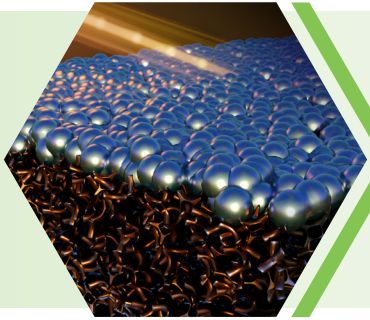


Second Target Station Science

Advancing Pressing Societal and Economic Challenges

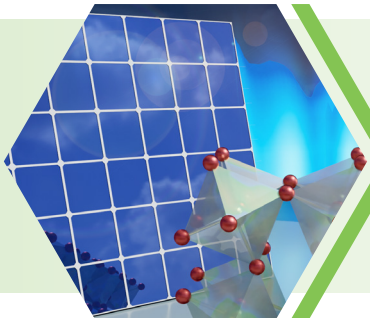


Net Zero Carbon Emissions by 2050

- Clean hydrogen generation and high-energy density storage, learning where and how hydrogen is stored
- CO₂ separation and sustainable long-term storage, understanding how CO₂ behaves at a molecular level in soil and geological formations

Widespread Electrical Vehicle (EV) Adoption

- Safer, more powerful, longer-lasting batteries, watching formation and movement of critical interfaces
- Lightweight and strong, high-performing materials to lower weight, understanding interfacial interactions in composite materials

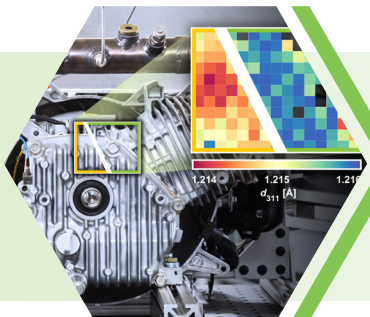


Decarbonizing the Power Sector by 2035

- Long-lived, robust, and efficient photovoltaic cells, understanding aging mechanisms
- Safe, reliable, predictable operation of nuclear reactors and new alloys for advanced reactor design, linking underlying structural changes to component performance

Advancing U.S. Manufacturing

- Predictable, confident deployment of 3D-printed components in failure-critical applications like aerospace, biomedical, and transportation, understanding the connection between intrinsic defects (e.g., voids and porosity) and component strength and durability



Materials in Action

- Scientists will observe changes in materials as they are made, as they perform, as they fail, and as underlying chemical and physical processes unfold 5-10x faster than with today's neutron sources