



Nicholas Melosh

Professor of Materials Science and Engineering

CONTACT INFORMATION

- **Administrator**

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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 seamlessly 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
- Member, Wu Tsai Neurosciences Institute

PROFESSIONAL EDUCATION

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

Teaching

COURSES

2025-26

- Bioelectronics: EE 120, EE 220, MATSCI 220 (Spr)
- Materials Matter: MATSCI 10 (Aut)

2024-25

- Materials Matter: MATSCI 10 (Aut)

2023-24

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

Publications

PUBLICATIONS

- **Ultrasensitive measurement of brain penetration mechanics and blood vessel rupture with microscale probes.** *Proceedings of the National Academy of Sciences of the United States of America*
Obaid, A., Hanna, M. E., Huang, S. W., Hu, Y. T., Jáidar, O., Nix, W., Ding, J. B., Melosh, N. A., Wu, Y. W.
2026; 123 (13): e2529147123
- **Soft photonic skins with dynamic texture and colour control.** *Nature*
Doshi, S., Gúsken, N. A., Dijk, G., Carlström, J., Ortiz-Cárdenas, J. E., Suzuki, P., Li, B., Fordyce, P. M., Salleo, A., Melosh, N. A., Brongersma, M. L.
2026; 649 (8096): 345-352
- **Thermal Processing Creates Water-Stable PEDOT:PSS Films for Bioelectronics.** *Advanced materials (Deerfield Beach, Fla.)*
Doshi, S., Former, M. O., Wang, P., Hadwe, S. E., Jin, A. T., Dijk, G., Brinson, K., Lim, J., Dominguez-Alfaro, A., Lim, C. Y., Salleo, A., Barone, D. G., Hong, et al
2025: e2415827
- **Direct-Print 3D Electrodes for Large-Scale, High-Density, and Customizable Neural Interfaces.** *Advanced science (Weinheim, Baden-Wuerttemberg, Germany)*
Wang, P., Wu, E. G., Uluşan, H., Zhao, E. T., Phillips, A. J., Kling, A., Hays, M. R., Vasireddy, P. K., Madugula, S., Vilku, R., Hierlemann, A., Hong, G., Chichilnisky, et al
2024: e2408602
- **Electrochemically mutable soft metasurfaces.** *Nature materials*
Doshi, S., Ji, A., Mahdi, A. I., Keene, S. T., Selvin, S. P., Lalanne, P., Appel, E. A., Melosh, N. A., Brongersma, M. L.
2024
- **NeuroRoots, a bio-inspired, seamless brain machine interface for long-term recording in delicate brain regions.** *AIP advances*
Ferro, M. D., Proctor, C. M., Gonzalez, A., Jayabal, S., Zhao, E., Gagnon, M., Slézia, A., Pas, J., Dijk, G., Donahue, M. J., Williamson, A., Raymond, J., Malliaras, et al

2024; 14 (8): 085109

- **Multiplexed neurochemical sensing with sub-nM sensitivity across 2.25 mm² area.** *Biosensors & bioelectronics*
Mintz Hemed, N., Hwang, F. J., Zhao, E. T., Ding, J. B., Melosh, N. A.
2024; 261: 116474
- **Enhanced Thin-Film Encapsulation Through Micron-Scale Anchors** *ADVANCED FUNCTIONAL MATERIALS*
Hemed, N., Pham, A., Zhao, E. T., Wang, P., Melosh, N. A.
2024
- **Direct electron beam patterning of electro-optically active PEDOT:PSS.** *Nanophotonics*
Doshi, S., Ludescher, D., Karst, J., Floess, M., Carlström, J., Li, B., Mintz Hemed, N., Duh, Y. S., Melosh, N. A., Hentschel, M., Brongersma, M., Giessen, H.
2024; 13 (12): 2271-2280
- **Unraveling sources of emission heterogeneity in Silicon Vacancy color centers with cryo-cathodoluminescence microscopy.** *Proceedings of the National Academy of Sciences of the United States of America*
Angell, D. K., Li, S., Utzat, H., Thurston, M. L., Liu, Y., Dahl, J., Carlson, R., Shen, Z. X., Melosh, N., Sinclair, R., Dionne, J. A.
2024; 121 (14): e2308247121
- **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., Uluşan, 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., Uluşan, H., Phillips, A. J., Rose Hays, M., Kling, A., Zhao, E. T., Madugula, S., Vilku, 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
- **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
- **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
- **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., Vučković, J.
2020; 20 (3): 1614-1619
- **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., Allassaad, 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
- **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
- **Nanostructured Materials for Intracellular Cargo Delivery.** *Accounts of chemical research*
Tay, A. n., Melosh, N. n.
2019
- **Sparking to life.** *Nature materials*
Melosh, N. A.
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. E. P., Carlson, R. M. 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. E. P., Carlson, R. M. 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., Bolor, 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*
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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., Sahasrabudhe, 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*
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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*
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- **Direct Intracellular Delivery of Cell Impermeable Probes of Protein Glycosylation Using Nanostraws.** *ChemBiochem*
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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*
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- **Electronic devices: Nanoparticles make salty circuits.** *Nature nanotechnology*
Yan, H., Melosh, N.
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- **Fabrication of Sealed Nanostraw Microdevices for Oral Drug Delivery** *ACS NANO*
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- **Ultralow effective work function surfaces using diamondoid monolayers.** *Nature nanotechnology*
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- **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
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- **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
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- **Emitter-Cavity Coupling in Hybrid Silicon Carbide-Nanodiamond Microdisk Resonators**
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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*
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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.
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Xu, A., Shieh, P., Sanman, L., Melosh, N.
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- **Bioorthogonal Calcium Modulation by Direct Intracellular Access using Nanostraws**
Xu, A., Aalipour, A., Kim, S., Melosh, N.
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- **Membrane indentation triggers clathrin lattice reorganization and fluidization** *SOFT MATTER*
Cordella, N., Lampo, T. J., Melosh, N., Spakowitz, A. J.
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