



*"Predict, Prevent and Manage"*

**Corrosion and Materials Research**



The University of Akron  
**NCERCAMP**

The National Center for Education and Research  
on Corrosion and Materials Performance

## OUR EXPERTS

NCERCAMP employs five core corrosion engineering faculty members who hold doctorates in engineering and are experts in corrosion prevention and inhibition, corrosion processes and mechanisms, smart corrosion inhibitors, hydrogen interactions, stress corrosion cracking, coatings performance and degradation processes, water treatment, and biodegradation.

In addition to the five core corrosion members, there are over 30 affiliate faculty members with expertise in a wide variety of engineering disciplines, mathematics and statistics, and polymer science.

NCERCAMP experts have done research for, or are members of, a number of government institutions, including:

- The Office of Naval Research (ONR)
- Army Research Laboratory (ARL)
- Air Force Research Laboratory (AFRL)
- Ohio Department of Transportation (ODOT)
- U.S. Army Construction Engineering Research Laboratory (CERL)
- The Ohio Aerospace Institute (OAI)

**Resources and Expertise  
to meet your corrosion and  
materials performance needs.**

**The National Center for Education and  
Research on Corrosion and Materials  
Performance (NCERCAMP)**

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**The  
University  
of Akron**

# AREAS OF EXPERTISE

## GOVERNMENT RESEARCH

Corrosion to infrastructure and military assets costs an estimated \$400B a year to the U.S. economy. In an effort to mitigate the negative impact, the Department of Defense, Office of Corrosion Policy and Oversight (DoD/CPO) granted The University of Akron \$15M to create The National Center for Education and Research on Corrosion and Materials Performance (NCERCAMP). The Center was established to research advanced materials and technologies to help mitigate the effects of corrosion and its associated costs to government and military assets.



### Corrosion Engineering

- Localized
- Pitting
- Passivity
- Stress Corrosion Cracking
- High Temperature
- Electrochemical

### Chemical Engineering

- Microbiology
- Antimicrobial/Antifouling Hydrogels
- Biofilms
- Nanomaterials
- Environmental Barrier Coatings

### Surface Engineering

- Tribology
- Lubrication Strategies
- Nanocomposite Materials

### Mechanical Engineering

- High Temperature Oxidation & Corrosion
- Stress, Time, Temperature, Environment Interaction & Mechanisms
- Materials Processing & Characterization
- Smart Materials & Structures
- Multi-Scale Modeling of Damage

### Civil Engineering

- Risk Analysis & Structural Reliability
- Damage Detection Methods
- Performance Assessment of Deterioration Structures
- Smart Materials & Structures
- Hydraulic Modeling

### Surface Physics

- Auger Electron Spectroscopy (AES)
- X-Ray Photoelectron Spectroscopy (XPS)

### Electrical Engineering

- NDE & Sensors
- AC Corrosion
- Systems Analysis & Engineering
- Wireless Monitoring Systems
- Large-Scale Real-Time Systems

### Structural Engineering

- Fatigue & Fracture of Structural Systems
- Structural Behavior & Design
- Material Characterization & Full Scale Experimentation
- Corrosion Damage to Reinforced Concrete & Steel Structures
- Life Cycle Analysis & Condition Assessment
- Structural Engineering & Bridge Design/Construction

### Polymer Science

- Surface Characterization
- Plasma Coatings
- Adhesion
- Microstructure & Dynamic of Polymer Systems
- Corrosion Resistant Coatings
- Coatings Under Insulation
- Metal Cladding
- Novel X-Ray & Neutron Scattering Techniques

### Applied Mathematics & Statistics

- Computational Mathematical Models of Corrosion Damage
- Galvanic / Crevice Corrosion
- Biofilms
- Statistics