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Education and Training

University of Utah. B.S.; 1994; Chemistry

University of California Santa Barbara. Ph.D.; 2002; Bioinorganic Chemistry

Los Alamos National Laboratory. Postdoctoral Fellow; 2004

Professional Experience

2005-Present Technical Staff Member, MPA-CINT, Los Alamos National Laboratory. Gold and silver nanocluster synthesis, complex nanoarchitectures, biosensors for threat reduction and tuberculosis.

2004-2005 Technical Staff Member, Bioscience Division, Los Alamos National Laboratory. Biosensors for biothreat reduction, tuberculosis, and breast cancer. Nanobio-composites.

2002- 2004 Directors Funded Postdoctoral Fellow, Bioscience Division, Los Alamos National Laboratory. Biosensors for biothreat reduction and tuberculosis. Ligand development. Research Advisors: Drs. Basil I. Swanson and Andrew M. Bradbury

1996-2002 Graduate Research Assistant and GOF Fellow, Department of Chemistry, University of California at Santa Barbara. Colligative properties of lipophilic metal chelates. Isolation, structure determination, and reactivity of marine natural products and vanadium bromoperoxidase. Research Advisor: Prof. Alison Butler

1994-1995 Research Associate, Department of Human Genetics, University of Utah. NF1 DNA mutation analysis and detection. Research Advisor: Prof. Richard Cawthon

1991-1994 Undergraduate Research Associate, Department of Biology, University of Utah. Isolation, synthesis, and structure-function relationship of marine natural products (conotoxins). Research Advisor: Distinguished Prof. Baldomero Olivera and Prof. Micheal MacIntosh

Publications

Yoo, H., Sharma, J., Kim, J.K., Martinez, J.S. "Solution-phase synthesis of trigonal and hexagonal Au rings," *Angew. Chemie Int Ed.*, submitted (2010)

Cannon, W.R., Talley, N.D., Danzig, B.A., Liu, X., Martinez, J.S., Shreve, A.P., MacDonald, G. "The effects of salts on the structure, aggregation and thermal unfolding intermediates of RecA," *Biopolymers* submitted (2010)

Sharma, J., Yeh, H.-S., Yoo, H., Werner, J.H., Martinez, J.S. "In-situ generation of aptamer templated silver nanoclusters for label-free protein detection," *Chem. Comm.,* DOI: 10.1039/C0CC03711G (2010)

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Bao, Y, Yeh, H.-C.., Sharma, J., Zhong, C., Neidig, M., Vu, D.M., Dyer, R.B., Shreve, A.P., Werner, J.H., Martinez, J.S. "Formation and Stabilization of Fluorescent Au Nanoclusters using Small Molecules," *J. P. C. C.* 114(38), 15879-15882 (2010)

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Bock, H., Fukuyo, Y., Kang, S., Phipps, M.L., Alexandrov, L., Rasmussesn, K., Bishop, A., Rosen, E., Martinez, J., Chen, H., Rodriguez, G., Alexandrov, B., Usheva, A. "Terehertz radiation in cellular reprogramming," *PLoS One,* accepted (2010)

Yoo, H., Sharma, J., Yeh, H.-C., Martinez, J.S. "Solution-phase synthesis of Au fibers using rod-shaped micelles as shape directing agents," *Chem. Commun.* (2010) DOI:10.1039/c0cc02100h

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Mukundan, H., Hongzhi, X.,Anderson, A., Grace, W.K., Martinez, J.S. Swanson, B.I. "Toward Photostable Multiplex Analyte Detection on a Single Mode Planar Optical Waveguide" SPIE, 7167, 71670A-1, 9 (2009)

Mukundan, H., Holt, A., Shively, J.E., Martinez, J.S., Grace, K., Grace, W.K., Swanson, B.I. "Planar optical waveguides for the quantitative detection of tumor markers" *Sensors & Actuators B.* 138 (2): 453-460 (2009)

Martin, R., Wang, H.L., Zhong, C., Bao, Y., Martinez, J.S., Shreve, A., Iyer, S., Iyer, R. "Impact of physiocehmical properties of engineered fullerenes on key biological responses." *Toxicol. & App. Pharmacol*. 234(1), 58-67 (2009).

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Owen, T., Pynn, R., Martinez, J.S., Butler, A. "Micelle to vesicle transition of an iron-chelating microbial surfactant, marinobactin E," *Langmuir* 21(26), 12109-12114 (2005).

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Martinez, J.S., Zhang, G.P., Holt, P.D., Jung, H.-T., Carrano, C.J., Haygood, M.G., Butler, A. "Self-assembling amphiphilic siderophores from marine bacteria," *Science*, 287 1245-1247 (2000). (Featured article in Chemical and Engineering News)

Jacobsen, R., Yoshikami, D., Ellison, M., Martinez, J., Gray, W.R., Cartier, G.E., Shon, K.-J., Groebe, D.R., Abramson, S.N., Olivera, B.M., McIntosh, J.M. "Differential targeting of nicotinic acetylcholine receptors by novel alpha-conotoxins," *J. of Biol. Chem*., 272 22531-22537 (1997).

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Johnson, D.S., Martinez, J., Elgoyhen, A.B., Heinemann, S.F., McIntosh, J.M. "Alpha-conotoxin Im(I) exhibits subtype-specific nicotinic acetylcholine receptor blockage- preferential inhibition of homomeric alpha-7 and alpha-9 receptors," *Molecular Pharmacology*, 48 194-199 (1995).

Patents

Fluorescence-enhancement of DNA-silver nanoclusters from guanine proximity. H.-C, Yeh, J. Sharma, J.S. Martinez, J.H. Werner S-18,917, 2010

Synthesis of fluorescent metal nanoclusters. J.S. Martinez, R. B. Dyer, D. M. Vu, C. Zhong, Y. Bao. Nonprovisional Patent Application number: 11/786,190, 2007

Planar optical waveguide based sandwich assay sensors and processes for the detection of biological targets including early detection of cancers. Martinez, J.S., Swanson, B.I., Shively, J.E. Li, L. U.S. Patent 7,541,196 (2009)

Planar optical waveguide based sandwich assay sensors and processes for the detection of biological targets including protein markers, pathogens and cellular debris. Martinez, J.S., Swanson, B.I., Grace, K.M., Grace, W.K., Shreve, A.P. U.S. Patent 7,541,197 (2009)

Modulated Optical Waveguide-Sensor, B.I. Swanson, J.G. Schmidt, J.S. Martinez, A. A. Anderson, Patent Application, 60/649,753, 2005, provisional.

Waveguide-Based Sensors for the Early Detection of Cancer, B. I. Swanson, J.S. Martinez, K. M. Grace, W. K. Grace, J. Shively, L. Lee, Provisional 60/583911, Application S-103,367, 7/2005.

Professional Honors

Presidential Early Career Award for Science and Engineering (2008)

LANL Outstanding Mentoring Award (2007)

Directors Postdoctoral Fellow, LANL (2002)

B.R. Baker Award, Outstanding Chemistry, UCSB

California SeaGrant Traineeship, UCSB

Graduate Opportunity Fellow, UCSB

Entrepreneurial Scholarship, JA, University of Utah