

Roberto Z. Guzman

Department of Chemical and Environmental Engineering
University of Arizona
Tucson AZ, 85721

Phone: (520) 621-6041
Fax: (520) 621- 6048
guzmanr@enr.arizona.edu

Education

Ph.D. in Chemical Engineering, December 1988, NCSU, Raleigh, N.C.
M.S. in Chemical Engineering, December 1980, University of Illinois, Chicago, Ill.
B.S. in Chemical Engineering, July 1976, University of Guanajuato, Guanajuato, Mexico.

Academic/Research Experience

8/05- present Professor. Department of Chemical and Environmental Engineering
University of Arizona.
8/96 – 7/05 Associate Professor. Department of Chemical and Environmental
Engineering, University of Arizona.
Summer'99 Visiting Scholar. Center for Separation Sciences, University of Uppsala, Sweden
Summer'95 Visiting Scholar. Universite de Technologie de Compiègne, France
8/89 - 7/96 Assistant Professor. Department of Chemical and Environmental
Engineering, University of Arizona
5/89 - 8/89 Visiting Professor. Department of Chemical Engineering,
University of Guanajuato (Mexico).
1/89 - 5/89 Research Associate. Department of Chemical Engineering, NCSU, Raleigh, NC.
12/80 - 6/83 Professor and Research Coordinator. Department of Chemical
Engineering, University of Guanajuato, Gto., Mexico.

Professional Affiliations

Asociacion Mexicana de Ingenieria Quimica
American Institute of Chemical Engineering
American Chemical Society
International Society of Molecular Recognition

Publications, Books and Patents:

- More than 50 research publications, in affinity bioseparations, surface functionalization, polymer synthesis and nanotechnology.
- One book published in Bioseparations ('96)
- Several patents, two granted from North Carolina State University and five filed at the University of Arizona.

Relevant publications

1. L-M. Lee, R. L. Heimark, R. Guzman, J. C. Baygents and Y. Zohar. "Low melting point agarose as a protection layer in photolithographic patterning of aligned binary proteins." Lab Chip 2006, 6, 1080-1085.
2. Gabriela Ramos-Clamont, María del Carmen Candia-Plata, Roberto Guzman Zamudio and Luz Vázquez-Moreno. "Novel Hydrophobic Interaction Chromatography Matrix for Specific Isolation and Simple Elution of Immunoglobulins (A, G, and M) From Porcine Serum. Journal of Chromatography A, 1122 (2006) 28-34.
3. C. Plata, J.E. Garcia, R. Guzmán, Jerker Porath and L. Vazquez-Moreno. "Isolation of Human Serum Immunoglobulins with a New Salt-Promoted Adsorbent" Journal of Chromatography A, 1118 (2006) 211-217.
4. B. Trzaskowski, A. Les, L., Adamowicz, P.A. Deymier, R. Guzmán, S.G. Stepanian. "Multilevel Quantum Chemistry Approach to the Development of a Database of the SAM- Ligand-Metal Ion-Protein Interactions." Journal of Computational and Theoretical Nanoscience, Vol. 2, 1-13, 2005.

5. S.G. Stepanian, B. Trzaskowski, P. Deymier, R. Guzmán, and L.Adamowicz. "Selectivity of chelator-protein interactions: a high level quantum chemistry study," *Journal of Computational and Theoretical Nanoscience*, Vol. 3, 1-10, 2006.
6. Y. Yang, P.A. Deymier, L. Wang, R. Guzmán, J. Hoying, H. McLaughlin, S.D. Smith and I. N. Jongewaard. "Nucleation and Growth of Microtubules from Gamma-Tubulin-Functionalized Gold Surfaces", *Biotechnol. Prog. ASAP Article* 10.1021/bp050150j S8756-7938 (05)00150-5, 2005.
7. Montesinos, R.M., Tejada-Mansir, Guzmán R., J. Ortega and W.E. Schiesser. "Analysis and Simulation of Frontal Affinity Chromatography of Proteins." *Separation and Purification Technology*, Volume 42, Issue 1, March 2005, Pages 75-84.
8. R. M. Montesinos-Cisneros, R. Guzman-Zamudio, J. Lopez-Ortega y A. Tejada-Mansir. "Cromatografía frontal de plasmidos: estimacion de parametros y simulacion." *Revista Mexicana de Ingenieria Quimica* Vol. 4 No. 1 Abril 2005.
9. Y. Yang, R. Guzmán, P.A. Deymier, M. Umnov, J. Hoying, S. Raghavan, O. Paluzinski and B.J.J. Zelinski, "Adsorption of a Microtubule on a Charged Surface Affects its Disassembly Dynamics," *Journal of Nanoscience and Nanotechnology*, Volume 5, Number 12, December 2005, pp. 2050-2056(7).
10. M. Umnov, O. Paluzinski, H. Barnaby, Y. Yang, S. Raghavan, R. Guzmán, J. Hoying, and P.A. Deymier, "Experimental Evaluation of Electrical Conductivity of Microtubules", *Biophysics Journal*, In Press 2006.
11. Tejada-Mansir, A., Montesinos, R.M., Magana, I. and Guzmán R. (2003) "Breakthrough performance of stacks of dye-cellulosic fabric in affinity chromatography of lysozyme." *Bioprocess Biosyst Eng* 25 (2003) 235-242.
12. Tejada-Mansir, A.; Montesinos, R.M.; Guzmán, R. (2001). "Mathematical analysis of frontal affinity chromatography in particle and membrane configurations." *Journal of Biochemical and Biophysical Methods*. 49: 1-28.
13. Montesinos-Cisneros, R.M.; Tejada-Mansir A.; Guzmán, R. (2001) "Simulation of Stirred Tank Affinity Processes Applied to Separation of Proteins." *International Journal of Bio-Chromatography*. 6, 231-244.
14. Tejada-Mansir, A.; Ortega, J.; Magana, I.; Guzmán, R. (1999). "Optimal design of affinity membrane chromatographic columns." *J. of Chromatogr.* 830, 2, 293-300.
15. Guzmán, R. and Garcia, J. (1999) "Metal Affinity Partitioning of Proteins." *Methods in Biotechnology: Aqueous Two-Phase Systems, Methods and Protocols*. Vol 11, chapter 31. Humana Press. R. Hatti-Kaul, ed.
16. Tejada-Mansir, A.; Juvera, J.M.; Magana, I.; Guzmán, R. (1998). "Design of affinity membrane chromatographic columns." *Bioprocess Eng.* 19, 2, 156-160.
17. Tellez C.M., Gaus, K.P., Graham, D., Arnold R.G. and Guzmán, R. (1998). "Isolation of Copper Biochelates from *Methylosinus trichosporium* OB3b and Soluble Methane Monooxygenase Mutants." *Appl. Environ. Microbiol.* 64:1115-1122
18. Ruiz-Manriquez, A., Magana, P.I., Lopez, V., and Guzmán, R. (1998). "Biosorption of Cu by *Thiobacillus ferrooxidans*." *Bioprocess Engr.* 18, pp 113-118.
19. Nedonchelle, E., Leduc, C., Garcia, X., Guzmán, R. and Vijayalakshmi, M.A. (1998). "Production of "Neometalloenzymes" by the De Novo Biosynthesis." *Ann. N.Y. Acad.Sci.* Vol. 864, pp 106-117.
20. Chaga G., Porath J. and Guzmán, R. (1997) "A New Method to Synthesize Biopolymeric Affinity Ligands." *Biotechnol. Appl. Biochem.* 26, 7-14.
21. Ehteshami, G.R., Sharma, S.D., Porath, J. and Guzmán, R. (1997). "Synthesis of Monoprotected Derivatives of Homobifunctional Molecules." *J. of Reactive Polymers*, 35, 135-143.
22. Garcia, J. and Guzmán, R. (1996). "Catalytic Transfer Hydrogenation of Heterobiprotected Poly(ethylene)glycol Derivatives Using Pd-Poly(ethylenimine) Catalyst." *J. Org. Chem.*, Vol. 62, No. 25. pp 8910.