer Institute REU Student)

Himanshu Aggarwal
Brian Huang^{1,3} (Northwestern University Graduate School)
Michael Awadalla
Vishal Kapadia^{1,3}
Shirley Bochman
Kunj Sheth (Northwestern University School of Medicine)
Jenni Boswell (Abbott Laboratories)
Eric Shin^{1,3} (Indiana University School of Medicine)
Max Krucoff¹
Shiva Daram³
Suraj Gupta¹ (Northwestern University School of Medicine)
Justin Derbas (Northwestern University Graduate School)
Liang Xiang (Northwestern University Graduate School)
Karthik Garapati³
Frank Zhou (Air Force Research Laboratories)
Rebecca Hoo
Nathan Stackhouse
Ryan Whitfield
Stephen Lu
John Leuthner¹
Siby Samuel¹
Brandon Yim
Brian Mikolajczyk⁵

High School Students

Gautham Oroskar

¹ Undergraduate who is lead author or co-author of peer-reviewed manuscript

² Awarded funding from Associate Provost and Associate Dean of Weinberg College for conference fellowship

³ Awarded McCormick Corporate Partners Research Grant

⁴ Northwestern University Undergraduate Research Award

⁵ National Cancer Institute Center for Cancer Nanotechnology Excellence Fellowship

Service as a M.S./Ph.D. Committee Member

Ph.D. Student Committees

Carrie Brubaker (Messersmith)

Hyun-Ok Ham (Messersmith)

Hannah Tuinstra (Shea)

John Kuang (Messersmith)

Saahir Khan (Stupp)

Rocio Vargas-Pinto (M. Johnson)

Adrian Kopacz (W. Liu)

Jaclyn Shepard (Shea)

Bei Peng (Espinosa)

M.S. Student Committees

Miller Tsai (Ameer)

Anand Jagannath (Ameer)

Andrea Ho (Espinosa)

NEWS COVERAGE

National Geographic Channel 'Known Universe' Television Program

- Nanodiamonds and Nanodiamond Microfilm technologies pioneered by Prof. Ho featured in February 2009 on the National Geographic Channel Program 'Known Universe-Biggest and Smallest'
- Program will include interview with Prof. Dean Ho pertaining to the impact of Nanotechnology on Medicine and the treatment of cancer

Nanodiamonds for Drug Delivery of Chemotherapeutics, Therapeutic Proteins, and Water Insoluble Drugs (Partial list of > 200 international news outlets)

- CNN Homepage (CNN.com)
- United Press International (UPI.com)
- Popular Science
- Yahoo-India-"Nanodiamonds Offer Safer, Effective Drug Delivery System" October 14th, 2007
- AAAS Science Update
- Nature Nanotechnology

Nanodiamond Devices for Sustained and Localized Chemotherapy (Partial list of > 100 international news outlets)

- National Science Foundation
- Reuters
- Yahoo News
- Yahoo Health
- MSNBC
- CNBC
- Scientific American
- MSN Health
- American Society of Clinical Oncology
- Science Daily

Polymeric Nanofilms For Controlled Drug Elution (Partial list of > 50 international news outlets)

- USA Today
- Chicago Tribune
- Science Daily