

## Details

### Interdisciplinary Center for Analytics on the Nanoscale (ICAN)

Nanoscience is one of the five strategic, profile-building research areas of the University of Duisburg-Essen (UDE). For the organization of all nano research activities across the faculties, the UDE has founded the Center for Nanointegration Duisburg-Essen (CENIDE). The presently 57 CENIDE members, who lead research groups with a total of over 350 scientists, represent a broad expertise in engineering, physics and chemistry. Within this network, the Interdisciplinary Center for Analytics on the Nanoscale (ICAN) combines and organizes the expertise in the characterization of nanomaterials at the UDE. It is based on the extensive know-how and the state-of-the-art equipment of the local research groups within the fields of surface and nanoanalysis. The core of these activities is represented by a microscopy center at the campus in Duisburg. In this microscopy center, distinct complementary techniques for structural and chemical analysis of nanomaterials on different length scales down to the atomic level will be available.

**Address:** Carl-Benz-Str. 199  
47057 Duisburg  
Nordrhein-Westfalen  
Deutschland  
[To website](#)

### Host Institution

**CENIDE | ICAN, Universität Duisburg-Essen**  
Forsthauses 2, Carl-Benz-Str. 199  
47057 Duisburg  
Nordrhein-Westfalen  
Deutschland  
<http://www.uni-due.de>

### Scientific Domain

**Primary Subjects:**

- Physics
- Materials Science and Engineering

**Secondary Subjects:**

- Chemistry
- Thermal Engineering/Process Engineering
- Computer Science, Electrical and System Engineering

### Category

Micro- and Nanotechnology facilities

### Scientific Services

ICAN offers the following services: sample preparation, structural analysis of nanomaterials using spectroscopic, microscopic and diffractive techniques as well as the characterization of material properties. The knowledge, experimental expertise and lab equipment in the fields of nanoanalysis and surface analysis at the UDE are combined and organized for internal and external use. The microscopy center represents the central point of these services. Experienced users may book time windows via an online portal in order to carry out measurements in the microscopy center (user operation). Alternatively, ICAN accepts orders for measurement tasks, makes suggestions on the choice of the techniques and provides assistance in the analysis and interpretation of the data (service operation). The general goal is to choose the best characterization techniques in order to provide a detailed answer to the user specific questions.

### Scientific Equipment

- Transmission electron microscope

- Scanning Auger electron microscope
- Scanning electron microscope
- Photo electron spectrometer
- Time-of-flight secondary ion mass spectrometer
- Atomic force / scanning probe microscope
- Profilometer
- Ellipsometer
- Raman spectrometer
- Fourier transform infrared spectrometer
- X-ray diffractometer
- Thermogravimetric analysis
- Analytical ultracentrifuge
- Focused ion beam
- Cryomicrotome

## Keywords

- Electron energy loss spectroscopy
- Energy dispersive X-ray spectroscopy
- Holography / Tomography
- Chemical composition
- Depth profiling
- Crystal structure
- Defect analysis
- Chemical state analysis
- Electronic structure
- Morphology / topography
- Film thickness
- Surface area (Brunauer, Emmett und Teller, BET)
- Thermal and Electrical Transport Properties
- Optical Properties of nanostructures
- Sample slicing and polishing

## Networks

**Cluster NanoMicro+Materials.NRW**

<http://www.nmwp.nrw.de/>

**BUONAPART-E**

<http://www.buonapart-e.eu>

## Users per annum

**Internal Users:** 100  
**External Users in total:** 30  
**External Users:** 20  
**External Users in the EU:** 5  
**External Users outside of EU:** 5