# Colorado Shared Instrumentation in Nanofabrication and Characterization

Colorado Shared Instrumentation in Nanofabrication and Characterization (COSINC) is a multidisciplinary core research facility and service center based in Boulder, Colorado. We provide access to state-of-the-art equipment in the areas of micro- and nano-fabrication, materials characterization and ISO 5 cleanroom facilities. We also offer expertise and advanced hands-on training in those areas to new and experienced researchers. As an open-access research facility, COSINC serves the University of Colorado Boulder academic and research community as well as industry and governmental researchers in Colorado and beyond. COSINC serves more than 250 users and 120 PIs, enabling funded sponsored projects of over $25 million in the last five years.Together, these new facilities represent an investment of over $7 million.

**COSINC**

University of Colorado **Boulder**

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Engineering & Applied Science
UNIVERSITY OF COLORADO **BOULDER**

## Experienced

COSINC has expert staff available to train and assist users in their projects. Our staff can be involved as collaborators and/or co-PIs on research proposals. COSINC is also part of RAIN, an National Science Foundation-funded remote training network.

## Open access

COSINC offers open access to all our facilities after training on processes and equipment by our staff. This approach encourages users from diverse academic disciplines to use the facilities. In fact, COSINC offers a common platform for the convergence of multiple scientific and engineering disciplines and enables innovations in a wide range of areas, from electronics, photonics and quantum science to biomedical, pharmaceutical and nanomedicine.

**The COSINC facility provides critical support for my research into the physical properties and rheology of naturally deformed rocks and minerals. Specifically, electron backscatter diffraction (EBSD) analysis is one of the back-bone tools utilized in investigations. COSINC provides the only EBSD capability at the University of Colorado."**

*– Associate Professor Kevin Mahan, Geological Sciences at CU Boulder*

## Developing hands-on skills and experience

COSINC provides hands-on training on instrumentation to professional researchers, faculty and graduate and undergraduate students. Our aim is to empower all researchers to pursue diverse career and research goals, while also advancing fundamental and technical knowledge in the area of materials characterization techniques, micro- and nano-fabrication technologies.

## Material Characterization Facility equipment

- Field-Emission Scanning Electron Microscopy (FESEM, JEOL JSM-7401F)
- Focused Ion Beam (FIB)-Dual Beam (FEI Nova 600 Nanolab), with Electron Backscatter Diffraction (EBDS)
- Scanning Electron Microscopy (SEM, Hitachi SU3500), with E-Beam lithography and EDS capability
- Atomic Force Microscopy (AFM)
- Scanning Tunneling Microscopy (STM)
- 24/7 access to equipment and facilities

### ISO 5 Cleanroom equipment

- Heidelberg DWL 66FS
- PlasmaTherm ICP Etcher
- Karl Suss MJB3 and OAI Mask Aligners
- Nanoscribe 3D printer Photonic Professional GT2 (coming soon)
- Beneq TFS 200 Atomic Layer Deposition (coming soon)
- Wet-processing capabilities