

Center for Biomedical Research (CBR)

CBR is a multidisciplinary research center devoted to the study of advanced biomaterials, devices, therapeutics, and related biomedical topics for applications in the biomedical industry.

Research and development areas:

- Bioactive Materials and Disease Intervention
- Metabolic Regulation and Environmental Toxicology
- Neuroscience, Neurotrauma, and aging
- Biosensors and Disease Diagnosis
- Biomedical and Medical Informatics

Center for Infrastructure Engineering Studies (CIES)

CIES focuses on fundamental and applied research in science and engineering related to transportation and building infrastructure in support of existing and emerging technologies.

Research and development areas:

- Advanced, sustainable materials for infrastructure construction and rehabilitation
- Rehabilitation of bridges and buildings by applying new materials, such as self-consolidating, fiber-reinforced composite materials
- Advanced design methods to resist extreme events, such as earthquakes and tornadoes
- Novel, non-destructive techniques to assess damage and structural health monitoring of infrastructure

Center for Intelligent Infrastructure (CII)

CII creates, conveys, and applies engineering knowledge and operational intelligence to help solve challenges with aging infrastructure for a safe, sustainable and resilient community and environment.

Research and development areas:

- Robotic platforms for infrastructure inspection and maintenance
- Smart materials and sensor integration in infrastructure for intelligent asset management
- Artificial intelligence and decision-making tools for civil and power infrastructure
- Life-cycle assessment, reliability, and stressor mitigation of infrastructure systems
- Post-disaster resiliency and recovery of infrastructure systems
- Condition assessment and monitoring responses to disasters and extreme events
- Cyber-physical-social infrastructure systems for sustainable and resilient society

Center for Research in Energy and Environment (CREE)

CREE serves as the focal point of research, development, and deployment related to energy and environmental technologies and in particular the energy/environment nexus.

Research and development areas:

- Environmental and economic sustainability of energy systems that improve rural economies and expand resource diversity.
- Integrate biological and physical systems involving emerging contaminants in natural and engineered systems.

Center for Science, Technology, and Society (CSTS)

CSTS provides an intellectual space for scholars and students to work together on critical issues related to technical problems and controversies from a global and interdisciplinary perspective.

The Center strives to:

- Advance research in the areas in which science and society intersect
- Support work that presents scientific ideas to general audiences
- Establish opportunities for faculty and students to improve their abilities to convey the significance of their work to the public.

Energetic Materials, Rock Characterization, and Geomechanics Research Center (EMRGe)

EMRGe is a multidisciplinary research center that focuses three main research themes: Natural Hazards, Subsurface Characterization and Imaging, and Energetic Materials.

Research and development areas:

- Earthquake hazard assessment in Central America
- Climate change and its implications on vulnerable ecosystems
- Wellbore integrity and leakage
- Carbon storage
- Traumatic brain injuries
- Blasting physics and hazards

High Performance Computing Center (HPCC)

HPCC provides flexible, high-performance computing and GPU processing capacity to researchers to perform a variety of computationally-intensive research tasks. This includes high-performance computing and GPU processing capacity: Over 15,000 cores on 226 nodes, including 8 GPU nodes.

Intelligent Systems Center (ISC)

ISC provides an interdisciplinary research environment in which faculty can cooperate and conduct research.

Research and development areas:

- Intelligent manufacturing processes, equipment and systems
- Intelligent cyber-physical systems
- Advanced simulation, sensing, control and communications
- Computational intelligence and embedded systems
- Smart grids and information management

Materials Research Center (MRC)

The Materials Research Center (MRC) serves as a focal point for interdisciplinary research in materials science and engineering. MRC investigators work on an extensive array of research and development areas: from ceramics, metals and alloys, and polymers to the specialized sectors of glass, composites and coatings, and cement and infrastructure materials.

Research and development areas:

- Ceramics, Polymers, Glass, Iron, Steel, and other metals and alloys
- Cement and infrastructure materials, Biomaterials, Coatings, Composites

Advanced Materials Characterization Core Facility

The S&T Advanced Materials Characterization Core Facility (AMCC) is a centralized resource hub, offering broad access to state-of-the-art instrumentation and support for cutting-edge materials research and development at Missouri S&T, as well as for partner institutions and industries. In addition to providing cutting-edge equipment, AMCC brings together a team of research specialists committed to helping researchers maximize the capabilities of the advanced materials characterization tools available at S&T.

The core facility's expertise and instrumentation cover:

- Scanning and transmission electron microscopy
- X-ray powder and thin-film diffraction
- 3D X-ray micro-computed tomography
- Atomic force microscopy
- X-ray photoelectron spectroscopy
- Nanoindentation
- Glow discharge profilometry
- Thermogravimetry and calorimetry

O'Keefe Critical Materials Center

The O'Keefe Center performs basic and applied research to develop technology, methods, and tools that facilitate sustainable supply of critical minerals for the United States. The Center also does science-based policy work that informs government policy on strategic minerals.

Research and development areas:

- Public policy development related to encouraging the recovery of critical materials from existing and new process streams.
- Development of new processes to recover critical minerals as byproducts from existing processes and new sources.
- Identifying new sources of critical minerals within the U.S.
- Life cycle-based criticality assessment of existing and new processes for critical mineral recovery.
- Sustainability assessment and environmental mitigation of potential hazards of existing and new processes.

Kummer Center for Advanced Manufacturing

The Center supports cross-disciplinary initiatives in AI, particularly for autonomous situations such as lifelong learning, explainable AI, real-time requirements, explainability, reliability, and policy implications of AI. Cross-cutting AI education, biomedical research, and national security applications including classified research are also initiatives of the Center.

Kummer Center for Artificial Intelligence and Autonomous Systems

The Center supports cross-disciplinary initiatives in AI, particularly for autonomous situations such as lifelong learning, explainable AI, real-time requirements, explainability, reliability, and policy implications of AI. Cross-cutting AI education, biomedical research, and national security applications including classified research are also initiatives of the Center.

Kummer Center for Resource Sustainability

The Center works on innovative solutions to address sustainability in the areas of clean drinking water, clean air, renewable energy, and natural resources, including mineral and fuel extraction, next-generation fuels, pollution control, and energy efficiency.

QUICK FACTS

- 63 faculty researchers are included on a list of the top 2% of researchers in their field for career-long impact ending in 2022, and 50 faculty researchers are recognized for impact in 2022 compiled by Stanford University.
- Research grants more than doubled since 2020.
- Missouri S&T is a partner in the Mid-America Transportation Center, a regional UTC supported by the U.S. Department of Transportation and the Tier-1 UTC for Durable and Resilient Transportation Infrastructure.
- Designated as one of 31 Tech Hubs nationwide and one of two hubs focused on critical minerals work with a focus on strategic planning for test-bed construction, workforce development and business development.
- The university also is part of the multi-institutional effort called Electrified Processes for Industry without Carbon (EPIX) funded by the Department of Energy.