INNOVATE IN MANCHESTER: THE ADVANCED MATERIALS CITY

COMPOSITES, LIGHT ALLOYS, TEXTILES, GRAPHENE & BEYOND

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MANCHESTER: DRIVING RESEARCH AND INNOVATION

Birthplace of the Industrial Revolution and more recently the city where graphene was isolated: Manchester UK is a city of innovation.

Graphene, the world’s first 2D material, was first isolated at the University of Manchester in 2004. Consisting of a single layer of carbon atoms it has been nicknamed the “wonder material” thanks to its impressive properties.

Manchester is at the heart of the UK’s largest regional centre for manufacturing employment; the North West of England. The city-region offers the right environment for R&D or large scale manufacturing to support commercialisation.

The UK Government has highlighted Manchester as the ideal location to capitalise on the lightweighting opportunities in automotive, aerospace and rail sectors, leading to The Low Carbon Transport of our future.

The continued investments from Government and private entities amount to over £500 million and add to an already established advanced materials ecosystem.

Additionally, the Government backed Local Industrial Strategy confirms commitment to developing the city’s commitment as a global leader. Manchester is home to:

- Two world leading centres for graphene - The National Graphene Institute and the Graphene Engineering Innovation Centre
- The UK's National Institute for Materials Science Research and Innovation – The Henry Royce Institute
- The BP International Centre for Advanced Materials
- The North West Composites Centre
- The University of Manchester Aerospace Research Institute
- The UK's National Composites Certification and Evaluation Facility
- The Institute for Materials Research and Innovation
- Four universities

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Manchester is home to one of the largest student bodies in Europe with a student population of over 100,000 across the city’s four universities. 33,000 students graduate each year of which 40% remain in the region. Manchester is home to the largest School of Materials Science in Europe futureproofing talent supply by training the next generation of engineers and researchers. There are also a further 19 universities within an hour’s drive time of the city.

**Talent**

A wealth of international organisations have recognised Manchester’s advanced materials strengths with Siemens, Thales, Tygavac, Hitachi, Nexperia, BASF, Sherwin Williams, Luxfer MEL Technologies, Albany International, Dow and MBDA all establishing a base here. The city is also home to global brands in other industries including life sciences, ICT, cyber, energy, and financial and professional services allowing materials businesses to collaborate across sectors.

**A thriving cluster of companies**

Manchester is connected to global manufacturing hubs by Manchester Airport which flies directly to over 200 destinations. London is less than two hours away by train and Manchester’s central location and excellent motorway network allows easy access to the rest of the UK.

**Connectivity**

Youthful, diverse, energetic and bursting with character; Manchester is one of the most exciting places to live, where everybody and anybody is warmly welcomed. One of the world’s top 50 places to live, the city centre offers a unique cultural offering whilst the surrounding boroughs offer beautiful green spaces, and picturesque market towns.

**Liveability**

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MANCHESTER: LIGHTWEIGHT MATERIALS FOR LOW CARBON TRANSPORT

The Market Opportunity
A projected global opportunity of £138 billion* in lightweight structures for transport applications by 2021. Within the UK, Greater Manchester offers the ideal access point.

£591m by 2021*

Major advanced manufacturing and materials companies are already driving demand in the North West, and Manchester’s ambition to be carbon neutral by 2038 has created an at-scale demonstrator region to prove and launch products.

£80.9bn by 2021*

Supporting specialisms in connected and autonomous vehicles, cyber, digital, batteries, supercapacitors and fuel cells, chemical, aerospace, automotive, energy, and nuclear engineering.

£18.6bn by 2022*

UK demand will come from local companies based in the North West, and further European opportunities are only hours away via direct international connections.

Manchester is creating an innovation ecosystem where scientists, manufacturers, engineers, innovators and industrialists can collaborate. Examples of the ecosystem are:

### The National Graphene Institute (NGI)
£61 million has been invested into the NGI at the University of Manchester which is focused on research into the applications of graphene. Over 90 companies are already working with over 350 researchers shaping the material’s future development.

### Graphene Engineering Innovation Centre (GEIC)
Opened in 2018, the GEIC is critical for the development of commercial applications for graphene and other 2D materials. The facility focuses on the pilot production and commercialisation within industry. Companies take space in the GEIC allowing, for example, for the use of mixing labs, extruders and an autoclave to pilot produce composite components. Labs for battery production, printed electronics, membranes and sensors are also on site.

### The Henry Royce Institute
The Institute is the UK’s National Institute for Materials Science Research and Innovation. It is the hub of a network of partners including the universities of Oxford, Cambridge, Imperial College London, Sheffield and Leeds. Research specialisms include 2D materials, advanced metals processing and atoms to devices. The Royce gives businesses access to state-of-the-art equipment and facilities and is continuing to grow available assets with its flagship building opening in 2020.

### Advanced Materials & Surface Engineering Research Centre
Manchester Metropolitan University’s Advanced Materials & Surface Engineering Research Centre develops materials for hydrogen fuel cells, batteries, sensors, electrolysers, amongst others, which can be screen printed or 3D printed. Specialisms include new catalyst materials for the low temperature removal of methane from diesel truck exhausts and photocatalyst materials; water treatment and disinfection or clean hydrogen from water splitting; along with surface coatings for low friction and wear, recyclable packaging and oxidation resistance, etc.

[[graphene.manchester.ac.uk/about/ngi](graphene.manchester.ac.uk/about/ngi)]  [[graphene.manchester.ac.uk/about/geic](graphene.manchester.ac.uk/about/geic)]  [[royce.ac.uk](royce.ac.uk)]  [[mmu.ac.uk/amse](mmu.ac.uk/amse)]

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MANCHESTER: DRIVING RESEARCH & DEVELOPMENT

With 25 Nobel Prize winners and more Nobel laureates working in Manchester than Oxford or Cambridge, Manchester’s four universities are all actively engaged in developing partnerships with organisations globally.

The University of Manchester is home to Europe’s largest school of materials and ranks 27th in the QS World University Rankings. Where graphene was isolated and where the research and commercialisation of graphene and other 2D materials continue to be developed, tested and brought to market.

The University of Bolton is home to the Institute for Materials Research and Innovation, internationally known for its strong applied and diagnostic approach towards materials science. Research is focused on a range of topics including smart materials and technical textiles.

The University of Salford’s research into advanced materials includes applications in aircraft structures. The University has state-of-the-art equipment onsite including various spectroscopy facilities. Courses at the university are shaped in partnership with industry meaning businesses can take an active role in shaping their future skills requirements.

Manchester Metropolitan University is home to the Advanced Materials & Surface Engineering Research Centre - the largest academic centre for corrosion in the western hemisphere, Fuel Cell Innovation Centre and Print City - a 3D printing centre of excellence where multi-disciplined scientists and students are carrying out research in collaboration with companies across the globe.

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Manchester is a city committed to supporting new investors and helping existing companies grow.

Since 1996, MIDAS, Manchester’s inward investment agency, has helped hundreds of businesses to locate and expand in Greater Manchester.

Our specialist business development team can help you and your business build your investment case, find the ideal commercial property, source the right staff and introduce you to networks on the ground to help your business grow. We have a reputation for understanding diverse business needs and helping to remove barriers for companies looking to invest in the area.

All of our services are free and confidential for companies from SMEs to global firms as well as location consultants.

Our local expertise and networks mean it’s easy for us to introduce you to the right suppliers, agencies and educational establishments. This essential support will save you time, money and effort leading to an efficient and successful move.

Contact MIDAS to see how Manchester can support your future innovation.

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HELLO Manchester

HELLO Manchester is a service that offers free or discounted office space, professional services as well as preferential hotel and restaurant rates to overseas investors. This ‘soft landing’ initiative enables companies to establish a foothold in Europe’s top city for business competitiveness with minimal risk and cost. All of this is underpinned by a vibrant quality of life and complimentary business support from MIDAS, Manchester’s Inward Investment Agency.

To find out more contact: info@midas.org.uk
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