



# Universities



## Materials

“

Innovation in new, advanced materials is clearly transforming the world that we live in, and the possibilities of influencing material properties at the atomic scale and the convergence of biology, physics and chemistry creates opportunities that we are only just starting to explore.”

*Advanced Materials Leadership Council*

### Key Messages

The significant presence of automotive, aerospace and rail in the West Midlands supports a large number of metals firms who feed into these industries' supply chains.

The West Midlands has the largest concentration of materials related jobs in the UK.

Leading innovation from the region's universities is helping develop materials for industrial use and future applications

The Rolls-Royce University Technology Centre, Birmingham is specifically focused on materials engineering.

### University Specialisms

Our universities maintain close links with industry partners, helping to advance our understanding of:

- The capabilities of existing materials and how these can be extended or used in innovative and exciting ways
  - New materials that can transform industry.
- Universities support industry by providing:
- Opportunities for innovation in reduced-risk environments
  - Support for the rapid development of industrial-scale applications for new materials
  - Expert assistance to identify new market opportunities.



### Thriving Cities

Birmingham, Coventry and Wolverhampton



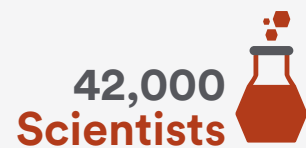
### A £92bn Economy



### 1,000 Materials companies



Students following technology & engineering courses each year



Around 41,000 students working towards science degrees

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**West Midlands Growth Company**

# Key University Facilities/Projects

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## Aston University

### Aston Institute of Materials Research

- R&D in biomaterials and biomedical devices, particle and membrane technology, carbon fibres, catalysts, ceramics, glasses, nano-diamonds, nanotubes, polymers, semiconductors and thin films for real-world applications.
- Work ranges from the design of novel materials, through to testing for specific industrial applications.



## Birmingham City University

### Centre for Advanced Manufacturing and Materials

- The Centre specialises in creating engineering solutions through the application of materials-led design thinking and analysis.

### Magnesium Innovation Group

- A strategic alliance with Meridian Lightweight Technologies UK, the world's largest producer of magnesium die-cast components, to deliver transport fuel efficiency through weight savings and sustainability.



## Coventry University

### Institute for Advanced Manufacturing and Engineering

- Established in partnership with Unipart Manufacturing Group, the Institute combines academic excellence with industry expertise to create a 'live' manufacturing environment ideally suited to advanced R&D and training.
- Centre for Manufacturing and Materials Engineering deals with a wide range of expertise; Functional Materials, metrology, electromagnetic processing of materials (MHD), Collaborative and Sustainable Manufacturing.



## University of Birmingham

### Manufacturing Technology Centre

- The MTC provides a high-quality environment for the development and demonstration of new technologies on an industrial scale, providing a unique opportunity for manufacturers to develop new and innovative processes and technologies in a low-risk environment.

### High Temperature Research Centre

- A collaboration between the University of Birmingham & Rolls-Royce.
- It delivers rapid innovation in design and manufacturing techniques for the aerospace sector and related industries.



### Advanced Materials and Processing Laboratory

- AMPLab investigates the influence of processing techniques on the microstructure-property development in advanced materials.
- It develops new materials and assesses their suitability for processing using a number of advanced manufacturing methods.

### Birmingham Centre for Strategic Elements & Critical Materials

- Develops new scientific techniques to address the challenges posed by supply constraints on strategic elements and critical materials.
- Work includes developing new recycling processes to enable recovery of rare materials from end-of-life products, mining wastes and even road dust.

### Magnetic Materials Group

- A School of Metallurgy and Materials group that has been at the forefront of alloy development and magnetic materials processing for many years.
- The group is recognised internationally for its work on hydrogen processing of rare earth magnets from both primary and secondary sources. These magnets are key components in applications including wind turbine technology.



## University of Warwick

### WMG Lightweight Technologies Centre of Excellence

- Lightweight technologies researchers employ the latest design and modelling software to create lightweight structures from combinations of metals, alloys, polymers, composites, ceramics and hybrid materials.
- Lightweight innovations at WMG include carbon-fibre race car wheels developed in partnership with Caterham Cars, and new materials solutions for reducing the weight of all car seats.



## University of Wolverhampton

### Environmental Technologies and Resource Efficiency Support Service

- EnTRESS supports SMEs to adopt environmental technologies and resource efficiency processes.
- The initiative helps SMEs identify new-to-market opportunities and connects businesses with leading academic and R&D projects.