

Curriculum Vitae

Alejandro Rodriguez

Faculty Fellow

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• Research Interests

High-throughput Computation · Materials Science · Machine Learning

• Education

2018.08 – 2023.08 Doctor of Philosophy in Mechanical Engineering, University of South Carolina, USA, **GPA: 4.0**

2014.08 – 2018.05 Bachelor of Science in Mechanical Engineering, University of South Carolina, USA, **GPA: 4.0**

• Publications

10. Ojih, J., **Rodriguez, A.**, Hu, J., and Hu, M., 2023, "Screening Outstanding Mechanical Properties and Low Lattice Thermal Conductivity Using Global Attention Graph Neural Network," Energy AI, 14(June), p. 100286. Impact Factor: **11.25**.

<https://doi.org/10.1016/j.egyai.2023.100286>

9. Negi, A., **Rodriguez, A.**, Zhang, X., Comstock, A. H., Yang, C., Sun, D., Jiang, X., Kumah, D., Hu, M., and Liu, J., 2023, "Thickness-Dependent Thermal Conductivity and Phonon Mean Free Path Distribution in Single-Crystalline Barium Titanate," Adv. Sci., 2301273, pp. 1–10. Impact Factor: **17.521**. <https://doi.org/10.1002/advs.202301273>

8. **Rodriguez, A.**, Lin, C., Shen, C., Yuan, K., Al-Fahdi, M., Zhang, X., Hongbin, Z., and Hu, M., "Unlock Phonon Properties of 80,000 Cubic Crystals by an Indirect Bottom-up Machine Learning Approach," npj Computational Materials 2023, accept in principal. Impact Factor: **12.256**.

7. **Rodriguez, A.**, Lin, C., Yang, H., Al-Fahdi, M., Shen, C., Choudhary, K., Zhao, Y., Hu, J., Cao, B., Zhang, H., and Hu, M., "Million-Scale Data Integrated Deep Neural Network for Phonon Properties of Heuslers Spanning the Periodic Table," npj Computational Materials 2023, **9**(20). Impact Factor: **12.256**. <https://doi.org/10.1038/s41524-023-00974-0>

6. Ojih, J., Onyekpe, U., **Rodriguez, A.**, Hu, J., Peng, C., and Hu, M., "Machine Learning Accelerated Discovery of Promising Thermal Energy Storage Materials with High Heat Capacity," ACS Applied Materials & Interfaces 2022, 14(38), pp. 43277–43289. Impact Factor: **10.38**. <https://doi.org/10.1021/acsami.2c11350>

5. Ojih, J., Al-Fahdi, M., **Rodriguez, A. D.**, Choudhary, K., and Hu, M., “Efficiently Searching Extreme Mechanical Properties via Boundless Objective-Free Exploration and Minimal First-Principles Calculations,” npj Computational Materials 2022, 8(1). Impact Factor: **12.256**. <https://doi.org/10.1038/s41524-022-00836-1>

4. **Rodriguez, A.**; Lam, S.; Hu, M., “Thermodynamic and Transport Properties of LiF and FLiBe Molten Salts with Deep Learning Potentials,” ACS Applied Materials & Interfaces 2021, acsami.1c17942. Impact Factor: **10.38**. <https://doi.org/10.1021/acsami.1c17942>

3. **Rodriguez, A.**; Schlichting, K.-P.; Poulidakos, D.; Hu, M., “Ab Initio Energetic Barriers of Gas Permeation across Nanoporous Graphene,” ACS Applied Materials & Interfaces 2021, 13 (33), 39701–39710. Impact Factor: **10.38**. <https://doi.org/10.1021/acsami.1c09229>

2. Al-Fahdi, M.; **Rodriguez, A.**; Ouyang, T.; Hu, M., “High-Throughput Computation of New Carbon Allotropes with Diverse Hybridization and Ultrahigh Hardness,” Crystals 2021, 11 (7), 783. Impact Factor: **2.589**. <https://doi.org/10.3390/cryst11070783>

1. **Rodriguez, A.**; Liu, Y.; Hu, M., “Spatial Density Neural Network Force Fields with First-Principles Level Accuracy and Application to Thermal Transport,” Physical Review B 2020, 102 (3), 035203. Impact Factor: **3.908**. <https://doi.org/10.1103/PhysRevB.102.035203>

● Fellowships and Awards

2022.01 Koerner Family Foundation Fellowship (\$10,000)

2019.08 – 2022.08 U.S. Department of Energy IUP Nuclear Energy Fellowship (\$150,000)

2019.11 AI-Machine Learning Innovation Award for Poster at ASME IMECE

2019.03 NASA SC Space Grant Consortium Minorities in STEM Research Award (\$6,000)

2014.08 – 2018.05 USC President’s Honor’s List

2014.08 – 2018.05 USC College of Engineering and Computing Dean’s List

2017.04 McNair Junior Fellowship Award

2015.03 Celebration of Excellence Award For Cumulative 4.0 GPA

● Professional Activities

2023.04 Presentation at EPSCoR Conference

2021.11 Virtual Poster at Workshop for the Molten Salt Thermal Properties

2021.10 Virtual Presentation at MS&T

2019.11 Poster and Conference Presentation at ASME IMECE