Oscar Juan Perales-Perez

Nanoscientist

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Biography

Perales is a Metallurgist graduated from the Universidad Nacional de Ingeniería (UNI) in Perú. After working in the School of Metallurgy at UNI as a professor and consultant engineer for more than 10 years, Oscar moved to the Institute for Advanced Materials Processing, Tohoku University in Japan, where he got his Ph.D. in Materials Processing in 1998. Perales was invited to join the Center for Interdisciplinary Research, Tohoku University (CIRTU) as a Visiting Associate Professor in November 1998. At CIRTU he was involved in research related to size-controlled synthesis and characterization of nanostructures and development of sizeselective separation methods for nanosize polydisperse crystals. Perales also worked as a member of the research team SONY-Tohoku University, being co-inventor of processes related to the size-controlled synthesis of magnetic nanomaterials.

Perales is with the Department of Engineering Science and Materials of the University of Puerto Rico, Mayaguez Campus (URPM) since 2002 and his current research interest involves the size, shape and structure-controlled synthesis of nanostructures (nanocrystals and thin films) for spintronics, high-density storage, electronic cooling and magnetocaloric applications. New research initiatives in nano-medicine are focused on the processing of quantum dots for Photo Dynamic Cancer Therapy (PDT). Perales projects are oriented towards the testbed stage through the Institute for Functional Nanomaterials (IFN) and strategic partners at the National High Magnetic Field Laboratory in Florida. The competitiveness of Perales' work is demonstrated by the support he receives from several agencies including the National Science Foundation, the United States Department of Defense, the United States Department of Education, NASA, the United States Geological Survey, the Puerto Rico Water Resources and Environmental Research Institute, the Toyota Foundation, The Water Management Authority and The Waste Solid Management Authority. He is also Co-director of the 5-years NSF-CREST Center on FBio-Nanotechnology at UPRM.

Perales, three times Distinguished Professor, recently appointed Associate Dean of Research of the College of Engineering at UPRM and selected member of the Peruvian National Academy of Science (2012), is author of more than 70 scientific and technological publications in materials processing and nanotechnology. He has also participated as invited panelist for the National Science Foundation SBIRT/STTR Program since 2003 (Functional Nanotechnologies and Advanced Materials).

Education

- Ph.D. in Materials Processing, Tohoku University, Sendai, Japan (1998)
- B.Sc. in Metallurgy, Universidad Nacional de Ingeniería (1986)

Appointments

2012–present	Associate Dean of Research, University of Puerto at Mayaguez, Mayaguez, PR, Puerto Rico
2008–present	Visiting Professor, National Engineering University-Graduate School of Metallurgy, Lima, Peru
2004–present	Associate Professor, University of Puerto Rico, Mayagüez Campus, Mayagüez, Puerto Rico
1998–2001	Visiting Associate Professor, Center for Interdisciplinary Research-Tohoku University, Sendai, Miyagi, Japan
1994–1995	Research Trainee, Institute for Advanced Materials Processing-Tohoku University, Sendai, Miyagi, Japan
1994–1995	Consulting Engineer, SGS-Pruvian branch-Division of Environmental Issues, Lima, Peru
1990–1991	Project Engineer, Newmont Gold Corporation, Cajamarca, Peru
1989–2002	Assistant Professor in Aqueous Processing & Hydrometallurgy, National Engineering University-School of Metallurgy, Lima, Peru

Honors and awards

- Selected Member of the National Academy of Sciences-Peru — Outstanding achievement in research , National Academy of Sciences, Peru (2012)
- Visiting Professorship-Metallurgy — Outstanding Research and Engineering Qualifications, National Engineering University-Department of Metallurgy, Lima-Peru (2009–2012)
- Distinguished Guest at the Faculty of Physical Sciences — Contributions to science and education in materials physics, National University of Trujillo, Department of Phyics,Trujillo, Peru (2009)
- President of the Peruvian Materials Science Sc. Committee — Contribution to Research and Education, Encuentro Cientifico Internacional-Peru (2006)
- Distinguished Professor — Excellency in Research and Education at the College of Engineering, University of Puerto Rico at Mayaguez, College of Engineering (2006–2007)
- Distinguished Professor — Contribution to research and education at UPRM, U of Puerto Rico at Mayaguez (2005–2006)
- Invited Panelist — Reviewer for NSF-SBIR/STTR Program (Advanced Materials, Nanotechnology), National Science Foundation (2004–2012)
- Distinguished Professor — Contribution to Reeaarch and Education, U of Puerto Rico at Mayaguez (2003–2004)
- Doctoral Scholarship — Research and Development achievements, Department of Education and Culture of Japan (Monbushyo) (1995–1998)

- Research Scholarship on Materials Processing — Research achievements in engineering, Japan International Cooperation Agency (JICA) (1994–1995)
- First Prize in Research — Oustandong Research: Use of crumb rubber to remove heavy metal ions from aqueous solutions, Interamerican Society of Sanitary Engineering and Environmental Sciences (AIDIS) ()
- Honorary Fellow University of Wisconsin-Madison — Contribution to Materials Science as part of the NSF-PREM Project, University of Wisconsin-Madison ()
- Adjunct Professor — Contributions to science and education in materials chemistry, University of Puerto Rico at Mayaguez-Department of Chemistry ()

Publications

1. Cedeno-Mattei, Y.; Sanchez-Pena M.; Lara-Rodriguez, Y.; [Perales-Perez, O.] and Cabrera-Rios, M.; "A case study on statistical characterization and optimization of coercivity in cobalt ferrite nanoparticles."; Journal of Engineering Manufacture; 226; 178 (2012)
2. Marquez, F.; Herrera, G.; Campo, T.; Cotto, M.; Duconge J.; Elizalde, E.; [Perales, O.]; Morant, C.; "Preparation of hollow magnetite microspheres and their applications as drugs carriers"; Nanoscale Research Letters; 7; 210 (2012)
3. Osorio-Cantillo, C.; Santiago-Miranda, A. N. ; [Perales-Perez, O.]; Xin, Y.; "Size- and phase-controlled synthesis of cobalt nanoparticles for potential biomedical applications"; Journal of Applied Physics; 111; 07b324 (2012)
4. Hernandez-Marquez, Z.; Blanco-Vicens, N.; Urcia-Romero, S.; [Perales-Perez, O.] and Cabrera-Rios, M.; "Statistical characterization of cobalt–zinc ferrite doped with gadolinium ions"; Journal of Engineering Manufacture; (2012)
5. Bailon-Ruiz, S.; Alamao-Nole, L.; [Perales-Perez, O].; "Synthesis and surface functionalization of water-soluble quantum dots"; Current Nanoscience; 8; 201 (2012)
6. Cedeno-Mattei, Y.; [Perales-Perez, O.] and Uwakweh, O. N. C.; "Synthesis of high-coercivity non-stoichiometric cobalt ferrite nanoparticles: Structural and magnetic characterization"; Materials Chemistry and Physics; 132; 999 (2012)
7. Vidal, T.; [Perales-Perez, O.]; Galvez, M.; "Effect of the Cross-Linking with Calcium Ions on the Structural and Thermo-Mechanical Properties of Alginate Films"; Mater. Res. Soc. Symp. Proc. ; 1366; (2011)
8. Galvez, M.; [Perales-Perez, O.]; [Guinel, M. J-F]; "Effect of vanadium ions on the functional properties of nanocrystalline zinc oxide"; Mater. Res. Soc. Symp. Proc. ; 1368; (2011)
9. Garcia, G.; Osorio-Cantillo, C.; [Perales-Perez, O.]; "Size- and shape-controlled synthesis of Ag nanoparticles for high termal conducitvity nanofluids"; Mater. Res. Soc. Symp. Proc. ; 1329; (2011)
10. Montes-Albino, G.; [Perales-Perez, O.]; Renteria, B.; Galvez, M.; [Guinel, M. J-F]; "Tuning of magnetic properties in Co-doped nanocrystalline bismuth ferrite"; MRS Proceedings; 1368; (2011)
11. Blagg, A.; [Perales-Perez, O.]; Valentin, R.; "Effect of Carbon Black and Silver Nanoparticle Loading on the Structural and Thermo-Mechanical Properties of Chitosan-Based Films"; NSTI Nanotech;

12. Montes-Albino, G.; [Perales-Perez, O.]; Galvez, M.; "Effect of Praseodymium Species on the Structural and Functional Properties of Nanocrystalline BiFeO3 Powders and Thin Films"; Mater. Res. Soc. Symp. Proc. ;
13. Montes-Albino, G.; Renteria, B.; Galvez, M.; [Perales-Perez, O.]; "Effect of the Type of Solvent and Bi-Stoichiometric Excess on the Purity of Nanocrystalline Bismuth Ferrite Single Phase"; Mater. Res. Soc. Symp. Proc. ;
14. Galvez, M.; Montes-Albino, G.; [Perales-Perez, O.]; "Functional Properties of Nanocrystalline Powders and Thin Films of (Co, V)-Zinc Oxide "; Mater. Res. Soc. Symp. Proc. ;
15. Garcia, G.; [Perales-Perez, O.]; Ahmadi, M.; [Guinel, M. J-F]; "Shape-controlled synthesis of silver nanostructures for high-thermal conductivity nanofluids"; Mater. Res. Soc. Symp. Proc. ;
16. Garcia, G.; Correa, J.; Renteria, B.; [Perales-Perez, O.]; Ahmadi, M.; [Guinel, M. J-F], McKrell, T.; "Size- and shape-controlled synthesis of silver nanostructures for potential high thermal conductivity applications"; Japanese Journal of Applied Physics;
17. Vidal-Urquiza, T.; [Perales-Perez, O.]; "Structural and Thermo-Mechanical Characterization of Calcium and Barium Alginate Films"; NSTI Nanotech;
18. Montes-Albino, G.; [Perales-Perez, O.]; Galvez, M.; "Study on the Structural, Electrical and Magnetic Properties of Pure and (Pr3+, Co2+) Doped BiFeO3 Powders and Thin Films"; Japanese Journal of Applied Physics;
19. Collantes, Y.; [Perales-Perez, O.]; Uwakweh, O., [Guinel, M. J-F]; "Synthesis of water dispersed Fe3O4@ZnO Composite Nanoparticles by the Polyol Method"; Mater. Res. Soc. Symp. Proc. ;
20. Bailon, S.; Alamo, L.; [Perales-Perez, O.]; "UV-Enhanced Toxicity of Water-Stable Quantum Dots in Human Pancreatic Carcinoma Cells"; Journal of Experimental Nanoscience;

Grants

1. M. De Jesus, W. La Torre, O. J. Perales-Perez, F. R. Roman, and M. Suarez. Fostering experiental learning to establish a pipeline from K-12 to graduate programs into a synergistic collaboration between STEM disciplines: agricultural, environmental and nanoscale science and engineering, United States Department of Education, Minority Science Improvement, 3 years, October 2012, Multiple PIs, Approved, $750,000.
2. F. Acosta, O. J. Perales-Perez, and F. R. Roman. Evaluation of novel recycling options for waste tires crumb rubber, Other, Waste Management Authority-PR, 1 year, March 2012, Multiple PIs, Approved, $150,000.
3. L. F. Fonseca, M. Gómez, Y. Ishikawa, R. S. Katiyar, G. Morell, W. Otaño, R. Palai, O. J. Perales-Perez, M. S. Tomar, and J. Velev. Development and Understanding of Multifunctional Nanostructures for Spintronics and Magnetoelectric Applications, United States Department of Energy, DOE-EPSCoR, 3 years, September 2011, Multiple PIs, Approved, $2,430,000.
4. L. Lopez, J. Lopez, E. Negron, O. J. Perales-Perez, F. R. Roman, M. Suarez, M. de Jesus, and W. de la Torre. Center for Education and Training in Agriculture and

Related Sciences (CETARS), Other, USDA-NIFA, 4 years, September 2011, Multiple PIs, Approved, $3,200,000.

5. O. J. Perales-Perez and F. R. Roman. Removal of organic solvents from water bodies using waste tire crumb rubber, Other, CDM Enginners, 1 year, September 2011, Multiple PIs, Approved, $35,000.
6. N. Cardona, A. J. Hernández, E. Juan, A. Padovani, O. J. Perales-Perez, R. G. Raptis, C. Rinaldi, L. Rivera, F. R. Roman, M. Suarez, D. Suleinman, M. S. Tomar, and M. Torres. CREST: Nanotechnology Center for Biomedical and Energy-Driven Systems and Energy, National Science Foundation, HRD, 5 years, August 2008, Multiple PIs, Approved, $5,000,000.

Presentations

1. A. Blagg, O. J. Perales-Perez, and R. Valentin (June 2012) "Effect of Carbon Black and Silver Nanoparticle Loading on the Structural and Thermo-Mechanical Properties of Chitosan-Based Films" in NANOTECH.
2. A. Blagg, O. J. Perales-Perez, and T. Vidal (June 2012) "Structural and Thermo-Mechanical Characterization of Calcium and Barium Alginate Films" in NANOTECH.
3. O. J. Perales-Perez (May 2012) "Enviromental Nanotechonologies: The Concept, Challenges and Opportunities in the Water Cleaning and Recycling Arena" in 7th Transdisciplinary Research Conference.
4. S. Bailon, R. Feliciano, and O. J. Perales-Perez (April 2012) "Systematic investigation of the aqueous processing of CdSe and CuS quantum dots for potential bio-medical applications" in MRS Spring Meeting.
5. M. Galvez, G. Montes, O. J. Perales-Perez, and B. Renteria (April 2012) "Effect of the Type of Solvent and Bi-Stoichiometric Excess on the Purity of Nanocrystalline Bismuth Ferrite Single Phase" in MRS Spring Meeting.
6. M. Galvez, G. Montes, and O. J. Perales-Perez (April 2012) "Ferromagnetism in Nanocrystalline Powders and Thin Films of Cobalt-Vanadium co-doped Zinc Oxide" in MRS Spring Meeting.
7. M. Ahmadi, G. Garcia, M. J. Guinel, and O. J. Perales-Perez (April 2012) "Shape-controlled synthesis of silver nanostructures for high-thermal conductivity nanofluids" in MRS Spring Meeting.
8. Y. Collantes, M. J. Guinel, O. J. Perales-Perez, and O. Uwakweh (April 2012) "Synthesis of water dispersed Fe3O4@ZnO Composite Nanoparticles by the Polyol Method" in MRS Spring Meeting.
9. S. Bailon, M. Cruz, and O. J. Perales-Perez (April 2012) "Quantum Dot/Anti-claudin-4 Conjugate for Bioimaging of Human Pancreatic Cancer Cells" in 2012 ERN Conference.
10. L. Alamo, R. Cruz, O. J. Perales-Perez, and F. R. Roman (February 2012) "Novel Size-Exclusion Chromatography Method for the separation and purification of water-soluble Zn-based quantum dots" in 2012 ERN Conference.
11. O. J. Perales-Perez (January 2012) "Environmental Nanotechnology" in Encuentro Cientifco Internacional.

12. O. J. Perales-Perez (December 2011) "NanomaterialsProcessing " in Peruvian Engineers Board.
13. C. Osorio, O. J. Perales-Perez, O. Uwakweh, and Y. Xin (November 2011) "Size- and Phase-controlled synthesis of cobalt nanoparticles for potential biomedical Applications" in 56th Annal Conference on Magnetism and Magnetic Materials.
14. O. J. Perales-Perez and C. Rodriguez (November 2011) "Surface Functionalization of Iron Oxide Nanoparticles for Magnetic Drug Targeting." in Annual Biomedical Research Conference for Minority Students (ABRCMS)..
15. S. Bailon, M. Cruz, and O. J. Perales-Perez (October 2011) "Synthesis of Ni-doped ZnSe@ZnS Quantum dots and their Cytotoxicity on Human Pancreatic Carcinoma Cells" in Material Science & Technology 2011.
16. S. Bailon and O. J. Perales-Perez (October 2011) "Thiol-dependent cytotoxicity of Zn-based QDs" in Material Science & Technology 2011.
17. O. J. Perales-Perez (October 2011) "Nanotechnology and Nanomaterials Processing & Applications" in First International Conference on Alternative Energy .
18. O. J. Perales-Perez, S. Peña, L. Rivera, S. P. Singh, and M. S. Tomar (July 2011) "Enhancement of Singlet Oxygen Generation in Aqueous and Non-aqueous Phase." in 43 IUPAC World Chemistry Congress.
19. T. Luna, O. J. Perales-Perez, and F. R. Roman (July 2011) "Functionalized magnetite nanoparticles in calcium alginate matrix and its effect on the adsorption of arsenic species in wáter. " in 43 IUPAC World Chemistry Congress.
20. L. Alamo, O. J. Perales-Perez, and F. R. Roman (July 2011) "Removal of VOCs, PAHs and gasolina components using recycled tire crumb rubber" in 43 IUPAC World Chemistry Congress.
21. A. Padilla, O. J. Perales-Perez, and F. R. Roman (July 2011) "Synthesis and functionalization of chitosan beads for the removal of vanadium contaminants from polluted waters" in 43 IUPAC World Chemistry Congress.
22. M. J. Guinel, C. Osorio, O. J. Perales-Perez, and A. Santiago (July 2011) "Synthesis and functionalziation of cobalt nanoparticles as potential candidates for biomedical applications" in 43 IUPAC World Chemistry Congress.
23. L. Alamo, S. Bailon, O. J. Perales-Perez, and F. R. Roman (July 2011) "Synthesis and size-exclusion separation of water-soluble quantum dots for biomedical applications" in 43 IUPAC World Chemistry Congress.
24. S. Bailon and O. J. Perales-Perez (July 2011) "UV-enhanced cytotoxicity of Cu-doped ZnSe@ZnS quantum dots in human pancreatic carcinoma cells: toxicology of quantum dots" in 43 IUPAC World Chemistry Congress.
25. M. Balaguera, S. Hernandez, O. J. Perales-Perez, and S. Singh (July 2011) "ZnO rods coated with Au for enhanced Raman spectroscopy" in 43 IUPAC World Chemistry Congress.
26. G. Garcia, M. J. Guinel, and O. J. Perales-Perez (April 2011) "Ag-Based Nanofluids for High-Thermal Conductivity Applications" in MRS Spring Meeting.
27. O. J. Perales-Perez and T. Vidal (April 2011) "Thermo-mechanical characterization of Calcium alginate films" in MRS Spring Meeting.
28. M. Gina, G. Marco, and O. J. Perales-Perez (April 2011) "Tuning of magnetic properties in Co-doped nanocrystalline BFO" in MRS Spring Meeting.
29. M. Galvez, M. J. Guinel, and O. J. Perales-Perez (April 2011) "V-doped ZnO and its structural, optical and magnetic properties" in MRS Spring Meeting.

30. O. J. Perales-Perez (April 2011) "Novel Options for an Old Issue: Recycling of Waste Tires Crumb Rubber in Agriculture. " in Mes del Reciclaje, Autoridad de Desperdicios Sólidos.
31. M. Galvez, G. Montes, and O. J. Perales-Perez (April 2011) "Effect of Praseodymium Species on the Structural and Functional Properties of Nanocrystalline BiFeO3 Powders and Thin Films" in MRS Spring Meeting.
32. S. Bailon, M. Cruz, and O. J. Perales-Perez (February 2011) "Synthesis of Ni-doped ZnSe@ZnS Quantum Dots and their Cytotoxicity in Human Pancreatic Carcinoma Cells" in Emerging Researchers National (ERN) Conference in STEM.
33. S. Bailon and O. J. Perales-Perez (February 2011) "UV-Enhanced Cytotoxicity of Cu-doped ZnSe@ZnS Quantum Dots in Human Pancreatic Carcinoma Cells" in Emerging Researchers National (ERN) Conference in STEM.