MADE IN MANCHESTER: GRAPHENE AND 2D MATERIALS

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MANCHESTER: DRIVING MATERIALS 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.

Graphene's properties
- 200 times stronger than steel
- World's most conductive material
  - Flexible
  - Transparent
  - Impermeable

Since Graphene's discovery, Manchester has been at the forefront of research into 2D materials adding to an already established advanced materials ecosystem. The city is home to:

- Two world leading centres for graphene research
- 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
- Four universities

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Talent
Manchester is home to one of the largest student bodies in Europe with a student population of almost 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.

A thriving cluster of companies
A wealth of international organisations have recognised Manchester’s advanced materials strengths with Siemens, Hitachi, Nexperia, BASF, Magnesium Elektron and Nanoco Technologies all establishing a base here. The city is also home to global brands in other industries including life sciences, ICT, energy, and financial and professional services allowing materials businesses to collaborate across sectors.

Connectivity
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.

Liveability
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.

MANCHESTER: BUSINESS BENEFITS

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MANCHESTER: GRAPHENE CITY

Composites and coatings
- Non rust paint
- Weatherproofing
- Packaging
- Sport equipment
- Aerospace

Energy
- Batteries
- Supercapacitors
- Storing wind and solar power

Membranes
- Graphene filtration
- Graphene coatings

Sensors
- ‘Smart’ food packaging
- Crop protection
- Defence

Electronics
- Wearable technology
- Transistors
- Semiconductors

The Market Opportunity
The estimated global graphene materials market will be more than £300 million by 2024. While graphene’s possible uses are endless, research is currently focusing on:

Biomedical
- Drug delivery
- Tissue engineering
- Biological agents
- MedTech

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

**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 40 companies are already working with over 200 researchers shaping the material’s future development.

[graphene.manchester.ac.uk/collaborate/national-graphene-institute](http://graphene.manchester.ac.uk/collaborate/national-graphene-institute)

**Graphene Engineering Innovation Centre (GEIC)**
Opening in 2018, The GEIC is critical for the development of commercial applications for graphene and other 2D materials. It is the University of Manchester’s second facility and will focus on pilot production and commercialisation with industry. Combined with the NGI there will be a globally unrivalled concentration of graphene expertise in Manchester.

[graphene.manchester.ac.uk/collaborate/geic](http://graphene.manchester.ac.uk/collaborate/geic)

**The Henry Royce Institute**
The Institute is the UK’s National Institute for Materials Science Research and Innovation. The Institute is at the centre of a network of partners including the universities of Oxford, Cambridge, Imperial College London and Leeds. Research specialisms will include 2D materials, advanced metals processing and atoms to devices. The Institute gives businesses access to state of the art equipment and facilities and is continuing to grow available assets with its flagship building opening in 2019.

[royce.ac.uk](http://royce.ac.uk)

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MANCHESTER: DRIVING RESEARCH & DEVELOPMENT

Alongside the various research centres working in partnership with industry, Manchester is home to four universities. All of the universities are actively engaged in developing partnerships with organisations globally.

University of Manchester

- High research power – ranking 28th globally
- Where graphene was isolated
- Home to two world leading graphene research centres
- £248m investment in live research projects
- Over 200 researchers working on 2D materials including graphene

Manchester’s four universities build on 2D materials with research strengths across a range of specialisms, including: coatings, organic polymers and semiconductor materials.

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

Since 1996, MIDAS, an award-winning 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 with its relocation and expansion plans. We have a reputation for understanding diverse business needs and helping to remove barriers for companies looking to invest in the area.

Whether you’re a SME, a global company or a location consultant, our team will work with you to 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.

All of our services are complimentary, confidential and tailored to your business. 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.

Our services don’t stop after you arrive in Manchester. We provide aftercare support and we account manage foreign-owned companies in the region.

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