



# ANALYTICAL CHEMISTRY INSTRUMENTATION FACILITY (ACIF)

DEPARTMENT OF CHEMISTRY



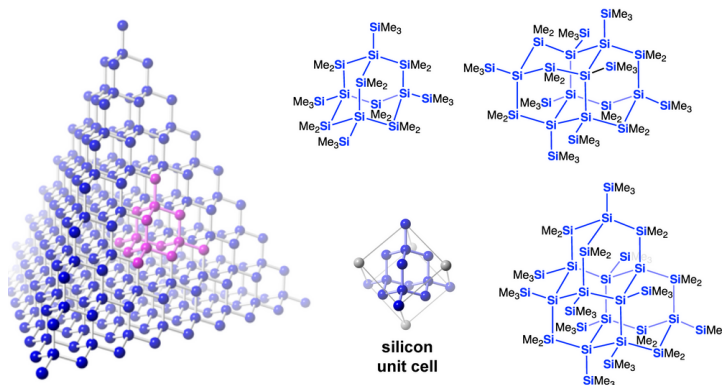
The Analytical Chemistry Instrumentation Facility (ACIF) is the center for molecular characterization at the University of California, Riverside. Housed in the Department of Chemistry, we offer state-of-the-art measurements in Mass Spectrometry, Nuclear Magnetic Resonance (NMR) Spectroscopy, Optical Spectroscopy, X-ray Photoelectron Spectroscopy, and X-ray Crystallography. A faculty director oversees ACIF as a whole and a support staff of four spectroscopists who manage and maintain the various ACIF facilities.

## Research

Molecular characterization is critical to facilitate developments in advanced materials at all length scales for applications in the DOD critical technology areas. In any given year, 80+ research groups from 14 departments across three colleges at UCR, with over \$100 million in active federal research grants, use ACIF molecular characterization services, resulting in over 400 peer-reviewed publications per year. The user base at UCR and the Inland Southern California region serviced by ACIF supports an incredibly broad research portfolio with significant overlap in the DOD critical technology areas, including biotechnology, renewable energy generation and storage, directed energy, and advanced materials.

## DOD Funded Research Supported by ACIF

**Professor Tim Su, FA9550-22-1-0404**

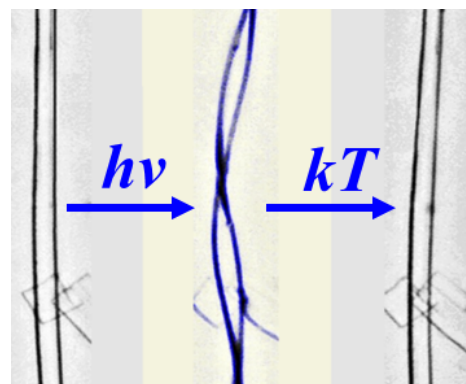


Crystalline Bulk Silicon

Sila-diamondoids: atomically precise nanoclusters of crystalline silicon

**Professor Christopher Bardeen, ONR N00014-18-1-2624**

A single crystal twists in response to light, then untwists in the dark. This reversible motion can be repeated for hundreds of cycles, making it a light-powered micromachine.







## EQUIPMENT BY ACIF FACILITIES

### Mass Spectrometry

Agilent 6545 LC/SFC Hybrid Q-TOF  
ThermoScientific Vantage triple quadrupole LCMS  
AB-SCIEX 5800 MALDI TOF/TOF  
Agilent 6210 LC TOF  
Agilent 5975C MS Detector

### Optical Spectroscopy

Horiba LabRam/Aist-NT AFM  
Thermo Nicolet 6700 FTIR  
Agilent Cary 5000 double beam UV/Vis/NIR  
Two Agilent Cary 60 UV/Vis spectrophotometers  
Jasco J-815 CD spectrophotometer  
Horiba PTI QM-400 Fluorescence spectrophotometer  
Rudolph AutoPol IV polarimeter

### Solution and Solid-State NMR Spectroscopy

Bruker Avance III 700 MHz NMR spectrometer  
Bruker NEO 600 MHz NMR spectrometer  
Bruker Avance 600 MHz NMR spectrometer  
Bruker Avance 500 MHz NMR spectrometer  
Bruker Avance 400 MHz NMR spectrometer  
Bruker Avance 300 MHz NMR spectrometer  
Bruker EMX EPR spectrometer

### X-ray Crystallography

Bruker D8 Venture  
Bruker Apex II

### X-ray Photoelectron Spectroscopy

Kratos Analytical AXIS Ultra Delay-Line Detector (DLD)

### Contact Information

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### About UC Riverside

As a proud member of the world's most prestigious public university system, UC Riverside both embodies and empowers the California Dream. Right here in Inland Southern California, on our nearly 1,200-acre campus, tomorrow's leaders come together today, finding new ways of thinking, doing, and achieving to make a difference in an increasingly multicultural and interconnected global society. [www.ucr.edu](http://www.ucr.edu)

