

# Oscar Martinez, Ph.D

## Group Leader and Senior R&D Staff

### RESUME SUMMARY



A Senior R&D staff and Group Leader with expertise in structural and thermal analysis as well as testing and design. I excel in leading and managing a diverse group of professionals. My extensive background encompasses roles such as group leader, work package manager, stress technical lead, package testing program manager, test director, operations manager, and control account manager, providing a versatile skill set in leadership and project management.

Proficient in research and effective communication. I have led the successful execution of project deliverables for the DOE Office of Nuclear Energy, National Nuclear Security Administration, NRC, DHS, and NASA. I have demonstrated leadership in destructive testing by overseeing regulatory testing of type B shipping packages with radioactive material and using the T7 model for success. With a track record of successful research, analytical work, written documentation, and project management.

### CORE COMPETENCIES

Nonlinear Material Behavior | Spent Nuclear Fuel Management | Finite Element Analysis | Hardware Optimization | R&D Management | Project Management | Strategic Planning | Testing | Mentoring | SCoR Principles

### PROFESSIONAL EXPERIENCE

2011 to Present | Oak Ridge National Laboratory, Oak Ridge, TN

#### Group Leader and Senior R&D Staff

- ◆ Group leader for the Nuclear Materials Packaging, Transportation, and Systems Analysis group
- ◆ Package Testing Program Manager. Managed testing campaigns between \$1.2 – \$1.6 million
- ◆ FEA subject matter expert in LS Dyna, ANSYS, and ABAQUS
- ◆ Executed, guided, and led novel technical analysis and experiments.
- ◆ Developed and implemented the Packaging Testing Program Training Plan and Quality Assurance Program.
- ◆ Control Account Manager for the Spallation Neutron Source Proton Power Upgrade Project, \$500K/yr.
- ◆ Provide staff planning, development, and oversight; research strategy planning, and foster internal and external collaborative partnerships.
- ◆ Office of Nuclear Energy Integrated Waste Management Work Package Manager, \$580K/yr.
- ◆ Developed and implement a group mission and vision to align with the Division and Lab's agenda.

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### EDUCATION

#### Ph.D. Aerospace Engineering

University of Florida, 2007

#### MS, Aerospace Engineering

University of Florida, 2004

#### BS, Aerospace Engineering

University of Florida, 2003

### SKILLS

- Formally trained in management, leadership, and safety
- Composite Laminate Theory
- Finite Element Analysis
- Mechanical Analysis and Design
- ASME B&PVC
- High Speed Dynamic Impact Analysis
- Conflict management & resolution
- NQA-1 and 10 CFR Subpart H
- LOSA trained
- Lab Space Manager
- Additive Manufacturing
- Transportation Security
- Testing Director
- ANSYS, ANSYS LS-DYNA
- ANSYS Thermal, Seismic, Dynamic, Nonlinear, Modal

2008-2011 | Jacobs Engineering, Houston, TX

### Senior Aerospace Structural Engineer

- ◆ Structural Analysis Technical Lead engineer for the Advanced Mars Space Suit
- ◆ Coordinated stress analysis schedule with overall project schedule.
- ◆ Evaluated the thermal protection system concept for project Orion as a subject matter expert.
- ◆ Developed advanced light-weight structural concepts for flight hardware.
- ◆ Engineering support for ISS space operations and Space Shuttle launches.

2007-2008 | Alliant Techsystems, Magna, UT

### Aerospace Structural Engineer

- ◆ Performed structural engineering analysis of the ATK Small Launch Vehicle (SLV)
- ◆ Developed key failure mechanisms to predict performance of rocket inter-stages.
- ◆ Sig-sigma workshops and Toyota Production Systems (TPS) trained.

### Professional Awards

- ◆ Jacobs Engineering Spot Award, Excellence in Advanced Space Suit Project and the Multi-Purpose Crew Vehicle project (2009, 2010, 2011)
- ◆ Award of Excellence in support of the Portable Life Support System for the Constellation Program from NASA Johnson Space Center. (2009)
- ◆ ORNL Significant Performance Award (2014, 2019, 2020, 2023)
- ◆ Great Minds in STEM Luminary Award (2020)

### JOURNAL PAPERS

1. **Martinez, O.**, Sankar, B.V., Haftka, R., Blosser, M.L. (2012), "Two-Dimensional Orthotropic Plate Analysis of an Integral Thermal Protection System," *AIAA Journal*, 50(2), 387–398, DOI: 10.2514/1.J051172.
2. **Martinez, O.**, Sharma, A., Sankar, B.V., Haftka, R., Blosser, M.L. (2010), "Thermal Force and Moment Determination of an Integrated Thermal Protection System," *AIAA Journal*, 48(1), 119–128, DOI: 10.2514/1.40678.
3. **Martinez, O.**, Sankar, B.V., Haftka, R., Blosser, M., Bapanapalli, S.K. (2007), "Micromechanical Analysis of a Composite Corrugated-Core Sandwich Panel for Integral Thermal Protection Systems," *AIAA Journal*, 45(9), 2323–2336, DOI: 10.2514/1.26779.
4. **Martinez, O.** (2007). "Micromechanical Analysis and Design of an Integrated Thermal Protection System for Future Space Vehicles", Ph.D. Dissertation, University of Florida, Gainesville, Florida,
5. Bapanapalli, S. K., **Martinez, O.**, Gogu, C., Sankar, B. V., Haftka, R. T., and Blosser, M.L., "Analysis and Design of Corrugated Core Sandwich Panels for Thermal Protection Systems of Space Vehicles," *AIAA Journal*, 2006–1942, 2006.
6. Mondal, K., **Martinez, O.**, Jain, P., "Advanced Manufacturing and Digital Twin Technology for Nuclear Energy", Awaiting publication, *Journal of Frontiers in Energy*
7. Mondal K., Karkkainen, R., **Martinez, O.**, Sikkema, I., Mathur, M., Hollifield, S., Mingyan, L., Advanced Manufacturing Technologies for Enhancing Security in Nuclear and Radiological Materials Transport, Awaiting publication, *Journal of Applied Science*.
8. W Tang, J Jun, SY Kwon, **O Martinez**, YF Su, R Repukaiti, Advanced Neutron Absorber Ni-Cr-Mo-Gd Alloys Seawater Corrosion Mechanism and Susceptibility Study, *Materials Today Communications*, 108759

### SELECTED CONFERENCE PROCEEDINGS

1. Tang, W., Giuliano, D., **Martinez, O.**, Gussev, Maxim., Nycz, A., An, K., Meyer, L., Masuo, C., Yu, D., Carter, W., Walters, A., Wallace, R., Vaughan, D, "Mechanical Responses of 316L Stainless Steel Printed by Wire Arc Additive Manufacturing with Different Thermal Histories", *Proceedings of the ASME 2023 Pressure Vessel Piping Conference PVP 2023*, July 16-21, 2023, Atlanta, GA, PVP2023-106680.
2. **Martinez, O.**, Giuliano, D., Tang, W., Nogradi, P., Adeniyi, A., Lowe, L., "Additive Manufacturing and Regulatory Testing of Canisters For Spent Nuclear Fuel Management", *Proceedings of the ASME 2023 Pressure Vessel Piping Conference PVP 2023*, July 16-21, 2023, Atlanta, GA, PVP2023-105981.
3. Montgomery, V., **Martinez, O.**, Nogradi, P., Lowe, L., Adeniyi, A., "Free Drop Impact Data Acquisition Using Digital Imaging Correlation", *Proceedings of the ASME 2023 Pressure Vessel Piping Conference PVP 2023*, July 16-21, 2023, Atlanta,

GA, PVP2023-106649.

4. Nogradi, P., **Martinez, O.**, Adeniyi, A., Lowe, L., Whittenbarger, R., Fisher, R., McLaurine, A., "3D Metrology Analysis of Structural Damages on Type B Shipping Container Compared to Predicted FEA Results After Completion of NCT and HAC Regulatory Testing", *Proceedings of the ASME 2023 Pressure Vessel Piping Conference PVP 2023*, July 16-21, 2023, Atlanta, GA, PVP2023-105912
5. **Martinez, O.**, Adeniyi, A., Nogradi, P., "Recent Radioactive Material Package Testing Experiences at Oak Ridge National Laboratory," *Proceedings of the 20th International Symposium on the Packaging and Transportation of Radioactive Materials*, Paper Number 1393, Juan-les-pins, Antibes, French Riviera, France, June 11 -15, 2023.
6. Adeniyi, A., **Martinez, O.**, Nogradi, P., Whittenbarger, R., Fisher, R., McLaurine, A., "3D Metrology Analysis of Structural Damages on Type B Shipping Container After Completion of Normal Conditions of Transportation and Hypothetical Accident Conditions", *Proceedings International High-Level Radioactive Waste Management Conference (IHLRWM)*, November 2022, Phoenix, AZ.
7. Tang, W., Giuliano, D., **Martinez, O.**, Banerjee, K., Nycz, A., Gussev, M., Meyer, L., Vaughn, D., "316L Stainless Steel Wire Arc Additive Manufacturing and Characterization for Potential SNF Canister Production", *Proceedings International High-Level Radioactive Waste Management Conference (IHLRWM)*, November 2022, Phoenix, AZ.
8. Cantonwine, P., **Martinez, O.**, Montgomery, R., "The Mechanical Response of High Burnup 17 x 17 PWR Fuel Rods Under Bending", *Proceedings of the TopFuel Conference 2022*, October 2022, Raleigh, NC.
9. **Martinez, O.**, Adeniyi A., Nogradi, P., Van Hoy B., "Regulatory Testing and 3D Scanning Methodology of the DPP-1 Type Shipping Container for NCT and HAC Tests," *Proceedings of the ASME 2022 Pressure Vessel & Piping Conference*, PVP-2022-86807, July 17-22, 2022, Las Vegas, NV.
10. **Martinez, O. A.**, Montgomery, R., Bevard, B., "Finite Element Evaluation of Spent Nuclear Fuel for Dynamic Impact Load Cases", *2021 ANS Virtual Annual Meeting*, June 14-16, 20201, Virtual Online.
11. **Martinez, O.A.**, Adeniyi, A., Nogradi, P., Loftin, B., Martinez, C., Van Hoy, B., "Regulatory Testing and Posttest Analysis of the DPP-3 Type B Shipping Container " *Proceedings of the ASME 2021 Pressure Vessel & Piping Conference*, PVP-2021-62434, July 12-16, 2021, Virtual Online.
12. **Martinez, O. A.**, "Regulatory Testing of a Type B Shipping Contained for NCT and HAC", *Proceedings of the 19th International Symposium on the Packaging and Transportation of Radioactive Materials PATRAM 2019*, Paper Number 1393, New Orleans, Louisiana, August 4-9, 2019.
13. **Martinez, O.A.**, "Special Form Testing of Sealed Source Encapsulations for High-Alpha-Activity Actinide Materials", *Proceedings of the 18th International Symposium on the Packaging and Transportation of Radioactive Materials PATRAM 2016*, Paper Number 5044, Kobe, Japan, September 18-23, 2016.
14. Jarrell, J., Adeniyi, A., **Martinez, O.**, Radulescu, G., Robb, K., Scaglione, J., "Design of Universal Canister System for U.S. High-Level Waste", *Proceedings of the 18th International Symposium on the Packaging and Transportation of Radioactive Materials PATRAM 2016*, Paper Number 5044, Kobe, Japan, September 18-23, 2016.
15. **Martinez, O.A.**, Blessinger, C.B., "ORNL Special Form Testing of Sealed Source Encapsulations", *Proceedings of the 49th ASME Pressure Vessel and Piping Conference*, ASME PVP2015-46003, Boston, Massachusetts, July 19-23, 2015.
16. Feldman, M.R., Ludwig, S.B., **Martinez, O.A.**, "Recent Radioactive Material Package Testing Experiences at Oak Ridge National Laboratory" *Proceedings of the 17th International Symposium on the Packaging and Transportation of Radioactive Materials PATRAM 2013*, San Francisco, California, August 18-23, 2013.