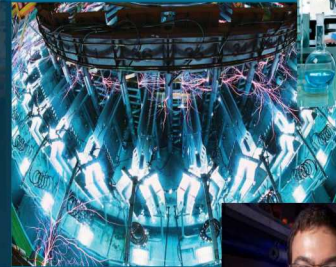


R&D for High Risk, High Consequence Applications

GAIN 2020

SAND2020-1331PE



Michelle A. Pang, Sandia National Laboratories

Senior Member of Technical Staff

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Fulfilling Our National Security Mission



Nuclear Deterrence



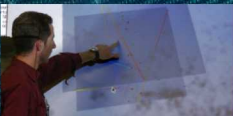
*Defense Nuclear
Nonproliferation*



*National Security
Programs*



*Energy & Homeland
Security*

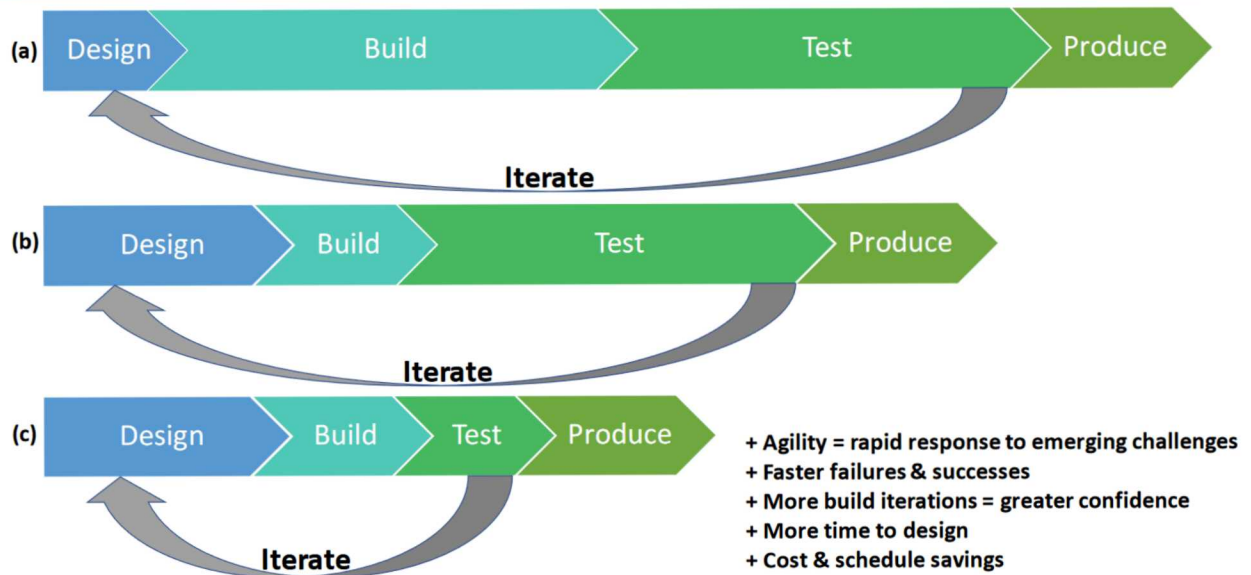


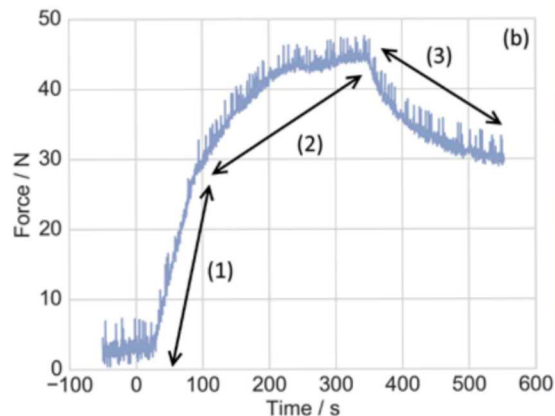
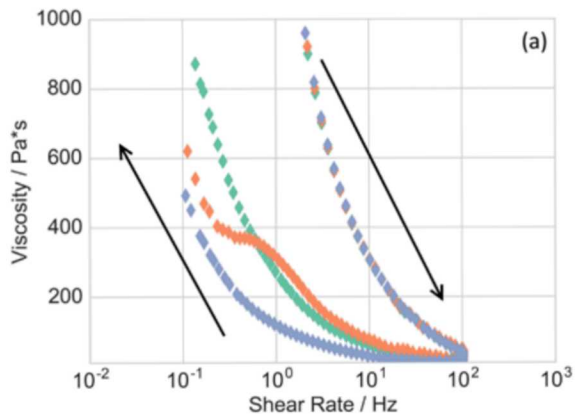
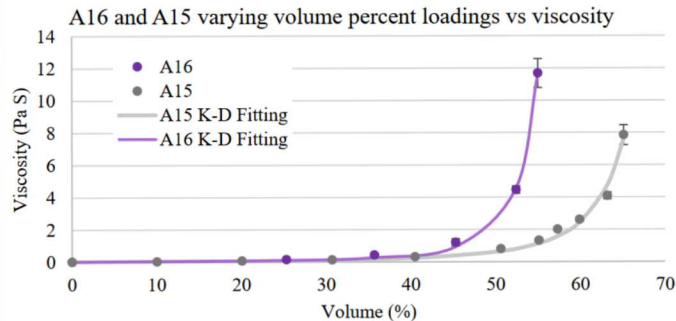
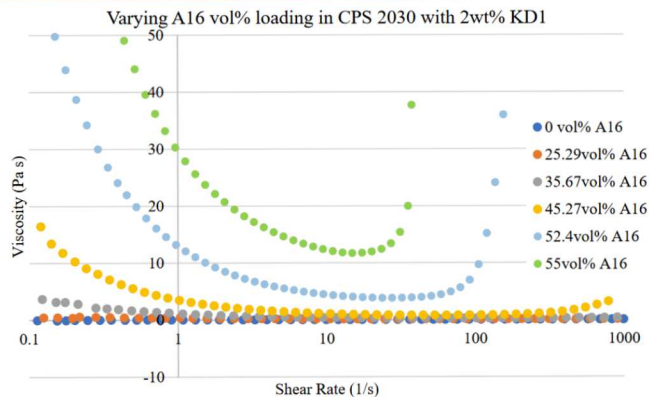
*Advanced Science &
Technology*

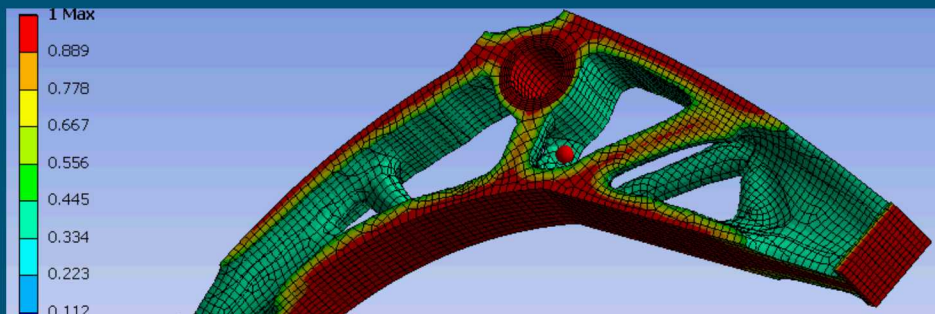
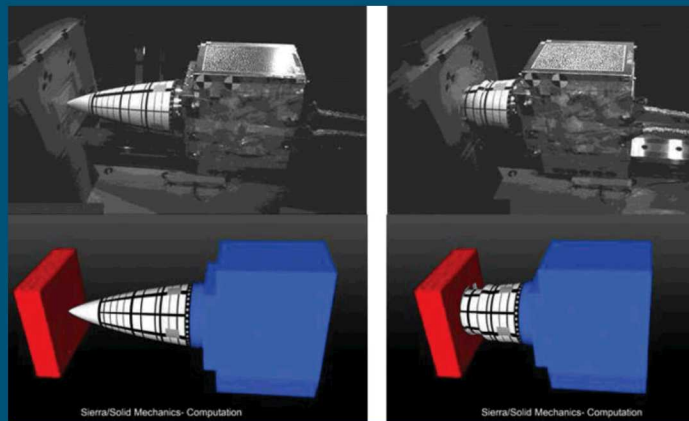
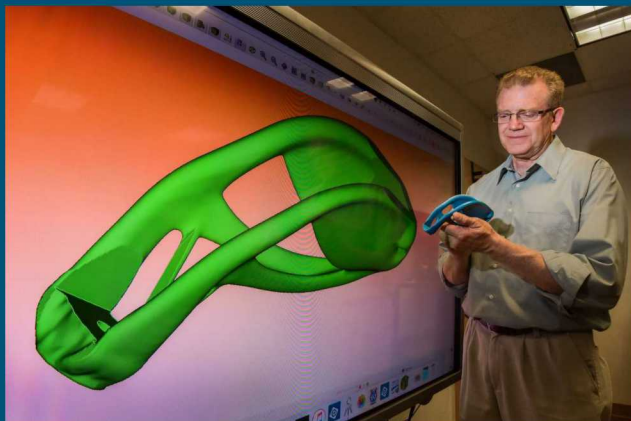
Science and technology are critical to the United States' national security mission. They are the foundation of our economic, medical, and technological leadership. They are the key to our future. They are the key to our survival. They are the key to our success. They are the key to our life.

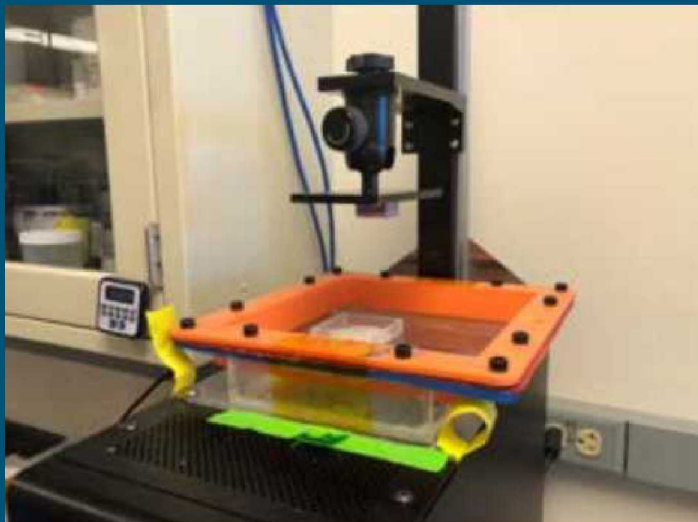
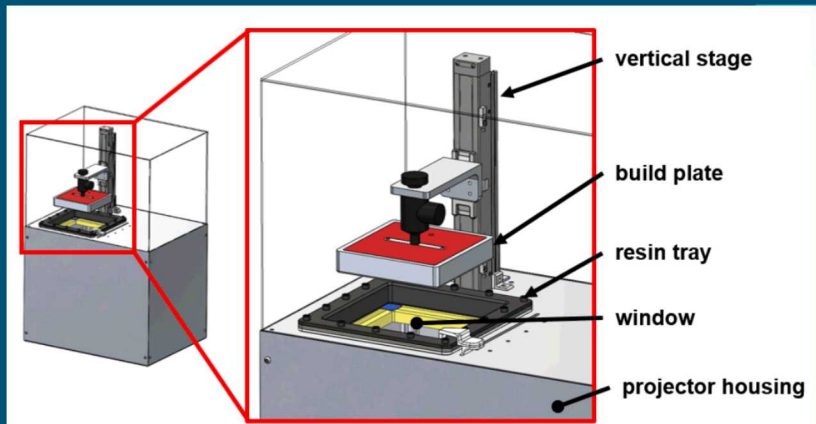
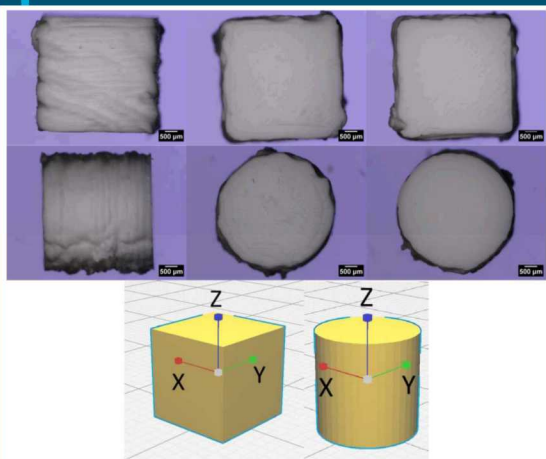
R&D Landscape: Additive Manufacturing

- Interested in a new technology
 - Advantages and disadvantages
- Acknowledge the risks or concerns
 - Methods to mitigate risk
 - R&D required to drive down concerns

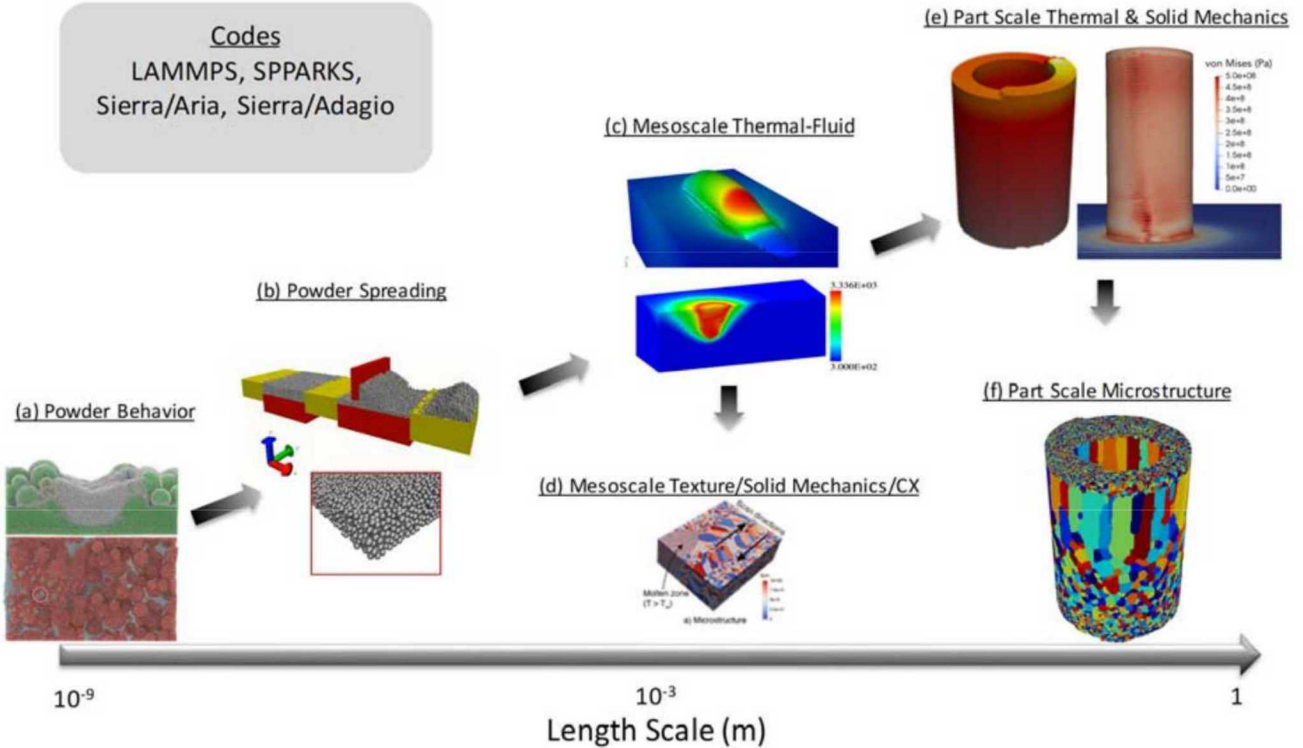


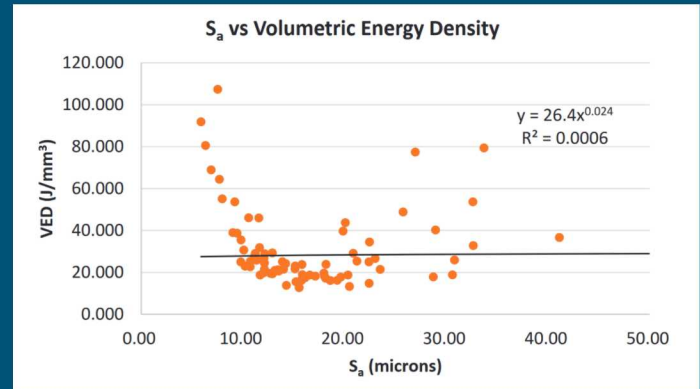
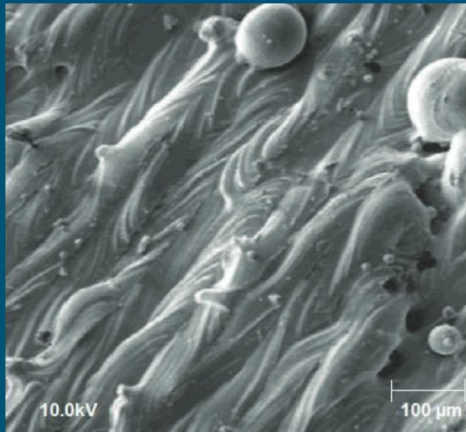
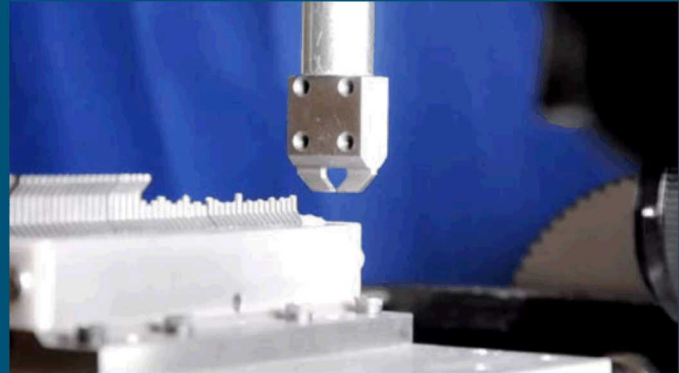
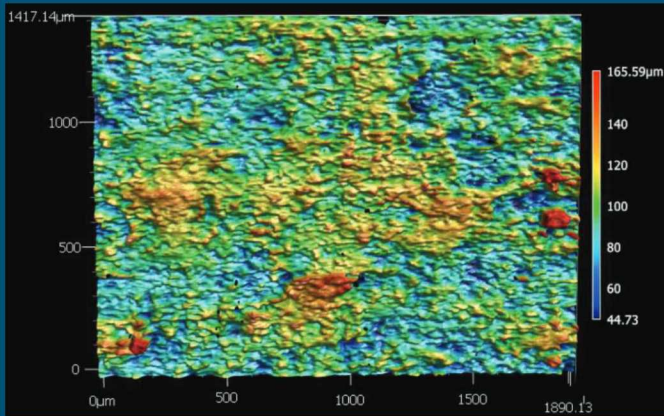


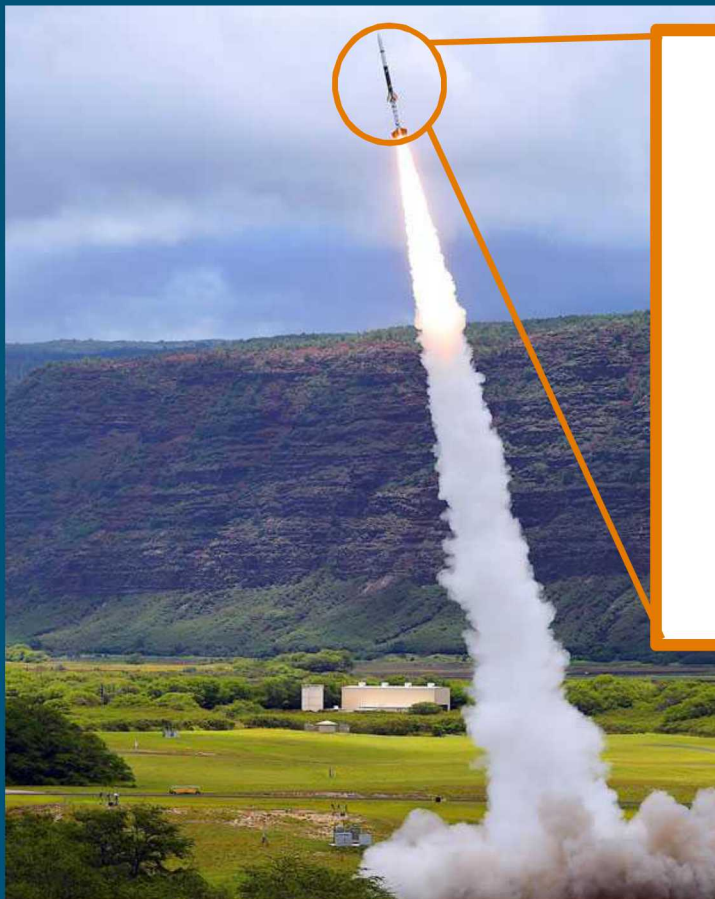




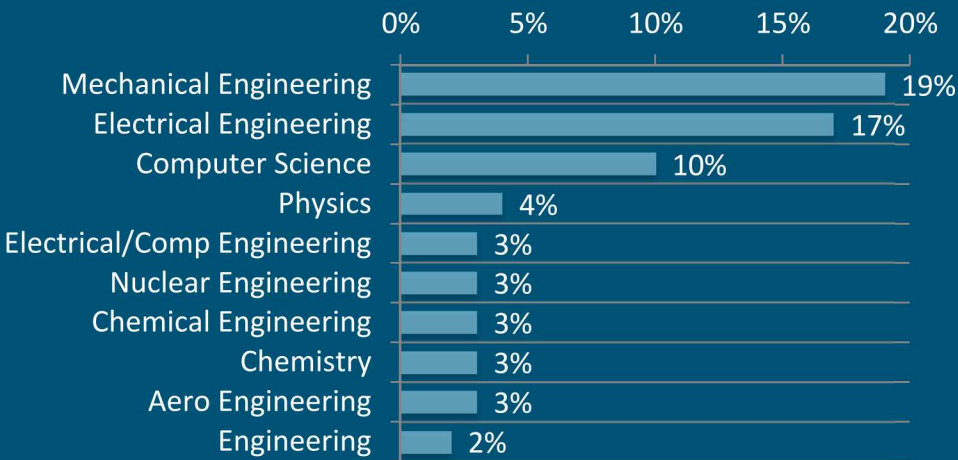
Codes
LAMMPS, SPPARKS,
Sierra/Aria, Sierra/Adagio



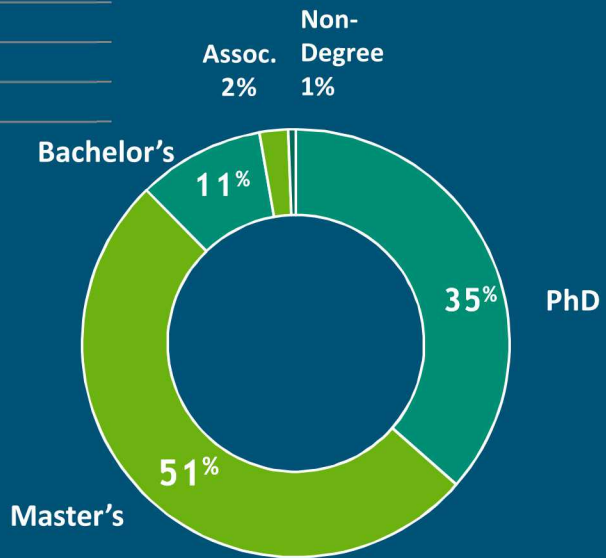




10 R&D by Discipline & Degree



Top 10 job descriptions shown, Regular exempt non-management employees only





Employment Opportunities



Internships

Encourages qualified students to develop interests in critical skills areas related to our mission, with the ultimate objective of developing our pipeline for our future. Available for Summer, Year Round and Co-op.

Eligibility Criteria

- Full-time enrollment status at an accredited school during the academic school year
- Undergraduate equivalent of 12 hours per semester
- Graduate equivalent of 9 hours per semester
- Must have a minimum cumulative GPA of 3.0 on a 4.0 scale for Technical, R&D, and Business interns; 2.5 on a 4.0 scale for Clerical and Labor interns
- Have U.S. citizenship for positions that require a security clearance or as stated in the job posting
- At least 16 years of age





Key areas for post-docs at Sandia:

- Computer science/Computer Engineering
- Electrical Engineering
- Mechanical Engineering
- High-performance computing
- Microelectronics and microfluidics
- Nanotechnology
- Physics
- Chemistry/ Electro Chem
- Biosciences and biotechnology
- Radiation & electrical sciences
- Engineering sciences
- Pulsed power sciences
- Materials science & engineering

Eligibility Criteria

- A recent PhD (conferred 5 years prior to employment) or the ability to complete all PhD requirements before hire date.

Fellowship Opportunities

Sandia provides postdoctoral fellows with professional development opportunities and prepares fellows to conduct independent, groundbreaking research.

Postdoctoral Fellowships

- Harry S. Truman Fellowship
- Jill Hruby Fellowship
- John Von Neumann

**Sign up for Automated Job Notifications!*

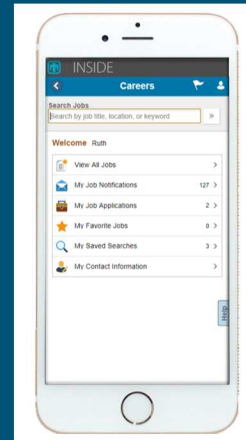


Apply Online! sandia.gov/careers



*Sign up for
Automated
Job
Notifications!*

*Mobile Job
Applications*

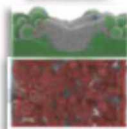




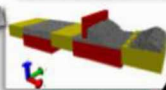
Thank You!

Backup Slides

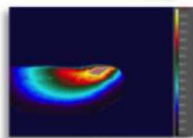
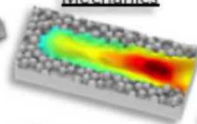
Powder Behavior



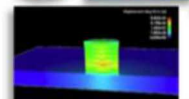
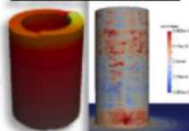
Powder Spreading



Mesoscale Thermal Behavior & Texture/Solid Mechanics



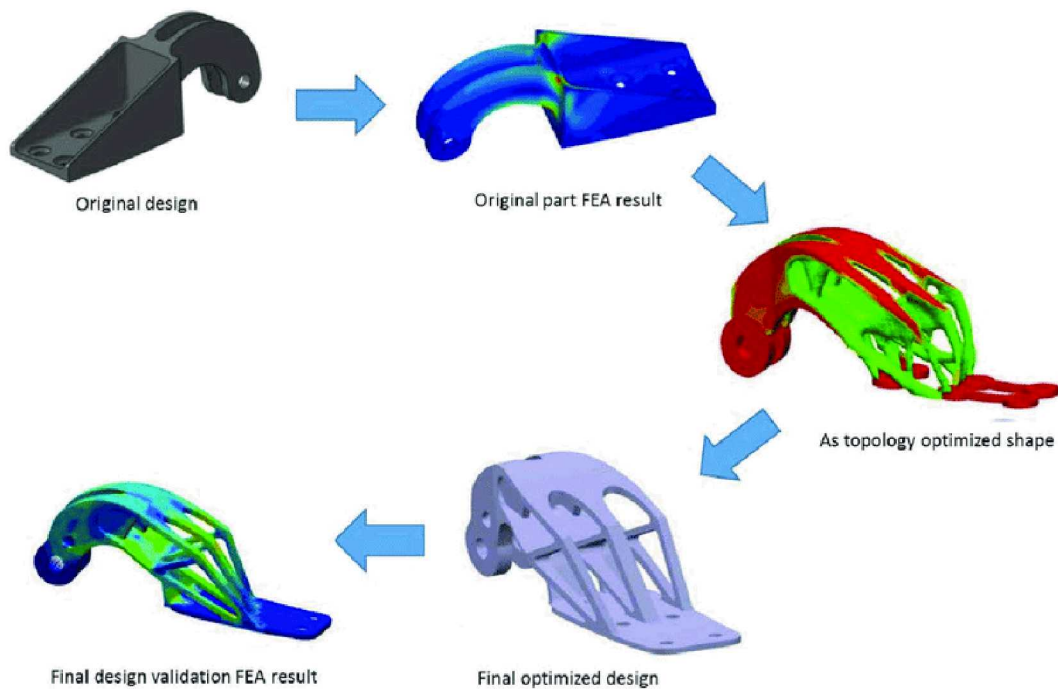
Part Scale Thermal & Solid Mechanics



Part Scale & Microstructure



Example using Metal Powder Bed Exemplar



Sandia's Additive Manufacturing IP Portfolio

Title
Freeforming of Materials from Powder Slurries
Apparatuses and Methods for Shuttering an Aerosol Particle Stream
Energy Beam Driven Rapid Fabrication System
Multiple Beam System for Material Deposition
Four Axis Powder Delivery Nozzle System
Aerodynamic Beam Generator for large particles
Two Fluid Hydrodynamic Printing
Powder delivery improvements for fed powder additive manufacturing
Metallic Nanoink Development for Direct Write Applications
Method for Producing a Net-Shaped Aerogel
Solid Freeform Fabrication Using Chemically Reactive Suspensions
Method for Producing a Net-Shaped Aerogel
Method for Making a Bio-Compatible Scaffold
AM Tool Path Generator with Embedded Process Control Commands
Completely Additively Manufactured Actuator

Tools

Materials

Process

Sandia's Brand Promise - *Sandia's Employee Value Proposition*

- ***National Security Mission:***
Your work contributes to the security, peace and freedom of our nation and the world
- ***Uniquely Challenging and Important Work:***
The work you do will be challenging, and amazing with real-world impact
- ***Work with Great People:***
You will work with extraordinary people, the top minds in their field
- ***Research Facilities Like None Other:***
You will have access to some of the best tools, equipment, and research facilities in the world
- ***Healthy Lifestyle, Work-Life Balance:***
You will experience a balance between your work life and personal life through flexible schedules, competitive benefits, and convenient amenities
- ***Career Mobility:***
You can have a full-life career at Sandia by working across multiple projects and areas of your interest

Available Videos

Videos require wifi in order to play

[Sandia Mission Video](#) (4:36)

[Sandia Our Roots](#)(3:05)

Location Videos

[Sandia New Mexico Location](#) (3:23)

[Sandia California Location](#) (3:41)

Diversity & Inclusion Videos

[Black Leadership Outreach](#)

[Asian Leadership Outreach](#)

[American Indian Outreach](#)

[Hispanic Leadership Outreach](#)

*For more Sandia Videos refer to [Sandia's YouTube Channel](#)