

ANALOGUE

Automated Nano AnaLysing, characterisatiOn and additive packaGing sUitE

EPSRC Strategic Equipment Grant
(EP/Y015215/1)



Engineering and
Physical Sciences
Research Council



Welcome



Dr. Bhavani Prasad Yalagala

Research Manager
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The mission of the ANALOGUE project is to establish a cutting-edge, fully automated facility for semiconductor packaging and characterisation. By integrating advanced technologies and sustainable manufacturing practices, we aim to support innovative research, drive technological advancements, and enhance the UK's resilience in the global electronics industry.

Analogue provides a world-class platform for automated nano-analysis, advanced characterisation, and additive packaging technologies. Through a strong collaborative ecosystem connecting academia, industry, and research institutions, we drive innovation in next-generation semiconductor devices and sustainable electronics manufacturing.

The ANALOGUE project thrives on strong partnerships with industry leaders, academic institutions, and research organizations. Through collaborative efforts, we aim to drive innovation and advance semiconductor technologies, becoming increasingly important to the regional and global economies of the future.

We hope you enjoy looking through our 2026 brochure and seeing what we have to offer. Get in touch if you are interested in collaborating with us and learning more about our state-of-the-art services and facilities.



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ANALOGUE

Vision

To be a leading open-access centre for advanced semiconductor packaging and automated characterisation, enabling next-generation innovation in health, quantum, and sustainable electronics.

Mission

Advanced Processing

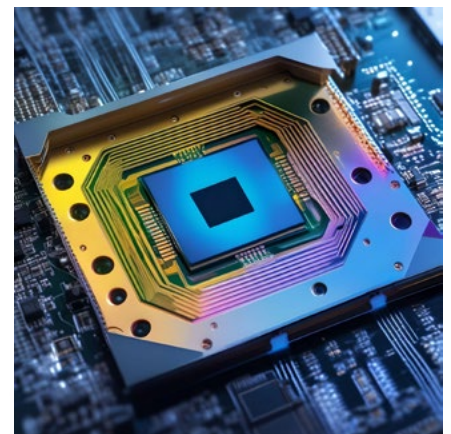
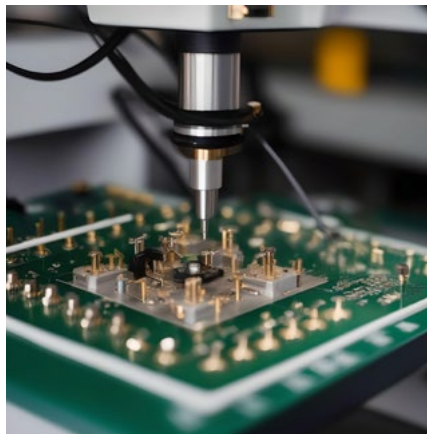
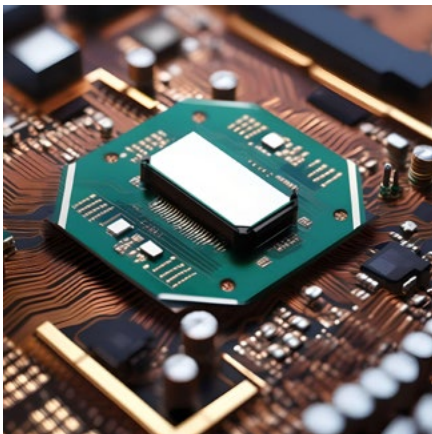
Delivering automated semiconductor processing, packaging, and high-precision characterisation capabilities.

Technology Translation

Accelerating the transformation of research into functional prototypes and real-world applications.

Collaboration

Fostering strong partnerships between academia, industry, and innovation stakeholders.



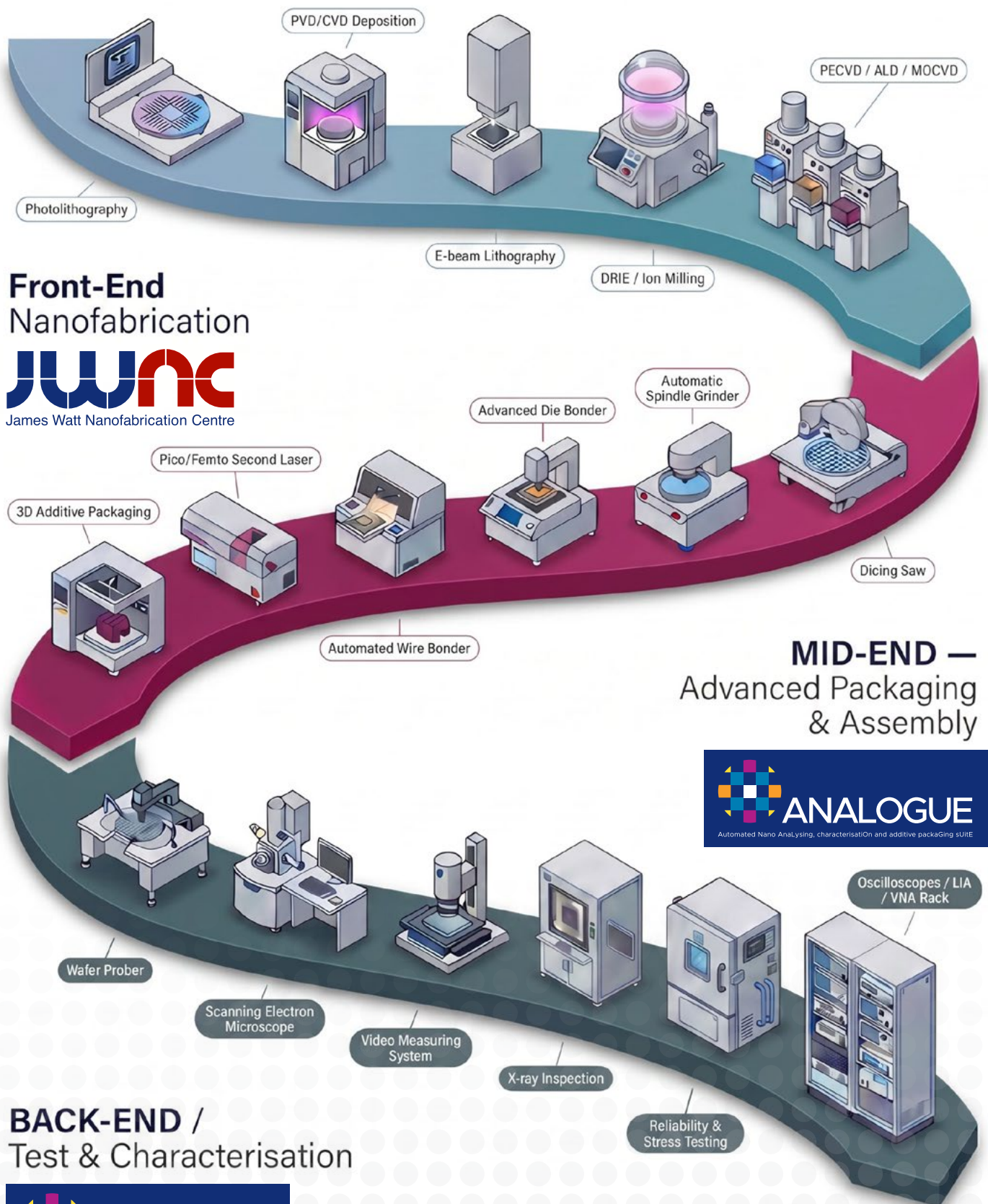
Sustainable Manufacturing

Advancing resilient, data-driven, and environmentally responsible electronics production.

Training & Access

Empowering talent through hands-on training and access to world-class facilities and expertise.

Best-in-Class of Semiconductor Packaging, Test and Metrology



Semiconductor Mid End

Advanced packaging and assembly



Disco DAG 810 (Automated Surface Grinder)

Thins wafers and substrates to achieve the required thickness for packaging and integration.

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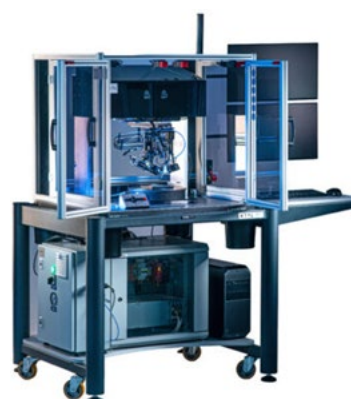
Disco Dicer DAD 3350

Precisely cuts wafers and substrates into individual dies or components with minimal damage.



Dragon Fly 3D printer (Nanodimension)

Produces custom PCB designs and other fixtures and prototypes. (dielectric + conductive) for rapid development and testing.



High-Resolution Inkjet Printer (XTPL)

Prints fine conductive and functional patterns for flexible electronics, sensors, and interconnects.



Super Inkjet Printer (SIJ)

Enables ultra-fine patterning for advanced microelectronics, micro-LEDs, and high-density interconnects.

Semiconductor Mid End

Advanced packaging and assembly



Semi-Automatic Screen Printer (Aurel)

Deposits solder paste, conductive inks, and dielectric materials for printed electronics and packaging.

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Parylene-C Deposition System

Provides conformal protective coatings for moisture resistance, insulation, and biocompatibility in electronic devices.



Finetech Femto2 (Automated Die Bonder)

Precision placement and attachment of semiconductor dies onto substrates and packages for advanced packaging applications.



Hesse BJ653 (Automated Wire Bonder)

Creates fine electrical interconnections between chips and package leads using gold, copper, or aluminum wire.

PCB Production line



Semiconductor Back End

Test and Characterisation



Royce 650 (Universal Bond Tester)

Evaluates the strength and reliability of wire bonds, die bonds, and solder joints for quality assurance.

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Probe Station (Inseto)

Performs electrical testing on wafers before dicing to identify device performance and defective dies.



X-ray Inspection Accelonix

Advanced X-ray inspection system for non-destructive analysis of solder joints, voids, and internal package structures.



Video Measuring System Nikon (VMZ-S3020)

High-precision optical inspection and dimensional measurement system for advanced packaging and microfabrication applications.

Semiconductor Back End

Test and Characterisation



Portable SEM Ciqtek (SEM3200)

Compact scanning electron microscope for high-resolution imaging, defect inspection, and material analysis.

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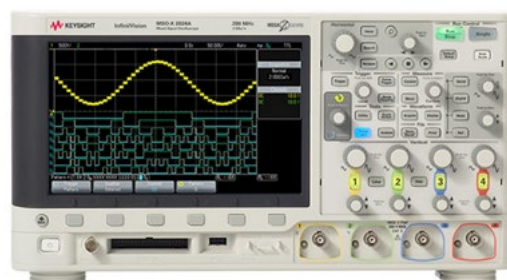
Femtosecond Laser (WoP)

Ultra-short pulse laser system for precision micromachining and material processing with minimal thermal impact.



RF Analyser

A high-frequency measurement instrument for analyzing RF signals, frequency response, and communication devices.



Digital Storage Oscilloscope (DSO)

Waveform capture and signal analysis instrument for debugging and validating electronic circuits.



Parameter Analyser (Keysight 4200)

Electrical characterisation system for measuring device performance, leakage, and semiconductor parameters.

Other Facilities



Magnetic Shielding Room

An ultra-low-noise, MEG-grade environment for biomagnetic sensing research.

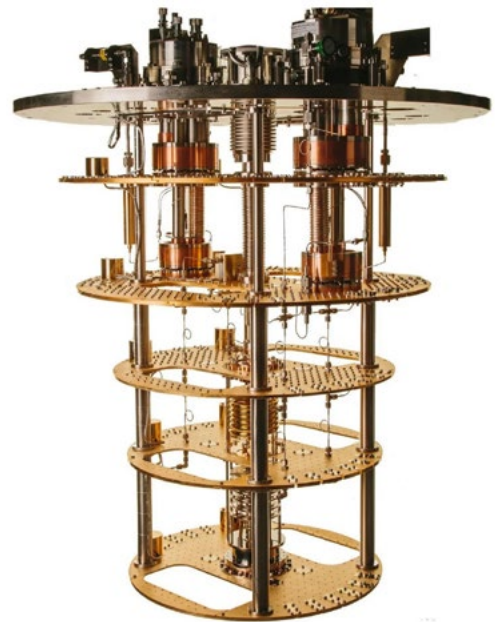
Performance at a glance

- Noise floor: <15 fT/√Hz
- Shielding factor: $>7,000$ at 10 Hz
- Residual field: <3 nT (typically 1–2 nT after degaussing)
- Multi-layer mu-metal construction

Enabling pioneering breakthroughs in:

- Ultra-sensitive biomagnetic signal detection
- Non-contact physiological monitoring
- Advanced wearable health and fitness tracking

Powering tomorrow's digital health, wearables, and extended reality (XR) applications.



Cryogenic Refrigerator (ProteoxMX)

Low-temperature cooling system for thermal testing, device characterization, and cryogenic research applications.



Design and Simulation tools

COMSOL, HFSS, Sim4Life, CADENCE, SYNOPSIS, SIEMENS, Altium Designer (Analogue and mixed signal circuit design and fabrication through EURO PRACTICE).

Facility Capabilities

Technology Focus Areas

- Photonics
- Quantum Technologies
- Medical Devices
- 2.5D and 3D Advanced Packaging
- Power Devices
- Semiconductor Prototyping and Device Integration
- Microelectronic packaging

Micro-Assembly and Packaging Equipment

- Advanced Die Bonder
- Automated Wire Bonder
- Universal Bond Tester
- Wafer Prober
- Automated Dicer
- Automated Surface Grinder

Manufacturing and Processing Tools

- 3D Printer
- Automated Screen Printer
- High-Resolution Inkjet Printer
- Super Inkjet Printer
- Parylene-C Deposition System

Laser Micromachining

- Femtosecond Laser Processing
- Picosecond Laser Processing
- Used for Precision Micro-Structuring, Photonic Device Fabrication and Advanced Material Processing

Characterisation and Metrology

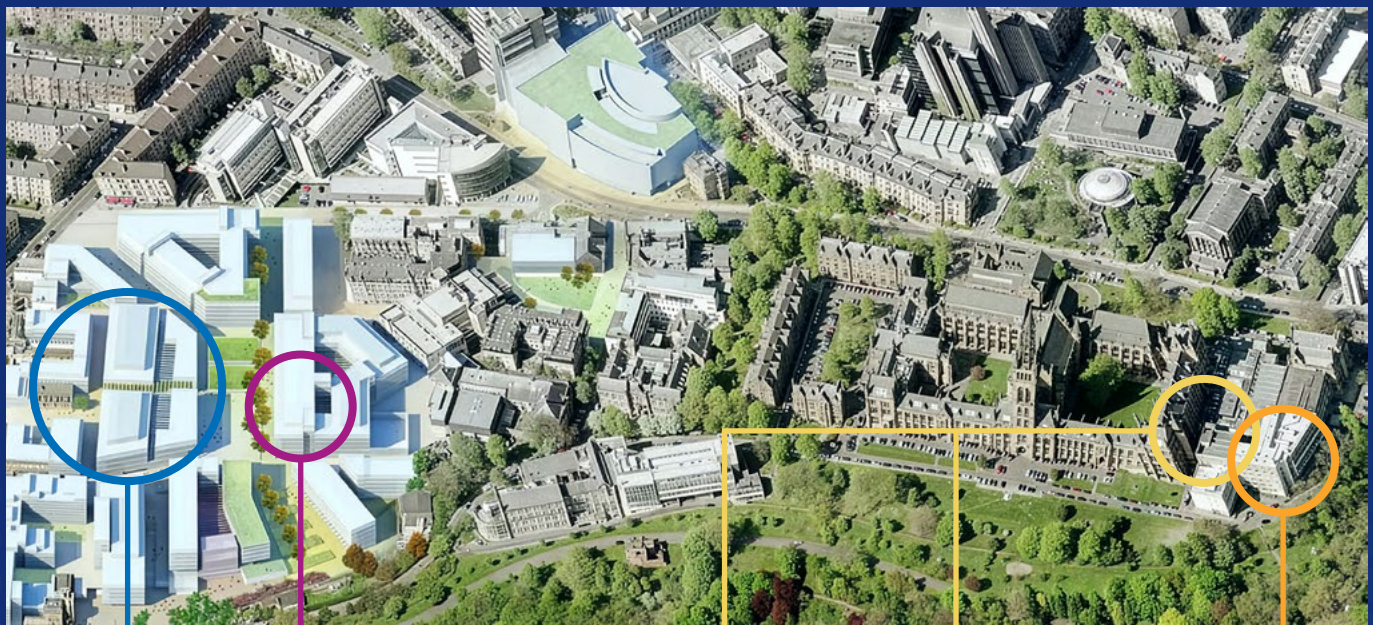
- Benchtop Scanning Electron Microscope (SEM)
- Video Measuring System
- X-ray Inspection System

Electrical and RF Testing

- Parameter Analyser
- RF Analyser
- Digital Storage Oscilloscope (DSO)

The Facility Supports

- University Spinouts
- Early-Stage Deep-Tech Startups
- Academic Research Groups
- Industry Collaborations



ARC 124

Advanced Heterogeneous Printing

KEYSTONE - Level 1 (2028)

ANALOGUE Centralized Facility

JWS 463

Back-end Processing

JWS 456

Testing and Characterization

JWN 393

Prototyping



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