Brian Meckes, PhD

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EDUCATION

Northwestern University — 2019
IIN Postdoctoral Fellow and *Eden and Steven Romick Fellow*, Chemistry
Advisor: Prof. Chad Mirkin

University of California, San Diego — 2015
Ph.D., Bioengineering
Advisor: Prof. Ratnesh Lal; Co-Sponsor: Prof. Gina Sosinsky

Rice University — 2009
B.S.B., Bioengineering

EXPERIENCE

Assistant Professor — 2019-Present
Department of Biomedical Engineering, University of North Texas

HONORS & AWARDS

Eden and Steven Romick Postdoctoral Fellowship	2017-2019
IIN Postdoctoral Fellowship	2015-2019
NIH Ruth Kirschstein Predoctoral Fellowship	2013-2015
James Street Fulton Service Prize, Rice University	2009
NSF REU Scholarship, CPIMA/Stanford University	2008
Will Rice College Academic Fellow, Rice University	2007-2009
Amgen Scholar, Amgen Foundation/University of Washington	2007
Louis J. Walsh Scholarship in Engineering, Rice University	2006-2007

PUBLICATIONS

1) Cabezas, M.C.,* **Meckes, B.,*** Mirkin, C.A., Mrksich, M. Subcellular Control Over Actin Stress Fiber Formation, Independent of Cell Morphology, Dictates Stem Cell Fate. In Revision. ACS Nano
2) Chen, P-C.,* Liu, M.,* Du, J.S., **Meckes, B.,** Wang, S., Lin, H., Wolverton, C., Dravid, V.P., Mirkin, C.A. Configuration of phase boundaries in multi-phase hybrid nanoparticles. (2019) Science 363 (6430), 959-964
3) Kluender, E.J.,* Hedrick, J.L.,* Brown, K.A., Rao, R.S., **Meckes, B.**, Du, J.S., Moreau, L.M., Maruyama, B., and Mirkin, C.A. Catalyst Discovery Through Mega-Libraries of Nanomaterials. (2019) Proceedings of the National Academy of Sciences. 116 (1), 40-45
4) Du, J.S., Chen, P-C., **Meckes, B.,** Kluender, E.J., Xie, Z., Dravid, V.P., Mirkin, C.A. (2018) Evaporation-Induced Coarsening of Ultrafine Au-Pt Nanoparticles in Polymer Nanoreactors. Journal of the American Chemical Society. 140 (23), 7213–7221
5) **Meckes, B.,*** Banga, R.J.,* Nguyen, S.T., Mirkin, C.A. (2018) Enhancing the Stability and Immunomodulatory Activity of Liposomal Spherical Nucleic Acids through Lipid-tail DNA Modifications. Small, 14 (5), 1702909
6) Chen, P-C., Du, J.S., **Meckes, B.,** Huang, L., Xie, Z., Hedrick, J., Dravid, V.P., Mirkin, C.A. (2017) The Structural Evolution of Three-Component Nanoparticles in Polymer Nanoreactors. Journal of the American Chemical Society, 139 (29), 9876-9884
7) Xie, Z.,* Gordiichuck, P.,* Lin, Q-Y., **Meckes, B.,** Chen, P-C., Sun, L., Du, J.S., Zhu, J., Liu, Y., Dravid, V.P., Mirkin, C.A. (2017) Solution-Phase Photochemical Nanopatterning Enabled by High-Refractive-Index Beam Pen Arrays. ACS Nano, 1 (8), 8231–8241
8) Du, J.S.,* Chen, P-C.,* **Meckes, B.,** Xie, Z., Zhu, J., Liu, Y., Dravid, V.P., Mirkin, C.A. (2017) The Structural Fate of Individual Multicomponent Metal-Oxide Nanoparticles in Polymer Nanoreactors. Angewendte Chemie International Edition, 56 (26), 7625–7629
9) Banga, R.J., **Meckes, B.,** Narayan, S.P., Sprangers, A.J., Nguyen, S.T., Mirkin, C.A. (2017). Cross-linked Micellar Spherical Nucleic Acids from Thermoresponsive Templates. Journal of the American Chemical Society. 139 (12), 4278–4281
10) Hwang, M.T.,* Landon, P.B.,* Mo, A.H., Lee, J., Meckes, B., Glinsky, G.V., Lal, R. (2016). Reusable DNA Nano-Carrier for Capture and Release of Biomolecules. Nanoscale, 7(41), 17397-17403
11) **Meckes, B.,** Ambrosi, C., Barnard, H., Arce, F.T., Sosinsky, G., Lal, R. (2014). Atomic Force Microscopy Shows Connexin26 Hemichannel Clustering in Purified Membrane Fragments. Biochemistry, 53 (47), 7407–7414

12) Landon, P.B., Lee, J., Hwang, M.T., Mo, A.H., Zhang, C., Neuberger, A., **Meckes, B.,** Gutierrez, J.J., Glinsky, G.V., Lal, R. (2014). Energetically Biased DNA Motor Containing a Thermodynamically Stable Partial Strand Displacements State. Langmuir, 30 (46), 14073–14078
13) Alfonta, L.,* **Meckes, B.,*** Amir, L., Schlesinger, O., Ramachandran, S., Lal, R. (2014). Measuring Localized Redox Enzyme Electron Transfer in a Live Cell with Conducting Atomic Force Microscopy. Analytical Chemistry, 86 (15), 7674-7680
14) Kwok, J., Grogan, S., **Meckes, B.,** Teran Arce, F., Lal, R., D'Lima, D. (2014). Atomic force microscopy reveals age-dependent changes in nanomechanical properties of the extracellular matrix of native human menisci: implications for joint degeneration and osteoarthritis. Nanomedicine: Nanotechnology, Biology, and Medicine, 10 (8), 1777–1785
15) Connelly, L.S.,* **Meckes, B.,*** Larkin, J., Gillman, A.L., Wanunu, M., Lal, R. (2014). Graphene Nanopore Support System for Simultaneous High Resolution AFM Imaging and Conductance Measurements. ACS Applied Materials and Interfaces, 6 (7), 5290-5296
16) **Meckes, B.,** Teran Arce, F., Connelly, L.S., Lal, R. (2014). Insulated Conducting Cantilevered Nanotips and Two-Chamber Recording System for High Resolution Ion Sensing AFM. Scientific Reports, 4, 4454
17) Mo, A.H.,* Landon, P.B.,* **Meckes, B.,** Yang, M.M., Glinsky, G.V., Lal, R. (2014). On-demand Four-way Junction DNAzyme Nanoswitch Driven by Inosine-Based Partial Strand Displacement. Nanoscale, 6, 1462-1466
18) Teran Arce, F., **Meckes, B.,** Camp, S.M., Garcia, J.G.N., Dudek, S.M., Lal, R. (2013). Heterogeneous elastic response of human lung microvascular endothelial cells to barrier modulating stimuli. Nanomedicine: Nanotechnology, Biology, and Medicine, 9 (7), 875–884
19) Leiske, D.L., **Meckes, B.,** Miller, C.E., Wu, C., Walker, T.W., Lin, B., Meron, M., Ketelson, H.A., Toney, M.F., Fuller, G.G. (2011). Insertion Mechanism of a Poly(ethylene oxide)-poly(butylene oxide) Block Copolymer into a DPPC Monolayer. Langmuir, 27 (18), 11444–11450

FUNDING AWARDED

NIDA/NIH Predoctoral Fellowship 2013-2015
Grant Number: F31DA034562
Total Award: $103,000

PATENTS PENDING

Mirkin, C.A., Mrksich, M., Cabezas, M.D., **Meckes, B.** (2019) Nanopatterning for Controlling Cell Cytoskeleton. PCT/US2019/

Mirkin, C.A., **Meckes, B.**, Zhang, W. (2018) Spherical Nucleic Acids (SNAs) with Sheddable PEG Layers. PCT/US2018/054221

Mirkin, C.A., Nuygen, S.T., Banga, R.J., **Meckes, B.** (2018) Enhancing Stability and Immunomodulatory Activity Of Liposomal Spherical Nucleic Acids. WO2018152327A1

Lal, R., Hwang, M.T., Landon, P.B., Glinskii, G., Mo, A., Ramachandran, S., Lee, J., **Meckes, B.** (2015) Nano-sensors for Nucleic Acid Detection and Discrimination. WO2017112941A1

TALKS

1) B. Meckes, R.J. Banga, C.A. Mirkin. "Probing the Stability of Liposomal Spherical Nucleic Acids for Therapeutic Design." American Chemical Society Annual Meeting, (2017) San Francisco, CA.

2) J. Hedrick, P.-C. Chen, B. Meckes, C.A. Mirkin. "Synthesis of Highly Tailorable Nanoparticle Libraries." American Chemical Society Annual Meeting, (2017) San Francisco, CA.
3) B. Meckes, L. Connelly, L. Alfonta, M. Wanunu, R. Lal. "New Conducting Atomic Force Microscopy for Simultaneous Electrical Recording and Imaging of Biomolecules." AFM-Biomed Conference, (2014) San Diego, CA.
4) A. Woodcock, B. Meckes, V. Stanley, R. Lal. "Biomechanical Basis of Alzheimer's Disease and Other Protein Misfolding Diseases: Designing a New AFM Probe to Study Amyloid-Mediated Membrane Disorders" 58th Annual Biophysical Society Meeting, (2014) San Francisco, CA.
5) H. Barnard, B. Meckes, C. Ambrosi, G. Sosinsky, R. Lal. "High Resolution Imaging of Non-Crystalline Connexin 26 Hemichannels." Biomedical Engineering Society Meeting, (2012) Atlanta, GA.

SELECT POSTERS

"Nanopatterned Control Over Cell Cytoskeletal Organization and Fate." Biomedical Engineering Society Annual Meeting. (2018) Atlanta, GA.

"Electrochemical AFM of Surface Modified E. Coli." UC Systemwide Bioengineering Conference. (2013) La Jolla, CA.

"Conducting Atomic Force Microscopy for Simultaneous Imaging of Structure and Ionic Current through Nanopores." 56th Annual Biophysical Society Meeting, (2012) San Diego, CA.