



Miguel Fuentes-Cabrera

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Summary

I use computational physics and deep learning techniques to investigate the properties of nanomaterials, microbial organelles and microbial populations. I also collaborate and support external users of the Center for Nanophase Materials Sciences, and mentor undergraduate and graduate students.

Skills

- Proficient in *Python* and *PyTorch*.
- Proficient in artificial neural networks, *e.g.* Autoencoders, Variational Autoencoders and Recurrent Neural Networks.
- Expert in quantum chemistry and classical molecular dynamics simulations of nanomaterials, and competent in agent-based modeling simulations.
- Strong collaboration skills in multi-disciplinary efforts.

Professional Preparation

Undergraduate: University of La Laguna, Spain, BS in Physics (1993)

Graduate: University of La Laguna, Spain, Ph.D. in Physics (1998)

Postdocs: Fulbright Postdoctoral Research Associate: Arizona State University; Postdoctoral Research Associate: North Carolina State University; Oak Ridge National Laboratory

Appointments

Research and Development Staff, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory (2009-Present)

Research Scientist I, Joint Institute for Computational Sciences, Computer Science and Mathematics Division, Center for Nanophase Materials Sciences, Oak Ridge National

Laboratory (2006-2009)

Publication record (83; h-index = 29; ORCID = 0000-0001-7912-7079)

<https://scholar.google.com/citations?user=XWQInDwAAAAJ&hl=en>

Patents:

1. Self-assembly patterning of organic molecules on a surface. Patent Number(s): 9,610,608. Inventors: Pan Minghu, **Miguel Fuentes-Cabrera**, Petro Maksymovych, Bobby G. Sumpter, Qing Li.

Synergistic Activities

- Mentored so far 31 students at Oak Ridge National Laboratory within the programs: Science Undergraduate Laboratory Internships; Higher Education Research Experiences; Office of Graduate Student Research Program; and GEM Fellowship Program.
- Manuscript Reviewer for: Journal of Physical Chemistry, Nanoscale, ACS Nano, Scientific Reports, The Journal of Physical Chemistry.
- Associate Editor Frontiers in Microbiology; Editor Scientific Reports - Nature.
- Scientific advisor of DOE proposal “Process Optimization and Real-Time Control for Synergistic Microalgae Cultivation and Wastewater Treatment, DOE”