

## REYES SIERRA-ALVAREZ

Professor

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### a. Professional Preparation

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| University of Valladolid (Valladolid, Spain)         | B.Sc., Chemistry, 1984              |
| University of Valladolid (Valladolid, Spain)-        | M.S. Chemical Engineering, 1985     |
| Wageningen University (Wageningen, The Netherlands)- | PhD, Environmental Technology, 1990 |
| Autonomous University of Barcelona (Spain)           | Postdoc, 1990-91                    |

### b. Appointments

- Professor, Dept. Chemical & Environmental Engineering, Univ. of Arizona, 08/10– present.
- Director of the Environmental Engineering Graduate program, Univ. of Arizona, 08/08-08/12.
- Co-Director, Center for Environmentally Sustainable Mining, University of Arizona, 2011-present.
- Associate Professor. Dept. Chemical & Environmental Engineering, Univ. of Arizona, 08/04 – 08/10.
- Visiting Associate Professor, Dept. Civil & Environmental Engineering, University of Washington, Seattle. Summer 2003, 2004 and 2008.
- Research Assoc. Professor. Dept. Chemical & Environ. Engineering, Univ. of Arizona, 01/01-07/04.
- Associate Professor, Dept. Environmental Sciences, Wageningen University, The Netherlands, 03/93-10/00
- Assistant Professor, UNESCO–Water Research Institute (IHE), Delft, The Netherlands, 02/91-02/93.

### c. Professional Interests

Microbial-catalyzed transformation of hazardous organic and inorganic pollutants, bioremediation, biological wastewater treatment, microbial toxicity and ecotoxicity of environmental contaminants, nanotoxicity, environmental fate and treatment of nanomaterials.

### c. Selected Publication (116 peer reviewed journal publications)

- Puyol D, JM Carvajal-Arroyo, B La Pena, R Sierra-Alvarez, JA Field. 2013. Kinetic characterization of *Brocadia* spp.-dominated anammox cultures. *Bioresource Technol.* (In press).
- Rottman J, L. Platt, R. Sierra-Alvarez, F. Shadman. 2013. Removal of TiO<sub>2</sub> nanoparticles by porous media: effect of filtration media and water chemistry. *Chem. Eng. J.* 217(1):212-220.
- Olivares C, J Liang, L Abrell, R Sierra-Alvarez, JA Field. 2013. Pathways of reductive 2,4-dinitroanisole (DNAN) biotransformation in sludge. *Biotechnol. Bioeng.* (In press).
- Sun W, A Luna-Velasco, R Sierra-Alvarez, JA Field. 2013. Assessing protein oxidation by inorganic nanoparticles with enzyme-linked immunosorbent assay (ELISA). *Biotechnol. Bioeng.* 110:694-701.
- Carvajal-Arroyo JM, W Sun, R Sierra-Alvarez, JA Field. 2012. Inhibition of anaerobic ammonium oxidizing (Anammox) enrichment cultures by substrates, metabolites and wastewater constituents. *Chemosphere* 91:22-27.
- Gomez-Rivera F, Field JA, Brown D, Sierra-Alvarez R. 2012. Fate of cerium dioxide (CeO<sub>2</sub>) nanoparticles in municipal wastewater during activated sludge treatment. *Bioresource Technol.* 108:300-304.

- Rottman, J., Sierra-Alvarez, R., Shadman, F. 2012. Interactions of inorganic oxide nanoparticles with sewage biosolids. *Water Sci Technol.* 66(9):1821-1827.
- Field JA, Luna-Velasco A, Boitano SA, Shadman F, Ratner BD, Barnes C, Sierra-Alvarez R. 2011. Cytotoxicity and physicochemical properties of hafnium oxide nanoparticles. *Chemosphere.* 84(10):1401-1407.
- Otero-González, L., Sierra-Alvarez, R., Boitano, S., Field, JA. 2012. Application and validation of an impedance-based real time cell analyzer to measure the toxicity of nanoparticles impacting human bronchial epithelial cells. *Environ. Sci. Technol.* 46:10271-10278.
- Sun W, Sierra-Alvarez R, Fernandez N, Sanz JL, Amils R, Legatzki A, Maier R, Field JA. 2009. Molecular characterization and in situ quantification of anoxic arsenite oxidizing denitrifying enrichment cultures. *FEMS Microb. Ecol.* 68:72-85.
- Sierra-Alvarez R, Cortinas I, Field JA. 2010. Methanogenic inhibition by roxarsone (3-nitro-4-hydroxybenzene arsonic acid) and related aromatic arsenic compounds. *J. Hazard. Mater.* 175:352–358
- Tapia-Rodriguez A, Luna-Velasco A, Sierra-Alvarez R, Field JA. 2012. Toxicity of uranium to microbial communities in anaerobic biofilms. *Water Air Soil Pollut.* 223(7):3859-3868.
- Sun W, R. Sierra-Alvarez, N Fernandez N, JL Sanz, R Amils, A Legatzki, R Maier, JA Field. 2009. Molecular characterization and in situ quantification of anoxic arsenite oxidizing denitrifying enrichment cultures. *FEMS Microb. Ecol.* 68:72-85.
- Ochoa-Herrera V, R Sierra-Alvarez, A Somogyi, NE Jacobsen, VH Wysocki, JA Field. 2008. Reductive defluorination of perfluorooctanesulfonate (PFOS). *Environ. Sci. Technol.* 42(9):3260-3264.
- Ochoa-Herrera V, R. Sierra-Alvarez. 2008. Removal of perfluorinated surfactants by sorption onto granular activated carbon, zeolite and sludge. *Chemosphere.* 72:1588–1593.
- Freeman SA, R Sierra-Alvarez, M Altinbas, J Hollingsworth, H Smidt, AJM Stams. 2008. Molecular characterization of mesophilic and thermophilic sulfate reducing microbial communities in expanded granular sludge bed (EGSB) reactors. *Biodegradation.* 19(2):161-177.
- Sierra-Alvarez R, Hollingsworth J, Zhou M. 2007. Removal of copper in an integrated sulfate reducing bioreactor - crystallization reactor system. *Environ. Sci. Technol.* 41:1426 – 1431.

#### d. Synergistic Activities

- Fulbright Senior Specialist, Visiting professor, October 2008. University of Concepcion, Chile.
- NSF Advance Fellows Award. 2002-2005.
- Associate editor, *Journal of Industrial Microbiology and Biotechnology* (2005-present) and *Reviews in Environmental Sci. Bio/Technology.* 2010-present.
- Faculty advisor- The Western Alliance to Expand Student Opportunities (WAESO)/More Graduate Education @ Mountain States Alliance (MGE@MSA). WAESO/MGE@MSA mission is broadening the participation of groups underrepresented in science, mathematics, engineering and technology graduate programs.

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| MS students advised (last 5 years):                             | 12 |
| PhD students (co-)advised (last 5 years):                       | 12 |
| Total number of postdoctoral scholars sponsored (last 5 years): | 7  |