Stanford

# Nicholas Melosh

Professor of Materials Science and Engineering

### CONTACT INFORMATION

- **Administrator**

  Alice Jung - Administrative Associate

  **Email** alijung@stanford.edu

  **Tel** (650)725-9486

## Bio

### BIO

The Melosh group explores how to apply new methods from the semiconductor and self-assembly fields to important problems in biology, materials, and energy. We think about how to rationally design engineered interfaces to enhance communication with biological cells and tissues, or to improve energy conversion and materials synthesis. In particular, we are interested in seamlessly integrating inorganic structures together with biology for improved cell transfection and therapies, and designing new materials, often using diamondoid molecules as building blocks.

My group is very interested in how to design new inorganic structures that will seamless integrate with biological systems to address problems that are not feasible by other means. This involves both fundamental work such as to deeply understand how lipid membranes interact with inorganic surfaces, electrokinetic phenomena in biologically relevant solutions, and applying this knowledge into new device designs. Examples of this include “nanostraw” drug delivery platforms for direct delivery or extraction of material through the cell wall using a biomimetic gap-junction made using nanoscale semiconductor processing techniques. We also engineer materials and structures for neural interfaces and electronics pertinent to highly parallel data acquisition and recording. For instance, we have created inorganic electrodes that mimic the hydrophobic banding of natural transmembrane proteins, allowing them to ‘fuse’ into the cell wall, providing a tight electrical junction for solid-state patch clamping. In addition to significant efforts at engineering surfaces at the molecular level, we also work on ‘bridge’ projects that span between engineering and biological/clinical needs. My long history with nano- and microfabrication techniques and their interactions with biological constructs provide the skills necessary to fabricate and analyze new bio-electronic systems.

Research Interests:

Bio-inorganic Interface

Molecular materials at interfaces

Self-Assembly and Nucleation and Growth

### ACADEMIC APPOINTMENTS

- Professor, Materials Science and Engineering
- Member, Bio-X

- Member, Maternal & Child Health Research Institute (MCHRI)
- Affiliate, Precourt Institute for Energy
- Faculty Fellow, Sarafan ChEM-H
- Member, Wu Tsai Neurosciences Institute

### ADMINISTRATIVE APPOINTMENTS

- Director, Stanford Nanofabrication Center, (2018- present)

### PROFESSIONAL EDUCATION

- PhD, University of California at Santa Barbara , Materials Science and Engineering (2001)
- BS, Harvey Mudd College , Chemistry (1996)

## Teaching

### COURSES

**2023-24**

- Materials Matter: MATSCI 10 (Aut)
- Nano-Biotechnology: MATSCI 380 (Spr)

### STANFORD ADVISEES

**Postdoctoral Faculty Sponsor**

Viktoryia Shautsova

**Doctoral Dissertation Advisor (AC)**

Tyler Chen, Siddharth Doshi, Pingyu Wang

**Doctoral Dissertation Co-Advisor (AC)**

Andrew Shin

**Postdoctoral Research Mentor**

Viktoryia Shautsova

**Doctoral (Program)**

Andrew Shin, Pingyu Wang

## Publications

### PUBLICATIONS

- **Direct electron beam patterning of electro-optically active PEDOT:PSS** *NANOPHOTONICS*
  Doshi, S., Ludescher, D., Karst, J., Floess, M., Carlstrom, J., Li, B., Hemed, N., Duh, Y., Melosh, N. A., Hentschel, M., Brongersma, M., Giessen, H.
  2024
- **Efficient Photonic Integration of Diamond Color Centers and Thin-Film Lithium Niobate** *ACS PHOTONICS*
  Riedel, D., Lee, H., Herrmann, J. F., Grzesik, J., Ansari, V., Borit, J., Stokowski, H. S., Aghaeimeibodi, S., Lu, H., McQuade, P. J., Melosh, N. A., Shen, Z., Safavi-Naeini, et al
  2023; 10 (12): 4236-4243
- **A CMOS-based highly scalable flexible neural electrode interface.** *Science advances*
  Zhao, E. T., Hull, J. M., Mintz Hemed, N., Ulu#an, H., Bartram, J., Zhang, A., Wang, P., Pham, A., Ronchi, S., Huguenard, J. R., Hierlemann, A., Melosh, N. A.
  2023; 9 (23): eadf9524

- **Direct-print three-dimensional electrodes for large- scale, high-density, and customizable neural inter- faces.** *bioRxiv : the preprint server for biology*
  Wang, P., Wu, E. G., Ulu#an, H., Phillips, A. J., Rose Hays, M., Kling, A., Zhao, E. T., Madugula, S., Vilkhu, R. S., Vasireddy, P. K., Hier-Lemann, A., Hong, G., Chichilnisky, et al
  2023
- **On-Demand, Reversible, Ultrasensitive Polymer Membrane Based on Molecular Imprinting Polymer.** *ACS nano*
  Mintz Hemed, N., Leal-Ortiz, S., Zhao, E. T., Melosh, N. A.
  2023
- **Decoding and Modulation of Spiking Activity of the Sciatic Nerve in an Awake and Moving Rodent**
  Fischer, K. S., Zhao, E. T., Maan, Z., Barrera, J., Noishiki, C., Litmanovich, B., Henn, D., Mojadidi, S. M., Gonzalez, J., Sivaraj, D., Hostler, A., Hahn, W., Chen, et al
  WILEY.2023: 267-268
- **An integrated perspective for the diagnosis and therapy of neurodevelopmental disorders - From an engineering point of view.** *Advanced drug delivery reviews*
  Mintz Hemed, N., Melosh, N. A.
  2023; 194: 114723
- **Heterologous reporter expression in the planarian Schmidtea mediterranea through somatic mRNA transfection.** *Cell reports methods*
  Hall, R. N., Weill, U., Drees, L., Leal-Ortiz, S., Li, H., Khariton, M., Chai, C., Xue, Y., Rosental, B., Quake, S. R., Sanchez Alvarado, A., Melosh, N. A., Fire, et al
  2022; 2 (10): 100298
- **Wafer-scale microfabrication of flexible organic electrochemical transistors** *FLEXIBLE AND PRINTED ELECTRONICS*
  Thiburce, Q., Melosh, N., Salleo, A.
  2022; 7 (3)
- **Ag-Diamond Core-Shell Nanostructures Incorporated with Silicon-Vacancy Centers.** *ACS materials Au*
  Li, S., Francaviglia, L., Kohler, D. D., Jones, Z. R., Zhao, E. T., Ogletree, D. F., Weber-Bargioni, A., Melosh, N. A., Hamers, R. J.
  2022; 2 (2): 85-93
- **Mechanical Stimulation after Centrifuge-Free Nano-Electroporative Transfection Is Efficient and Maintains Long-Term T Cell Functionalities.** *Small (Weinheim an der Bergstrasse, Germany)*
  Tay, A., Melosh, N.
  2021: e2103198
- **Quantum Photonic Interface for Tin-Vacancy Centers in Diamond** *PHYSICAL REVIEW X*
  Rugar, A. E., Aghaeimeibodi, S., Riedel, D., Dory, C., Lu, H., McQuade, P. J., Shen, Z., Melosh, N. A., Vuckovic, J.
  2021; 11 (3)
- **Narrow-linewidth tin-vacancy centers in diamond waveguides**
  Rugar, A. E., Aghaeimeibodi, S., Dory, C., Lu, H., McQuade, P. J., Mishra, S., Sun, S., Shen, Z., Melosh, N. A., Vuckovic, J., IEEE
  IEEE.2021
- **Narrow-Linewidth Tin-Vacancy Centers in a Diamond Waveguide** *ACS PHOTONICS*
  Rugar, A. E., Dory, C., Aghaeimeibodi, S., Lu, H., Sun, S., Mishra, S., Shen, Z., Melosh, N. A., Vuckovic, J.
  2020; 7 (9): 2356–61
- **Generation of Tin-Vacancy Centers in Diamond via Shallow Ion Implantation and Subsequent Diamond Overgrowth.** *Nano letters*
  Rugar, A. E., Lu, H., Dory, C., Sun, S., McQuade, P. J., Shen, Z., Melosh, N. A., Vuckovic, J.
  2020
- **Synergistic enhancement of electrocatalytic CO2 reduction to C2 oxygenates at nitrogen-doped nanodiamonds/Cu interface.** *Nature nanotechnology*
  Wang, H., Tzeng, Y., Ji, Y., Li, Y., Li, J., Zheng, X., Yang, A., Liu, Y., Gong, Y., Cai, L., Li, Y., Zhang, X., Chen, et al
  2020
- **Massively parallel microwire arrays integrated with CMOS chips for neural recording.** *Science advances*
  Obaid, A. n., Hanna, M. E., Wu, Y. W., Kollo, M. n., Racz, R. n., Angle, M. R., Müller, J. n., Brackbill, N. n., Wray, W. n., Franke, F. n., Chichilnisky, E. J., Hierlemann, A. n., Ding, et al
  2020; 6 (12): eaay2789

- **Generation of Tin-Vacancy Centers in Diamond via Shallow Ion Implantation and Subsequent Diamond Overgrowth** *Nano Letters*
  Rugars, A. E., Lu, H., Dory, C., Sun, S., McQuade, P., Shen, Z., Melosh, N., Vu#kovi#, J.
  2020; 20 (3): 1614-1619

- **CHIME: CMOS-Hosted in vivo Microelectrodes for Massively Scalable Neuronal Recordings.** *Frontiers in neuroscience*
  Kollo, M., Racz, R., Hanna, M., Obaid, A., Angle, M. R., Wray, W., Kong, Y., Muller, J., Hierlemann, A., Melosh, N. A., Schaefer, A. T.
  2020; 14: 834

- **Site-controlled generation of tin-vacancy centers in diamond via shallow ion implantation and diamond overgrowth**
  Rugar, A. E., Lu, H., Dory, C., Sun, S., McQuade, P. J., Shen, Z., Melosh, N. A., Vuckovic, J., IEEE
  IEEE.2020

- **Transfection with Nanostructure Electro-Injection is Minimally Perturbative** *ADVANCED THERAPEUTICS*
  Tay, A., Melosh, N.
  2019; 2 (12)

- **Transfection with nanostructure electro-injection is minimally perturbative.** *Advanced therapeutics*
  Tay, A., Melosh, N.
  2019; 2 (12)

- **Impact of Rigidity on Molecular Self-Assembly.** *Langmuir : the ACS journal of surfaces and colloids*
  King, E. M., Gebbie, M. A., Melosh, N. A.
  2019

- **Surface Photovoltage-Induced Ultralow Work Function Material for Thermionic Energy Converters** *ACS ENERGY LETTERS*
  Schindler, P., Riley, D. C., Bargatin, I., Sahasrahuddhe, K., Schwede, J. W., Sun, S., Pianetta, P., Shen, Z., Howe, R. T., Melosh, N. A.
  2019; 4 (10): 2436–43

- **Nanodiamond Integration with Photonic Devices** *LASER & PHOTONICS REVIEWS*
  Rodulaski, M., Zhang, J., Tzeng, Y., Lagoudakis, K. G., Ishiwata, H., Dory, C., Fischer, K. A., Kelaita, Y. A., Sun, S., Maurer, P. C., Alassaad, K., Ferro, G., Shen, et al
  2019

- **Micron-gap spacers with ultrahigh thermal resistance and mechanical robustness for direct energy conversion.** *Microsystems & nanoengineering*
  Nicaise, S. M., Lin, C., Azadi, M., Bozorg-Grayeli, T., Adebayo-Ige, P., Lilley, D. E., Pfitzer, Y., Cha, W., Van Houten, K., Melosh, N. A., Howe, R. T., Schwede, J. W., Bargatin, et al
  2019; 5: 31

- **Micron-gap spacers with ultrahigh thermal resistance and mechanical robustness for direct energy conversion** *MICROSYSTEMS & NANOENGINEERING*
  Nicaise, S. M., Lin, C., Azadi, M., Bozorg-Grayeli, T., Adebayo-Ige, P., Lilley, D. E., Pfitzer, Y., Cha, W., Van Houten, K., Melosh, N. A., Howe, R. T., Schwede, J. W., Bargatin, et al
  2019; 5

- **Sparking to life.** *Nature materials*
  Melosh, N. A.
  2019

- **Nanostructured Materials for Intracellular Cargo Delivery.** *Accounts of chemical research*
  Tay, A. n., Melosh, N. n.
  2019

- **Frequency Tunable Single-Photon Emission From a Single Atomic Defect in a Solid**
  Sun, S., Zhang, J., Fischer, K. A., Burek, M. J., Dory, C., Lagoudakis, K. G., Tzeng, Y., Radulaski, M., Kelaita, Y., Safavi-Naeini, A., Shen, Z., Melosh, N. A., Chu, et al
  IEEE.2019

- **Cavity-Enhanced Raman Emission from a Single Color Center in a Solid.** *Physical review letters*
  Sun, S., Zhang, J. L., Fischer, K. A., Burek, M. J., Dory, C., Lagoudakis, K. G., Tzeng, Y., Radulaski, M., Kelaita, Y., Safavi-Naeini, A., Shen, Z., Melosh, N. A., Chu, et al
  2018; 121 (8): 083601

- **An Ultrastrong Double-Layer Nanodiamond Interface for Stable Lithium Metal Anodes** *JOULE*
  Liu, Y., Tzeng, Y., Lin, D., Pei, A., Lu, H., Melosh, N. A., Shen, Z., Chu, S., Cui, Y.
  2018; 2 (8): 1595–1609

- **Experimental measurement of the diamond nucleation landscape reveals classical and nonclassical features.** *Proceedings of the National Academy of Sciences of the United States of America*
  Gebbie, M. A., Ishiwata, H., McQuade, P. J., Petrak, V., Taylor, A., Freiwald, C., Dahl, J. E., Carlson, R. M., Fokin, A. A., Schreiner, P. R., Shen, Z., Nesladek, M., Melosh, et al
  2018

- **Electronic and Ionic Materials for Neurointerfaces** *ADVANCED FUNCTIONAL MATERIALS*
  Ferro, M. D., Melosh, N. A.
  2018; 28 (12)

- **Sterically controlled mechanochemistry under hydrostatic pressure** *NATURE*
  Yan, H., Yang, F., Pan, D., Lin, Y., Hohman, J., Solis-Ibarra, D., Li, F., Dahl, J. P., Carlson, R. K., Tkachenko, B. A., Fokin, A. A., Schreiner, P. R., Galli, et al
  2018; 554 (7693): 505-+

- **Monochromatic Photocathodes from Graphene-Stabilized Diamondoids** *NANO LETTERS*
  Yan, H., Narasimha, K. T., Denlinger, J., Li, F., Mo, S., Hohman, J., Dahl, J. P., Carlson, R. K., Tkachenko, B. A., Fokin, A. A., Schreiner, P. R., Hussain, Z., Shen, et al
  2018; 18 (2): 1099–1103

- **Strongly Cavity-Enhanced Spontaneous Emission from Silicon-Vacancy Centers in Diamond** *NANO LETTERS*
  Zhang, J., Sun, S., Burek, M. J., Dory, C., Tzeng, Y., Fischer, K. A., Kelaita, Y., Lardakis, K. G., Radulaski, M., Shen, Z., Melosh, N. A., Chu, S., Loncar, et al
  2018; 18 (2): 1360–65

- **Functionalisation of Detonation Nanodiamond for Monodispersed, Soluble DNA-Nanodiamond Conjugates Using Mixed Silane Bead-Assisted Sonication Disintegration** *SCIENTIFIC REPORTS*
  Edgington, R., Spillane, K. M., Papageorgiou, G., Wray, W., Ishiwata, H., Labarca, M., Leal-Ortiz, S., Reid, G., Webb, M., Foord, J., Melosh, N., Schaefer, A. T.
  2018; 8: 728

- **Roadmap on semiconductor-cell biointerfaces.** *Physical biology*
  Tian, B., Xu, S., Rogers, J. A., Cestellos-Blanco, S., Yang, P., Carvalho-de-Souza, J. L., Bezanilla, F., Liu, J., Bao, Z., Hjort, M., Cao, Y., Melosh, N., Lanzani, et al
  2018; 15 (3): 031002

- **Cellular Differentiation of Human Monocytes Is Regulated by Time-Dependent Interleukin-4 Signaling and the Transcriptional Regulator NCOR2** *IMMUNITY*
  Sander, J., Schmidt, S. V., Cirovic, B., McGovern, N., Papantonopoulou, O., Hardt, A., Aschenbrenner, A. C., Kreer, C., Quast, T., Xu, A. M., Schmidleithner, L. M., Theis, H., Lan Do Thi Huong, et al
  2017; 47 (6): 1051-+

- **Self-Assembly of Mesoscale Artificial Clathrin Mimics** *ACS NANO*
  Kong, Y., Hanna, M. S., Zhuo, D., Chang, K. G., Bozorg-Grayeli, T., Melosh, N. A.
  2017; 11 (10): 9889–97

- **Quantifying and Elucidating Thermally Enhanced Minority Carrier Diffusion Length Using Radius-Controlled Rutile Nanowires** *NANO LETTERS*
  Zhang, L., Sun, L., Guan, Z., Lee, S., Li, Y., Deng, H. D., Li, Y., Ahlborg, N. L., Boloor, M., Melosh, N. A., Chueh, W. C.
  2017; 17 (9): 5264–72

- **Electron-emission materials: Advances, applications, and models** *MRS BULLETIN*
  Trucchi, D. M., Melosh, N. A.
  2017; 42 (7): 488–92

- **Nondestructive nanostraw intracellular sampling for longitudinal cell monitoring** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Cao, Y., Hjort, M., Chen, H., Birey, F., Leal-Ortiz, S. A., Han, C. M., Santiago, J. G., Pasca, S. P., Wu, J. C., Melosh, N. A.
  2017; 114 (10): E1866–E1874

- **Temperature-dependent optical properties of titanium nitride** *APPLIED PHYSICS LETTERS*
  Briggs, J. A., Naik, G. V., Zhao, Y., Petach, T. A., Sahasrabuddhe, K., Goldhaber-Gordon, D., Melosh, N. A., Dionne, J. A.

2017; 110 (10)

- **Hybrid metal-organic chalcogenide nanowires with electrically conductive inorganic core through diamondoid-directed assembly.** *Nature materials*
  Yan, H., Hohman, J. N., Li, F. H., Jia, C., Solis-Ibarra, D., Wu, B., Dahl, J. E., Carlson, R. M., Tkachenko, B. A., Fokin, A. A., Schreiner, P. R., Vailionis, A., Kim, et al
  2017; 16 (3): 349-355

- **Nondestructive nanostraw intracellular sampling for longitudinal cell monitoring.** *Proceedings of the National Academy of Sciences of the United States of America*
  Cao, Y., Hjort, M., Chen, H., Birey, F., Leal-Ortiz, S. A., Han, C. M., Santiago, J. G., Pasca, S. P., Wu, J. C., Melosh, N. A.
  2017

- **Vertical-Substrate MPCVD Epitaxial Nanodiamond Growth.** *Nano letters*
  Tzeng, Y., Zhang, J. L., Lu, H., Ishiwata, H., Dahl, J., Carlson, R. M., Yan, H., Schreiner, P. R., Vuckovic, J., Shen, Z., Melosh, N., Chu, S.
  2017

- **Back-gated graphene anode for more efficient thermionic energy converters** *NANO ENERGY*
  Yuan, H., Riley, D. C., Shen, Z., Pianetta, P. A., Melosh, N. A., Howe, R. T.
  2017; 32: 67-72

- **Direct Intracellular Delivery of Cell Impermeable Probes of Protein Glycosylation Using Nanostraws.** *Chembiochem*
  Xu, A. M., Wang, D. S., Shieh, P., Cao, Y., Melosh, N.
  2017

- **Complete Coherent Control of Silicon-Vacancies in Diamond Nanopillars Containing Single Defect Centers**
  Zhang, J., Lagoudakis, K. G., Tzeng, Y., Dory, C., Radulaski, M., Kelaita, Y., Fischer, K. A., Shen, Z., Melosh, N. A., Chu, S., Vuckovic, J., IEEE
  IEEE.2017

- **Complete coherent control of silicon vacancies in diamond nanopillars containing single defect centers** *OPTICA*
  Zhang, J. L., Lagoudakis, K. G., Tzeng, Y., Dory, C., Radulaski, M., Kelaita, Y., Fischer, K. A., Sun, S., Shen, Z., Melosh, N., Chu, S., Vuckovic, J.
  2017; 4 (11): 1317-1321

- **Electronic devices: Nanoparticles make salty circuits.** *Nature nanotechnology*
  Yan, H., Melosh, N.
  2016; 11 (7): 579-580

- **Fabrication of Sealed Nanostraw Microdevices for Oral Drug Delivery** *ACS NANO*
  Fox, C. B., Cao, Y., Nemeth, C. L., Chirra, H. D., Chevalier, R. W., Xu, A. M., Melosh, N. A., Desai, T. A.
  2016; 10 (6): 5873-5881

- **Ultralow effective work function surfaces using diamondoid monolayers.** *Nature nanotechnology*
  Narasimha, K. T., Ge, C., Fabbri, J. D., Clay, W., Tkachenko, B. A., Fokin, A. A., Schreiner, P. R., Dahl, J. E., Carlson, R. M., Shen, Z. X., Melosh, N. A.
  2016; 11 (3): 267-272

- **Hybrid Group IV Nanophotonic Structures Incorporating Diamond Silicon-Vacancy Color Centers.** *Nano letters*
  Zhang, J. L., Ishiwata, H., Babinec, T. M., Radulaski, M., Müller, K., Lagoudakis, K. G., Dory, C., Dahl, J., Edgington, R., Soulière, V., Ferro, G., Fokin, A. A., Schreiner, et al
  2016; 16 (1): 212-7

- **Hybrid Group IV Nanophotonic Structures Incorporating Diamond Silicon-Vacancy Color Centers** *NANO LETTERS*
  Zhang, J. L., Ishiwata, H., Babinec, T. M., Radulaski, M., Mueller, K., Lagoudakis, K. G., Dory, C., Dahl, J., Edgington, R., Souliere, V., Ferro, G., Fokin, A. A., Schreiner, et al
  2016; 16 (1): 212-217

- **Low Strain Silicon-Vacancy Color Centers in Diamond Nanopillar Arrays**
  Zhang, J., Ishiwata, H., Babinec, T. M., Radulaski, M., Muller, K., Lagoudakis, K. G., Dory, C., Shen, Z., Melosh, N. A., Vuckovic, J., IEEE
  IEEE.2016

- **Emitter-Cavity Coupling in Hybrid Silicon Carbide-Nanodiamond Microdisk Resonators**
  Radulaski, M., Tzeng, Y., Zhang, J., Ishiwata, H., Lagoudakis, K. G., Souliere, V., Ferro, G., Shen, Z., Melosh, N. A., Chu, S., Vuckovic, J., IEEE
  IEEE.2016

- **Temporally resolved direct delivery of second messengers into cells using nanostraws** *LAB ON A CHIP*
  Xu, A. M., Kim, S. A., Wang, D. S., Aalipour, A., Melosh, N. A.
  2016; 16 (13): 2434-2439

- **Significantly enhanced photocurrent for water oxidation in monolithic Mo:BiVO4/SnO2/Si by thermally increasing the minority carrier diffusion length** *ENERGY & ENVIRONMENTAL SCIENCE*
  Zhang, L., Ye, X., Boloor, M., Poletayev, A., Melosh, N. A., Chueh, W. C.
  2016; 9 (6): 2044-2052

- **Determining the Time Window for Dynamic Nanowire Cell Penetration Processes** *ACS NANO*
  Xie, X., Aalipour, A., Gupta, S. V., Melosh, N. A.
  2015; 9 (12): 11667-11677

- **Engineering Ultra-Low Work Function of Graphene** *NANO LETTERS*
  Yuan, H., Chang, S., Bargatin, I., Wang, N. C., Riley, D. C., Wang, H., Schwede, J. W., Provine, J., Pop, E., Shen, Z., Pianetta, P. A., Melosh, N. A., Howe, et al
  2015; 15 (10): 6475-6480

- **Fabrication of sub-cell size "spiky" nanoparticles and their interfaces with biological cells.** *Journal of materials chemistry. B*
  Xie, X., Melosh, N. A.
  2015; 3 (26): 5155-5160

- **Nanotechnology and neurophysiology** *CURRENT OPINION IN NEUROBIOLOGY*
  Angle, M. R., Cui, B., Melosh, N. A.
  2015; 32: 132-140

- **Nanotechnology and neurophysiology.** *Current opinion in neurobiology*
  Angle, M. R., Cui, B., Melosh, N. A.
  2015; 32: 132-140

- **Nanostraws: A Nanofabricated Platform for Delivery of Cell-Impermeable, Synthetic Biomolecules**
  Xu, A., Shieh, P., Sanman, L., Melosh, N.
  CELL PRESS.2015: 149A

- **Bioorthogonal Calcium Modulation by Direct Intracellular Access using Nanostraws**
  Xu, A., Aalipour, A., Kim, S., Melosh, N.
  CELL PRESS.2015: 568A

- **Membrane indentation triggers clathrin lattice reorganization and fluidization** *SOFT MATTER*
  Cordella, N., Lampo, T. J., Melosh, N., Spakowitz, A. J.
  2015; 11 (3): 439-448

- **Hybrid Diamond-Silicon Carbide Structures Incorporating Silicon-Vacancies in Diamond as Quantum Emitters**
  Zhang, J., Ishiwata, H., Radulaski, M., Babinec, T. M., Mueller, K., Lagoudakis, K. G., Edgington, R., Alassaad, K., Ferro, G., Melosh, N. A., Shen, Z., Vuckovic, J., IEEE
  IEEE.2015

- **Physical properties of materials derived from diamondoid molecules** *REPORTS ON PROGRESS IN PHYSICS*
  Clay, W. A., Dahl, J. E., Carlson, R. M., Melosh, N. A., Shen, Z.
  2015; 78 (1)

- **Thermally-enhanced minority carrier collection in hematite during photoelectrochemical water and sulfite oxidation** *JOURNAL OF MATERIALS CHEMISTRY A*
  Ye, X., Yang, J., Boloor, M., Melosh, N. A., Chueh, W. C.
  2015; 3 (20): 10801-10810

- **Physical properties of materials derived from diamondoid molecules.** *Reports on progress in physics. Physical Society (Great Britain)*
  CLAY, W. A., Dahl, J. E., Carlson, R. M., Melosh, N. A., Shen, Z.
  2015; 78 (1): 016501-?

- **Fabrication of sub-cell size "spiky" nanoparticles and their interfaces with biological cells** *JOURNAL OF MATERIALS CHEMISTRY B*

Xie, X., Melosh, N. A.
2015; 3 (26): 5155-5160

- **Membrane indentation triggers clathrin lattice reorganization and fluidization.** *Soft matter*
Cordella, N., Lampo, T. J., Melosh, N., Spakowitz, A. J.
2014; 11 (3): 439-448

- **Penetration of Cell Membranes and Synthetic Lipid Bilayers by Nanoprobes (vol 107, pg 2091, 2014)** *BIOPHYSICAL JOURNAL*
Angle, M. A., Wang, A., Thomas, A., Schaefer, A. T., Melosh, N. A.
2014; 107 (12): 3034

- **Penetration of Cell Membranes and Synthetic Lipid Bilayers by Nanoprobes** *BIOPHYSICAL JOURNAL*
Angle, M. R., Wang, A., Thomas, A., Schaefer, A. T., Melosh, N. A.
2014; 107 (9): 2091-2100

- **Penetration of cell membranes and synthetic lipid bilayers by nanoprobes.** *Biophysical journal*
Angle, M. R., Wang, A., Thomas, A., Schaefer, A. T., Melosh, N. A.
2014; 107 (9): 2091-100

- **Plasma Membrane and Actin Cytoskeleton as Synergistic Barriers to Nanowire Cell Penetration** *LANGMUIR*
Aalipour, A., Xu, A. M., Leal-Ortiz, S., Garner, C. C., Melosh, N. A.
2014; 30 (41): 12362-12367

- **Plasma membrane and actin cytoskeleton as synergistic barriers to nanowire cell penetration.** *Langmuir*
Aalipour, A., Xu, A. M., Leal-Ortiz, S., Garner, C. C., Melosh, N. A.
2014; 30 (41): 12362-12367

- **Microfabricated Thermally Isolated Low Work-Function Emitter** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
Lee, J., Bargatin, I., Vancil, B. K., Gwinn, T. O., Maboudian, R., Melosh, N. A., Howe, R. T.
2014; 23 (5): 1182-1187

- **Intracellular nanoprobes: Membrane penetration**
Angle, M., Melosh, N. A.
AMER CHEMICAL SOC.2014

- **Integrating membrane electrodes for cell recording**
Melosh, N.
AMER CHEMICAL SOC.2014

- **Rheology and simulation of 2-dimensional clathrin protein network assembly.** *Soft matter*
VanDersarl, J. J., Mehraeen, S., Schoen, A. P., Heilshorn, S. C., Spakowitz, A. J., Melosh, N. A.
2014; 10 (33): 6219-6227

- **Rapid Calcium Modulation in Cells: Direct Intracellular Access using Nanostraws**
Xu, A., Kim, S. A., Aalipour, A., Melosh, N. A.
CELL PRESS.2014: 432A

- **Rough-smooth-rough dynamic interface growth in supported lipid bilayers** *PHYSICAL REVIEW E*
Verma, P., Mager, M. D., Melosh, N. A.
2014; 89 (1)

- **Quantification of nanowire penetration into living cells.** *Nature communications*
Xu, A. M., Aalipour, A., Leal-Ortiz, S., Mekhdjian, A. H., Xie, X., Dunn, A. R., Garner, C. C., Melosh, N. A.
2014; 5: 3613-?

- **Quantification of nanowire penetration into living cells.** *Nature communications*
Xu, A. M., Aalipour, A., Leal-Ortiz, S., Mekhdjian, A. H., Xie, X., Dunn, A. R., Garner, C. C., Melosh, N. A.
2014; 5: 3613-?

- **Mechanical Model of Vertical Nanowire Cell Penetration** *NANO LETTERS*
Xie, X., Xu, A. M., Angle, M. R., Tayebi, N., Verma, P., Melosh, N. A.

2013; 13 (12): 6002-6008

- **Sterically directed chalcogenides: Self-assembling superstructures of n-dimensional materials**
  Hohman, J., Yan, H., Melosh, N. A.
  AMER CHEMICAL SOC.2013

- **A semiconductor/mixed ion and electron conductor heterojunction for elevated-temperature water splitting.** *Physical chemistry chemical physics*
  Ye, X., Melas-Kyriazi, J., Feng, Z. A., Melosh, N. A., Chueh, W. C.
  2013; 15 (37): 15459-15469

- **Covalent attachment of diamondoid phosphonic Acid dichlorides to tungsten oxide surfaces.** *Langmuir*
  Li, F. H., Fabbri, J. D., Yurchenko, R. I., Mileshkin, A. N., Hohman, J. N., Yan, H., Yuan, H., Tran, I. C., Willey, T. M., Bagge-Hansen, M., Dahl, J. E., Carlson, R. M., Fokin, et al
  2013; 29 (31): 9790-9797

- **High-Bandwidth AFM Probes for Imaging in Air and Fluid** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Vijayraghavan, K., Gellineau, A. A., Wang, A., Butte, M. J., Melosh, N. A., Solgaard, O.
  2013; 22 (3): 603-612

- **Nanostraw-electroporation system for highly efficient intracellular delivery and transfection.** *ACS nano*
  Xie, X., Xu, A. M., Leal-Ortiz, S., Cao, Y., Garner, C. C., Melosh, N. A.
  2013; 7 (5): 4351-4358

- **Measurement of elastic properties in fluid using high bandwidth atomic force microscope probes** *APPLIED PHYSICS LETTERS*
  Vijayraghavan, K., Wang, A., Solgaard, O., Butte, M. J., Melosh, N. A.
  2013; 102 (10)

- **Nanostraw-Mediated Intracellular Delivery: Direct Observation of Cell/Nanotube Interfaces** *57th Annual Meeting of the Biophysical-Society*
  Xu, A. M., Aalipour, A., Melosh, N. A.
  CELL PRESS.2013: 194A–194A

- **Microbead-separated thermionic energy converter with enhanced emission current** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
  Littau, K. A., Sahasrabuddhe, K., Barfield, D., Yuan, H., Shen, Z., Howe, R. T., Melosh, N. A.
  2013; 15 (34): 14442-14446

- **Photon-enhanced thermionic emission from heterostructures with low interface recombination.** *Nature communications*
  Schwede, J. W., Sarmiento, T., NARASIMHAN, V. K., Rosenthal, S. J., Riley, D. C., Schmitt, F., Bargatin, I., Sahasrabuddhe, K., Howe, R. T., Harris, J. S., Melosh, N. A., Shen, Z.
  2013; 4: 1576-?

- **Nanostraw–Electroporation System for Highly Efficient Intracellular Delivery and Transfection** *Acs Nano*
  Xie, X., Xu, A., M., Leal-Ortiz, S., Cao, Y., Garner, C., C., Melosh, N., A.
  2013

- **Power-independent wavelength determination by hot carrier collection in metal-insulator-metal devices** *Nat Commun*
  Wang, F., Melosh, N., A.
  2013; 4: 1711

- **Measurement of elastic properties in fluid using high bandwidth atomic force microscope probes** *Applied Physics Letters*
  Vijayraghavan, K., Wang, A., Solgaard, O., Butte, M., J., Melosh, N., A.
  2013; 102: 103111 (4 pp.)-103111 (4 pp.)

- **Photon-enhanced thermionic emission from heterostructures with low interface recombination** *Nat Commun*
  Schwede, J., W., Sarmiento, T., Narasimhan, V., K., Rosenthal, S., J., Riley, D., C., Schmitt, F., Melosh, Nicholas, A.
  2013; 4: 1576

- **Photon-enhanced thermionic emission from heterostructures with low interface recombination.** *Nature communications*
  Schwede, J. W., Sarmiento, T., NARASIMHAN, V. K., Rosenthal, S. J., Riley, D. C., Schmitt, F., Bargatin, I., Sahasrabuddhe, K., Howe, R. T., Harris, J. S., Melosh, N. A., Shen, Z.
  2013; 4: 1576-?

- **Power-independent wavelength determination by hot carrier collection in metal-insulator-metal devices.** *Nature communications*
  Wang, F., Melosh, N. A.
  2013; 4: 1711-?
- **Photocathode device using diamondoid and cesium bromide films** *APPLIED PHYSICS LETTERS*
  Clay, W. A., Maldonado, J. R., Pianetta, P., Dahl, J. E., Carlson, R. M., Schreiner, P. R., Fokin, A. A., Tkachenko, B. A., Melosh, N. A., Shen, Z.
  2012; 101 (24)
- **A model for emission yield from planar photocathodes based on photon-enhanced thermionic emission or negative-electron-affinity photoemission** *JOURNAL OF APPLIED PHYSICS*
  Sahasrabuddhe, K., Schwede, J. W., Bargatin, I., Jean, J., Howe, R. T., Shen, Z., Melosh, N. A.
  2012; 112 (9)
- **Diamondoid coating enables disruptive approach for chemical and magnetic imaging with 10 nm spatial resolution** *APPLIED PHYSICS LETTERS*
  Ishiwata, H., Acremann, Y., Scholl, A., Rotenberg, E., Hellwig, O., Dobisz, E., Doran, A., Tkachenko, B. A., Fokin, A. A., Schreiner, P. R., Dahl, J. E., Carlson, R. M., Melosh, et al
  2012; 101 (16)
- **Nanostraws for Direct Fluidic Intracellular Access** *NANO LETTERS*
  VanDersarl, J. J., Xu, A. M., Melosh, N. A.
  2012; 12 (8): 3881-3886
- **Shape Matters: Intravital Microscopy Reveals Surprising Geometrical Dependence for Nanoparticles in Tumor Models of Extravasation** *NANO LETTERS*
  Smith, B. R., Kempen, P., Bouley, D., Xu, A., Liu, Z., Melosh, N., Dai, H., Sinclair, R., Gambhir, S. S.
  2012; 12 (7): 3369-3377
- **Optimal emitter-collector gap for thermionic energy converters** *APPLIED PHYSICS LETTERS*
  Lee, J., Bargatin, I., Melosh, N. A., Howe, R. T.
  2012; 100 (17)
- **Mesoporous Thin-Film on Highly-Sensitive Resonant Chemical Sensor for Relative Humidity and CO2 Detection** *ANALYTICAL CHEMISTRY*
  Lee, H. J., Park, K. K., Kupnik, M., Melosh, N. A., Khuri-Yakub, B. T.
  2012; 84 (7): 3063-3066
- **Energetics and dynamics of direct cell-penetrating peptide translocation using atomic force microscopy**
  Hager-Barnard, E., Wang, A., Melosh, N. A.
  AMER CHEMICAL SOC.2012
- **Direct Penetration of Cell-Penetrating Peptides Across Lipid Bilayers**
  Wang, A., Melosh, N.
  CELL PRESS.2012: 487A
- **Mechanical Model of Cell Membrane Penetration by Vertical Nanowires**
  Xie, X., Melosh, N. A.
  CELL PRESS.2012: 205A
- **Novel Nanoscale Patch-Clamp Arrays for Probing Neuronal Electrical Activities**
  Tayebi, N., Chang, K. G., Melosh, N.
  CELL PRESS.2012: 299A
- **Nanostraws for Direct Fluidic Intracellular Access**
  Xu, A. M., VanDersarl, J. J., Melosh, N. A.
  CELL PRESS.2012: 583A
- **MICROFABRICATED SILICON CARBIDE THERMIONIC ENERGY CONVERTER FOR SOLAR ELECTRICITY GENERATION** *25th IEEE International Conference on Micro Electro Mechanical Systems (MEMS)*
  Lee, J. H., Bargatin, I., Gwinn, T. O., Vincent, M., Littau, K. A., Maboudian, R., Shen, Z., Melosh, N. A., Howe, R. T.
  IEEE.2012
- **Diamondoid coating enables disruptive approach for chemical and magnetic imaging with 10 nm spatial resolution** *Applied Physics Letters*

Ishiwata, H., Acremann, Y., Scholl, A., Rotenberg, E., Hellwig, O., Dobisz, E., Melosh, Nicholas, A.
2012; 101: 163101 (5 pp.)-163101 (5 pp.)163101 (5 pp.)

- **Optimal emitter-collector gap for thermionic energy converters** *Applied Physics Letters*
  Lee, J., H., Bargatin, I., Melosh, N., A., Howe, R., T.
  2012; 100
- **A model for emission yield from planar photocathodes based on photon-enhanced thermionic emission or negative-electron-affinity photoemission** *Journal of Applied Physics*
  Sahasrabuddhe, K., Schwede, J., W., Bargatin, I., Jean, J., Howe, R., T., Shen, Z., X., Melosh, Nicholas, A.
  2012; 112: 094907 (10 pp.)-094907 (10 pp.)094907 (10 pp.)
- **Photocathode device using diamondoid and cesium bromide films** *Applied Physics Letters*
  Clay, W., A., Maldonado, J., R., Pianetta, P., Dahl, J., E.P., Carlson, R., M.K., Schreiner, P., R., Melosh, Nicholas, A.
  2012; 101: 241605 (5 pp.)-241605 (5 pp.)
- **Plasmonic Energy Collection through Hot Carrier Extraction** *NANO LETTERS*
  Wang, F., Melosh, N. A.
  2011; 11 (12): 5426-5430
- **Photoluminescence of diamondoid crystals** *JOURNAL OF APPLIED PHYSICS*
  Clay, W. A., Sasagawa, T., Iwasa, A., Liu, Z., Dahl, J. E., Carlson, R. M., Kelly, M., Melosh, N., Shen, Z.
  2011; 110 (9)
- **Molecular Structure Influences the Stability of Membrane Penetrating Biointerfaces** *NANO LETTERS*
  Almquist, B. D., Melosh, N. A.
  2011; 11 (5): 2066-2070
- **Engineering cell access with nano-functionalized posts** *241st National Meeting and Exposition of the American-Chemical-Society (ACS)*
  Verma, P., Tayebi, N., Almquist, B., Melosh, N.
  AMER CHEMICAL SOC.2011
- **Theoretical analysis of hot electron collection in metal-insulator-metal devices** *Conference on Next Generation (Nano) Photonic and Cell Technologies for Solar Energy Conversion II*
  Wang, F., Melosh, N. A.
  SPIE-INT SOC OPTICAL ENGINEERING.2011
- **Photoluminescence of Diamond Crystals** *Journal of Applied Physics*
  Clay, W., A., Sasagawa, T., Iwasa, A., Liu, Z., Dahl, J., E., Carlson, R., M.K., Melosh, Nicholas, A.
  2011
- **Plasmonic energy collection through hot carrier extraction** *Nano Letters*
  Wang, F., Melosh, N., A.
  2011; 11: 5426-30
- **Nanostraws for Direct Fluidic Intracellular Access** *Nano Letters*
  Vandersarl, J., J., Xu, A., M., Melosh, N., A.
  2011
- **Rapid spatial and temporal controlled signal delivery over large cell culture areas** *LAB ON A CHIP*
  VanDersarl, J. J., Xu, A. M., Melosh, N. A.
  2011; 11 (18): 3057-3063
- **Nanoscale patterning controls inorganic-membrane interface structure** *NANOSCALE*
  Almquist, B. D., Verma, P., Cai, W., Melosh, N. A.
  2011; 3 (2): 391-400
- **ENZYME ASSAYS Detection by failure** *NATURE CHEMISTRY*
  Melosh, N. A.
  2010; 2 (12): 1006-1007

- **Effects of tip-induced material reorganization in dynamic force spectroscopy** *PHYSICAL REVIEW E*
  Hager-Barnard, E. A., Melosh, N. A.
  2010; 82 (3)
- **Photon-enhanced thermionic emission for solar concentrator systems** *NATURE MATERIALS*
  Schwede, J. W., Bargatin, I., Riley, D. C., Hardin, B. E., Rosenthal, S. J., Sun, Y., Schmitt, F., Pianetta, P., Howe, R. T., Shen, Z., Melosh, N. A.
  2010; 9 (9): 762-767
- **Gigaohm resistance membrane seals with stealth probe electrodes** *APPLIED PHYSICS LETTERS*
  Verma, P., Melosh, N. A.
  2010; 97 (3)
- **An Electrostatic Model for DNA Surface Hybridization** *BIOPHYSICAL JOURNAL*
  Wong, I. Y., Melosh, N. A.
  2010; 98 (12): 2954-2963
- **Dynamic actuation using nano-bio interfaces** *MATERIALS TODAY*
  Wong, I. Y., Almquist, B. D., Melosh, N. A.
  2010; 13 (6): 14-22
- **Continuum model of mechanical interactions between biological cells and artificial nanostructures** *BIOINTERPHASES*
  Verma, P., Wong, I. Y., Melosh, N. A.
  2010; 5 (2): 37-44
- **Single-Step Process to Reconstitute Cell Membranes on Solid Supports** *LANGMUIR*
  Mager, M. D., Melosh, N. A.
  2010; 26 (7): 4635-4638
- **Fusion of biomimetic stealth probes into lipid bilayer cores** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Almquist, B. D., Melosh, N. A.
  2010; 107 (13): 5815-5820
- **Lateral fusion of lipid membranes to nanoscale functionalized**
  Almquist, B., Melosh, N.
  AMER CHEMICAL SOC.2010
- **Clathrin protein assemblies as a biotemplate**
  VanDersarl, J. J., Melosh, N. A.
  AMER CHEMICAL SOC.2010
- **AFM force spectroscopy on TAT membrane penetration**
  Hager-Barnard, E. A., Almquist, B. D., Melosh, N. A.
  AMER CHEMICAL SOC.2010
- **Gigaohm resistance membrane seals with stealth probe electrodes** *Applied Physics Letters*
  Verma, P., Melosh, N., A.
  2010; 97
- **AFM Force Spectroscopy on TAT Membrane Penetration**
  Hager-Barnard, E. A., Almquist, B. D., Melosh, N. A.
  CELL PRESS.2010: 217A–218A
- **Fusion of Biomimetic 'Stealth' Probes into Lipid Bilayer Cores**
  Almquist, B., Melosh, N.
  CELL PRESS.2010: 596A
- **Fusion of Biomimetic ‘Stealth’ Probes into Lipid Bilayer Cores**
  Almquist, B., D., Melosh, N., A.
  2010

- **Effects of tip-induced material reorganization in dynamic force spectroscopy** *Phys. Rev. E*
  Hager-Barnard, E., Melosh, N., A.
  2010; 82: 31911

- **ENZYME ASSAYS: Detection by failure** *Nature Chemistry*
  Melosh, N., A.
  2010; 2: 1006-1007

- **Directed Hybridization and Melting of DNA Linkers using Counterion-Screened Electric Fields** *NANO LETTERS*
  Wong, I. Y., Melosh, N. A.
  2009; 9 (10): 3521-3526

- **Determining orientational structure of diamondoid thiols attached to silver using near-edge X-ray absorption fine structure spectroscopy** *JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA*
  Willey, T. M., Lee, J. R., Fabbri, J. D., Wang, D., Nielsen, M. H., Randel, J. C., Schreiner, P. R., Fokin, A. A., Tkachenko, B. A., Fokina, N. A., Dahl, J. E., Carlson, R. M., Terminello, et al
  2009; 172 (1-3): 69-77

- **Influence of electrostatic fields in self assembly**
  Melosh, N. A.
  AMER CHEMICAL SOC.2009

- **Identification and Passivation of Defects in Self-Assembled Monolayers** *LANGMUIR*
  Preiner, M. J., Melosh, N. A.
  2009; 25 (5): 2585-2587

- **Lipid Membrane Penetration Forces from AFM Force Spectroscopy**
  Hager-Barnard, E. A., Almquist, B. D., Melosh, N. A.
  CELL PRESS.2009: 389A

- **Fusion of Biomimetic 'Stealth' Probes into Lipid Bilayer Cores**
  Almquist, B. D., Melosh, N. A.
  CELL PRESS.2009: 354A

- **An Internally Amplified Signal SOI Nano-bridge Biosensor for Electrical Detection of DNA Hybridization** *IEEE International SOI Conference 2009*
  Parizi, K. B., Melosh, N., Nishi, Y.
  IEEE.2009: 67–68

- **Determining orientational structure of diamondoid thiols attached to silver using near-edge X-ray absorption fine structure spectroscopy** *Journal of Electron Spectroscopy and Related Phenomena*
  Willey, T., M., Lee, J., R.I., Fabbri, J., D., Wang, D., Nielsen, M., H., Randel, J., C., Melosh, Nicholas, A.
  2009; 172: 69-77

- **Origin of the Monochromatic Photoemission Peak in Diamondoid Monolayers** *NANO LETTERS*
  Clay, W. A., Liu, Z., Yang, W., Fabbri, J. D., Dahl, J. E., Carlson, R. M., Sun, Y., Schreiner, P. R., Fokin, A. A., Tkachenko, B. A., Fokina, N. A., Pianetta, P. A., Melosh, et al
  2009; 9 (1): 57-61

- **Nanopore-Spanning Lipid Bilayers for Controlled Chemical Release** *ADVANCED MATERIALS*
  Mager, M. D., Melosh, N. A.
  2008; 20 (23): 4423-4427

- **Formation and Characterization of Fluid Lipid Bilayers on Alumina** *LANGMUIR*
  Mager, M. D., Almquist, B., Melosh, N. A.
  2008; 24 (22): 12734-12737

- **Diamondoids as low-kappa dielectric materials** *APPLIED PHYSICS LETTERS*
  Clay, W. A., Sasagawa, T., Kelly, M., Dahl, J. E., Carlson, R. M., Melosh, N., Shen, Z.
  2008; 93 (17)

- **Near-edge X-ray absorption fine structure spectroscopy of diamondoid thiol monolayers on gold** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Willey, T. M., Fabbri, J. D., Lee, J. R., Schreiner, P. R., Fokin, A. A., Tkachenko, B. A., Fokina, N. A., Dahl, J. E., Carlson, R. M., Vance, A. L., Yang, W., Terminello, L. J., van Buuren, et al
  2008; 130 (32): 10536-10544

- **Interfacial effects in thin films of polymeric semiconductors** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY B*
  Rivnay, J., Jimison, L. H., Toney, M. F., Preiner, M., Melosh, N. A., Salleo, A.
  2008; 26 (4): 1454-1460

- **Electronically activated actin protein polymerization and alignment** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Wong, I. Y., Footer, M. J., Melosh, N. A.
  2008; 130 (25): 7908-7915

- **Creating large area molecular electronic junctions using atomic layer deposition** *APPLIED PHYSICS LETTERS*
  Preiner, M. J., Melosh, N. A.
  2008; 92 (21)

- **A nonvolatile plasmonic switch employing photochromic molecules** *NANO LETTERS*
  Pala, R. A., Shimizu, K. T., Melosh, N. A., Brongersma, M. L.
  2008; 8 (5): 1506-1510

- **Efficient optical coupling into metal-insulator-metal plasmon modes with subwavelength diffraction gratings** *APPLIED PHYSICS LETTERS*
  Preiner, M. J., Shimizu, K. T., White, J. S., Melosh, N. A.
  2008; 92 (11)

- **Suspension of nanoparticles in SU-8: Processing and characterization of nanocomposite polymers** *European Nano System Conference (ENS '05)*
  Chiamori, H. C., Brown, J. W., Adhiprakasha, E. V., Hantsoo, E. T., Straalsund, J. B., Melosh, N. A., Pruitt, B. L.
  ELSEVIER SCI LTD.2008: 228–36

- **Diamondoids as low-kappa dielectric materials** *Applied Physics Letters*
  Clay, W., A., Sasagawa, T., Kelly, M., Dahl, J., E., Carlson, R., M.K., Melosh, N.
  2008; 93: 172901

- **Efficient optical coupling into metal-insulator-metal plasmon modes with subwavelength diffraction gratings** *Applied Physics Letters*
  Preiner, M., J., Shimizu, K., T., White, J., S., Melosh, N., A.
  2008; 92: 113109-1-3

- **Creating large area molecular electronic junctions using atomic layer deposition** *Applied Physics Letters*
  Preiner, M., J., Melosh, N., A.
  2008; 92

- **Lipid bilayer deposition and patterning via air bubble collapse** *LANGMUIR*
  Mager, M. D., Melosh, N. A.
  2007; 23 (18): 9369-9377

- **COLL 108-Lateral fusion of lipid membranes to nanoscale functionalized posts**
  Almquist, B. D., Melosh, N. A.
  AMER CHEMICAL SOC.2007

- **BIOT 53-Nanoscale reservoirs for spatially and temporally controlled biointerfaces**
  Melosh, N. A., VanDersarl, J. J., Hagar-Barnard, E., Yenilmez, E.
  AMER CHEMICAL SOC.2007

- **Monochromatic electron photoemission from diamondoid monolayers** *SCIENCE*
  Yang, W. L., Fabbri, J. D., Willey, T. M., Lee, J. R., Dahl, J. E., Carlson, R. M., Schreiner, P. R., Fokin, A. A., Tkachenko, B. A., Fokina, N. A., Meevasana, W., Mannella, N., Tanaka, et al
  2007; 316 (5830): 1460-1462

- **Dynamic control of biomolecular activity using electrical interfaces.** *Soft matter*
  Wong, I. Y., Footer, M. J., Melosh, N. A.

2007; 3 (3): 267-274

- **Dynamic control of biomolecular activity using electrical interfaces** *SOFT MATTER*
  Wong, I. Y., Footer, M. J., Melosh, N. A.
  2007; 3 (3): 267-274
- **Monochromatic Electron Emission from Negative Electron Affinity Diamondoid Monolayers** *Science*
  Yang, W., L., Fabbri, J., D., Willey, T., M., Lee, J., R.I., Dahl, J., E., Carlson, R., M.K., Melosh, Nicholas, A.
  2007; 315: 1460-1462
- **Probing molecular junctions using surface plasmon resonance spectroscopy** *NANO LETTERS*
  Shimizu, K. T., Pala, R. A., Fabbri, J. D., Brongersma, M. L., Melosh, N. A.
  2006; 6 (12): 2797-2803
- **Soft deposition of large-area metal contacts for molecular electronics** *ADVANCED MATERIALS*
  Shimizu, K. T., Fabbri, J. D., Jelincic, J. J., Melosh, N. A.
  2006; 18 (12): 1499-?
- **Soft Deposition of Large Area Metal Contacts for Molecular Electronics** *Advanced Materials*
  Shimizu, K., T., Fabbri, J., D., Jelincic, J., J., Melosh, N., A.
  2006; 18: 1499-1504
- **Probing molecular junctions using surface plasmon resonance spectroscopy** *Nano Letters*
  Shimizu, K., T., Pala, R., A., Fabbri, J., D., Brongersma, M., L., Melosh, N., A.
  2006; 6: 2797-2803
- **Silicon chip-based patch-clamp electrodes integrated with PDMS microfluidics** *49th Annual Meeting of the Biophysical-Society*
  Nagarah, J. M., Wang, P., Luo, Y., Pantoja, R., Melosh, N. A., Starace, D. M., Blunk, R., Bezanilla, F., Heath, J. R.
  CELL PRESS.2005: 522A–522A
- **Fabrication of conducting Si nanowire arrays** *JOURNAL OF APPLIED PHYSICS*
  Beckman, R. A., Johnston-Halperin, E., Melosh, N. A., Luo, Y., Green, J. E., Heath, J. R.
  2004; 96 (10): 5921-5923
- **Silicon chip-based patch-clamp electrodes integrated with PDMS microfluidics** *BIOSENSORS & BIOELECTRONICS*
  Pantoja, R., Nagarah, J. M., Starace, D. M., Melosh, N. A., Blunck, R., Bezanilla, F., Heath, J. R.
  2004; 20 (3): 509-517
- **Ultrahigh-density nanowire lattices and circuits** *SCIENCE*
  Melosh, N. A., Boukai, A., Diana, F., Gerardot, B., Badolato, A., Petroff, P. M., Heath, J. R.
  2003; 300 (5616): 112-115
- **Ultrahigh-density nanowire lattices and circuits** *Science*
  Melosh, N., A., Boukai, A., Diana, F., Gerardot, B., Badolato, A., Petroff, P., M.
  2003; 300: 112-15
- **Triblock copolymer syntheses of mesoporous silica with periodic 50 to 300 angstrom pores** *Science*
  Zhao, D., Y., Feng, J., L., Huo, Q., S., Melosh, N., Fredrickson, G., H., Chmelka, B., F.
  1998; 279: 548-552