

# UltraWire 2019

## Workshop on Commercialisation of Ultra-conductive Composite Materials

[www.ultrawire.eu](http://www.ultrawire.eu)

Joined with nanoMAT<sup>3D</sup> workshop

### 1<sup>st</sup> Preliminary Agenda, Speakers and Participating Organisations

*Date: 10th & 11th July 2019*

**Meeting Venue:** The Chancellor's Centre  
Wolfson College  
Barton Road,  
Cambridge, CB3 9BB  
<http://www.wolfson.cam.ac.uk/>

**Dinner Venue:** Isaac Newton Suite  
Hotel Hilton Cambridge City Centre  
20 Downing Street  
Cambridge CB2 3DT  
Telephone: 44-1223-464491

**Organiser:** Cambridge Nanomaterials Technology Ltd  
14 Orchard Way, Lower Cambourne  
Cambridge, CB23 5BN, UK  
[www.cnt-ltd.co.uk](http://www.cnt-ltd.co.uk)

## UltraWire 2019 - Workshop on Commercialisation of Ultra-conductive Composite Materials

Cambridge Nanomaterials Technology Ltd is organising the **UltraWire Workshop 2019** in order to support commercialisation of ultra-conductive materials and development of nano-carbon and metal composites based technologies for a number of applications, including electrical energy transmission and transport, by bringing together technology development leaders and industrial end-users. The UltraWire 2019 Workshop would be an opportunity to follow UltraWire project research and learn about progress in development of nano-carbon wire technology. It would be also a platform to exchange experience for all technology developers in industry and researchers in academia, working on nano-carbon and metal composite materials. This year, we are using the opportunity to link the workshop with activities related to use of nano-materials and metal composites in additive manufacturing, and a number of speaker related to this topic will be presenting on the second day of this workshop (**nanoMAT<sup>3D</sup>**). The nanoMAT<sup>3D</sup> (Nanomaterials for 3D printing) Workshop is designed as a platform to support nanomaterials and additive manufacturing producers, application developers and end-users, in development of technologies based on use of nanomaterials for 3D printing. The aim is to identify commercialisation barriers and opportunities and facilitate development of the supply chain.

We have organised four UltraWire workshops so far. The first ones were organised during the UltraWire project ([www.ultrawire.eu](http://www.ultrawire.eu)) in order to help exploitation and dissemination of results of the project. The last two were organised after the project ended in order to bring the researchers from the project and outside the project together, to help further commercialisation of relevant technologies. The first workshop took place in September 2015 in Cambridge, UK; the second one, in September 2016 in Leuven, Belgium; the third one and fourth one, in Cambridge, UK in July 2017 and 2018. Some of the participating organisations from the Workshops have come from:

# UltraWire Workshops

## Participating Organisations

### 2015 – 2016 – 2017 - 2018

The participating organisations include:

- Aalto University School of Chemical Technology
- AGH
- Aurubis
- invro
- IOM
- exans
- Outotec
- UNIVERSITY OF CAMBRIDGE
- thinkstep
- KME
- nationalgrid
- PSA PEUGEOT CITROËN
- Wieland
- AIRBUS DEFENCE & SPACE
- LEONI
- Rte
- Le réseau de transport d'électricité
- Prysmian Group
- AEROSPACE AMERICA
- PEUGEOT CITROËN
- mkm
- wir leben kupfer
- Rolls-Royce
- cea
- Schneider Electric
- BOSE
- UCLM
- Fraunhofer IFAM
- GE
- DLR
- BT
- SIEMENS
- Ingenium for life
- FURUKAWA ELECTRIC
- KU LEUVEN
- EDERFIL BECKER
- Cranfield University
- MBDA
- ARUP
- LML Products Ltd
- ArcelorMittal
- NISSAN MOTOR CORPORATION
- MITSUBISHI HEAVY INDUSTRIES EUROPE LTD.
- ENGIE
- Cu
- Copper Alliance™



## UltraWire 2017 - 2018 Workshop Photos



**UltraWire 2018 Workshop -12<sup>th</sup> - 13<sup>th</sup> July**



**UltraWire Workshop 2019 - Meeting & Dinner Venues**

The **UltraWire Workshop 2019** on 10<sup>th</sup> and 11<sup>th</sup> July will be taking place at:

Gatsby & Roger Needham Rooms  
The Chancellor's Centre  
Wolfson College  
Barton Road,  
Cambridge, CB3 9BB  
<http://www.wolfson.cam.ac.uk/>



The Chancellor's Centre is Wolfson College's purpose-built conference centre. Opened in 2004, it is home to two principal meeting rooms. The **Roger Needham Room** was named in honour of one of the most notorious British Computer scientist: *Roger Michael Needham, CBE, FRS, FEng.* Among his theoretical contributions is the development of the Burrows-Abadi-Needham

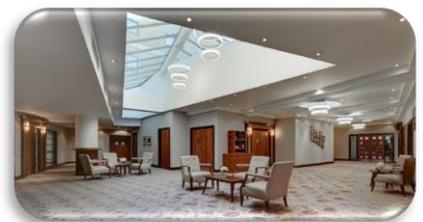
logic for authentication, generally known as the BAN logic. His Needham-Schroeder (co-invented with Michael Schroeder) security protocol forms the basis of the Kerberos authentication and key exchange system. He also co-designed the TEA and XTEA encryption algorithms. He pioneered the technique of protecting passwords using a one-way hash function.



The UltraWire 2019 dinner will be taking place on the 10<sup>th</sup> July 2019 at **7pm** at:



Isaac Newton Room  
[Hotel Hilton Cambridge City Centre](http://www.hilton.com/city)  
20 Downing Street  
Cambridge CB2 3DT  
Telephone: 44-1223-464491



The room named after the famous English physicist and mathematician Sir Isaac Newton, most famous for his law of gravitation, was instrumental in the scientific revolution of the 17th century.

The Hilton Cambridge City Centre offers limited valet parking spaces (£10 up to 5 hours - £5 up to 3 hours).

There is a public car park (*Grand Arcade Car park*), located next to the hotel. For latest information and charges, please visit their website: <https://www.cambridge.gov.uk/grand-arcade-car-park>

This Hotel is the venue of our dinner on the 10th July. They are offering a 10% discount of their best available rate, to all participants booking in this hotel. To have access to their special rate, please book through this [Hotel link](#)



## UltraWire Workshop 2019

### Workshop on Commercialisation of Ultra-conductive Composite Materials

#### Day 1

*Date: 10<sup>th</sup> July 2019*

*Venue: Gatsby Room  
Wolfson College, Cambridge*

**14:00** *Arrival and registration*

**14:15** **Dr Bojan Boskovic**, CEO, Cambridge Nanomaterials Technology Ltd

#### **Welcome and Introduction to the UltraWire Workshop 2019**

**14:30** **Dr Marek Burda**, Director, CAMETICS Cambridge Advanced Metals Limited, UK

**Title: Development and commercialisation of nano-carbon materials for thermal management of electrical conductors**

An overview of the activities in the CAMETICS, founded in 2014 by Prof. Krzysztof Koziol and Dr Marek Burda, would be given. CAMETICS specialises in design and fabrication of nano composite and hybrid products for thermal, electrical and structural applications and also holds unique IP providing solution for joining carbon materials and other materials generally considered as difficult to solder.

**15:00** **Dr Atif Aziz**, Nanoscience Centre, University of Cambridge, UK

**Title: Carbon nanotubes/copper composites and their applications**

An overview of the work to develop high current carrying capacity electrical cables based on a nano wire composite.

**15:30** *Coffee break*

**16:00** **Dr María Vila Santos**, IMDEA Materials Institute, Spain

**Title: Carbon Nanotube Fibres for electrical cable usage**

The global necessity for electric energy and its effective transfer and transformation is quickly increasing, and any advance in this field of technology is surely, of great interest to industry, economy or environment. This rising need present new challenges in terms of materials fabrication, integration into multifunctional structures, and operation under harsh mechanical conditions. A key enabling technology to address some of these challenges are fabrics of nanocarbons. They combine the conductivity and toughness of steel, superior electrochemical stability than metals, the density of plastic and are already produced industrially. In particular, carbon nanotubes fibres assembled as cords, are potential candidates for the next generation of highly conductive electrical wires. These wires are lightweight materials with high mechanical performance, lower costs and a minimized ecological footprint. This presentation will discuss the current progresses in using this technology for integrated conductors and current collectors used in lighter supercapacitors and lithium ion battery electrodes outperforming commercial comparators.

**16:30 Discussion**

*Facilitated by* **Bojan Boskovic**, CEO, Cambridge Nanomaterials Technology Ltd

**19:00** *Dinner at Hotel Hilton Cambridge City Centre*

## **Day 2**

### **UltraWire/nanoMAT<sup>3D</sup>**

#### **Workshop on Nanomaterials for 3D Printing**

*Date: 11<sup>th</sup> July 2019*

*Venue: Roger Needham Room –  
Gatsby Room coffee breaks  
Wolfson College, Cambridge*

**09:15** *Arrival and welcome*

**09:30** **Dr Bojan Boskovic**, CEO, Cambridge Nanomaterials Technology Ltd

#### **Welcome and Introduction to the Nanomaterials for 3D Printing 2019 Workshop**

**10:00** **Mark Bowers**, ARUP, UK

**Title: Development of metal and cement 3D printed applications for construction industry**

An overview would be given of the 3D printing projects related to construction industry applications and activities related to use of nanomaterials in ARUP, including presentations of recent 3D projects, such as:

- 1) 3D printed house in Milan (<https://www.arup.com/projects/3d-housing-05>),
- 2) 3D printed metal bridge in Amsterdam, the MX3D bridge (<https://www.arup.com/projects/mx3d-bridge?query=3d%20print>)

**10:30 Dr Elena Polyakova**, CEO, Graphene Laboratories, Inc (Graphene Supermarket), USA

**Title: Development of conductive and toughened thermosets for 3D printing applications**

**11:00** *Coffee break*

**11:30 Dr Cecilia Mattevi**, Faculty of Engineering, Department of Materials, Imperial College of London, UK

**Title: Electronics and 3D printing applications of graphene**

**12:00 Harry Kleijnen**, Key Account Manager, Additive Industries B.V. Netherland

**Title: “Accelerating Additive Manufacturing with process automation and integration.”**

Today's additive manufacturing production processes are characterized by many separated process steps requiring intensive manual labour and complex planning processes. For series production of parts this way of working will be too costly and is prone to errors, jeopardizing yield and overall equipment efficiency. In his presentation Harry Kleijnen will elaborate on Additive Industries vision and solutions for integrated and automated additive manufacturing. In addition he also will present the environment to for the end-user to monitor Overall Equipment Efficiency as driver for continuous improvement in an end to end additive manufacturing process environment.

**12:30 Jamil Kanfoud**, Brunel Innovation Centre (BIC), Brunel University London, UK

**Title: In-line inspection in additive manufacturing and nanomaterial enhanced composites**

**13:00** *Networking Lunch & exhibition*

**14:00 Dr Elias P. Koumoulos**, Innovation in Research and Engineering Solutions –IRES, Belgium

**14:30 Dr Yarjan Abdul Samad**, Cambridge Graphene Centre, University of Cambridge, UK

**15:00** *Coffee break*

**15:30 Joe Stallard**, Department of Engineering, University of Cambridge, UK

**Title: Advanced Nanotube Application and Manufacturing Initiative (ANAM)**

Following introduction to the ANAM initiative, details of the specific research activities would be presented. The ANAM is a project funded by EPSRC, which seeks to convert the promise offered by CNTs into commercial reality. This project directly addresses the industrial utilization of CNTs and seeks to close the gap between academic achievement and commercial return.

**16:00 Christine Boyle** MBE, CEO Senergy, UK

**Title: "Senergy Solar Thermal Nanocomposite Panels from Concept to Commercialisation"**

Solar Thermal is a renewable energy that is 70% efficient which far exceeds Solar PV which is only 18% efficient. It also produces the lowest carbon emissions and is easily generated on site and it has the potential to become a reliable source of energy for heating and cooling space in the future. However to date solar thermal energy collection systems made from glass copper and aluminium have been expensive and the initial investment has been cost prohibitive. There have also been challenges around the architecture and appearance of the systems.

The Senergy business and product idea was conceived by Christine Boyle MBE, with almost 20 years running her commercial roofing company Christine recognised the potential for building integrated solar.

Unlike current thermal panels that are made of glass, copper and aluminium Senergy panels are 100% polymer plastic, this makes them 50% less expensive to both manufacture and install than current metallic panels on the market. The Senergy panels benefit from the advantages of the polymer materials and incorporate carbon nanotube materials that enhance the thermal performance and mechanical strength. The panels are also embedded with low cost sensor and information technologies. This digital integration provides an IOT/IQT platform ensuring the energy supply is more efficient and the building owner has greater control. These advantages address the challenges that have hindered the roll out of this form of renewable energy. Bringing together expert roofing and polymer manufacturing companies alongside leading academics in the nanocomposite field, Senergy plan to leverage the innovative and commercial opportunities they have identified. What are the opportunities and barriers for large scale cost effective production?

### 16:30 Discussion

Facilitated by **Bojan Boskovic**, CEO, Cambridge Nanomaterials Technology Ltd

**Note** It is planned that all presentations would be followed by Q&A discussion. The organisers reserve the right to change the programme, speakers or venue should circumstances require. *For any further enquires please do not hesitate to contact directly the Dr Bojan Boskovic on [Bojan.Boskovic@CNT-Ltd.co.uk](mailto:Bojan.Boskovic@CNT-Ltd.co.uk) or on his mobile phone +447780874335.*

## UltraWire 2019 - nanoMAT<sup>3D</sup> Workshops – Speakers



**Dr. María Vila Santos** (*Speaker*)

IMDEA Materials Institute

Web: <http://www.materials.imdea.org/groups/mng/>

**María Vila Santos** has a BSc in Physics from Universidad Complutense de Madrid (UCM), and a PhD from the same university, obtained in 2014. She was a postdoctoral research associate in the European Synchrotron (ESRF), at the Spanish beamline, SpLine, after which she joined, the Madrid Institute for Advanced Studies in Materials (IMDEA Materiales Institute) as a research associate in the Multifunctional Nanocomposites Group (MNG) led by Juan José Vilatela. Her current scientific interest lies in the synthesis of Carbon Nanotube Fibres (CNTF), grown on a CVD synthesis reactor. In particular, her research is focused on the study of the electronic structure of CNTF and the introduction of dopants in the constituent CNTs to modify optoelectronic properties.



**Dr Atif Aziz** (*Speaker*)  
Senior Research Associate  
The Nanoscience Centre  
University of Cambridge  
Web: [www.nanoscience.cam.ac.uk](http://www.nanoscience.cam.ac.uk)

**Dr Atif Aziz** is a senior research associate at the Nanoscience Centre, University of Cambridge. His area of research is studying the physical, electrical and mechanical properties of nano materials and nanoscale devices. At present he is working on Carbon Nanotubes and metal composites in particular copper and functional nanofibers. He did his PhD from Cavendish Lab, University of Cambridge and had been working as a research associate at the Materials Science Department, University of Cambridge. Before his current job, he was an experimental office at the Lancaster University, where he setup a nanofabrication facility for Quantum Technology Centre and had been a manager of the Cambridge Graphene Centre.



**Dr Marek Burda** (*Speaker*)  
Cametics Cambridge Advanced Metals Ltd  
Web: [www.cametics.com](http://www.cametics.com)

**Dr Marek Burda** is a co-founder and Managing Director of Cametics Cambridge Advanced Metals Limited. Marek is responsible for representing the company to major customers and professional associations, building and maintaining research policy of the company and directing strategy towards the profitable growth and operation. Marek is leading the Company's Team in research, development and production of composite and hybrid products utilizing both classic and nanostructured materials. He holds a PhD in Materials Science and completed PostDoc research position at Department of Materials Science and Metallurgy, University of Cambridge, focused on development of Ultra Conductive Copper-Carbon Nanotube Wire. Marek is inventor of set of patented soldering alloys (C-Solder) which consist innovative & unique solution for bonding carbon-based components to other carbon or metal components.



**Mark Bowers**, (*Speaker*)  
ARUP  
Web: [www.arup.com](http://www.arup.com)

**Mark Bowers** is a senior engineer in the materials consulting department of the London office and global materials skills manager for the company having previously led the materials business in the Americas. Mark has an expert knowledge of brittle materials and their failures (glass, stone + ceramic) but also looks at innovative technologies and how they can be applied in the built environment. Over the last 5 years Mark has been leading Arup's Nano Carbon Initiative, developing potential applications with academia and industry as well as looking at the potential challenges in the industry. Along with the nano carbon technologies, Mark has been keenly investigating a novel radiative cooling technology and how it can be applied in new applications.



**Dr Elena Polyakova** (*Speaker*)  
CEO, Graphene 3D Lab  
Web: [www.graphenelabs.com](http://www.graphenelabs.com)  
<https://graphene-supermarket.com/>

**Dr. Elena Polyakova** serves as Co-Chief Executive Officer at Graphene 3D Lab. Previously Dr. Polyakova had served for two and a half years as the company's Chief Operating Officer. She was instrumental in bringing the first graphene filament to market. Dr. Polyakova is also the co-founder of Graphene Laboratories, Inc. where she has served as the Chief Executive Officer and President since 2009. The company pioneered the commercial graphene production market. Dr. Polyakova has grown the company's client base substantially in the past six years. Her expertise in 2D materials has been covered by prestigious news publishers such as BBC and Bloomberg. Dr. Polyakova has co-authored papers with Nobel and Kavli prize winners, as well as members of the National Academy of Sciences. She previously was one of the first graphene researchers in the Flynn Group at Columbia University. She received a Ph.D. in Physical Chemistry from the University of Southern California and a Master's degree in Physical Chemistry from Moscow Institute of Physics and Technology.



**Dr. Cecilia Mattevi** (*Speaker*)  
Imperial College London  
Royal School of Mines

**Dr Cecilia Mattevi** is a Royal Society University Research Fellow in the Department of Materials at Imperial College London since October 1, 2012. Her research interests centre on science and engineering of novel 2D atomically thin semiconducting materials to enable applications in optoelectronics and energy storage. Mattevi's research group focuses on the synthesis of these materials, developing tunability of their characteristics, and on the fabrication of devices based on planar structures and on highly porous 3D hierarchical structures where a diverse range of assembly methods is employed.

Cecilia's current funding supports: science and engineering of 2D semiconducting materials (EPSRC 1st grant, EPSRC-Royal Society fellowship engagement, The Royal Society University Research Fellowship), the development of methods for large scale synthesis of graphene for applications in different technology areas from energy storage to polymer/ceramic composite materials (EPSRC-Graphene Engineering), engineering large scale implementation of graphene-composite (Petronas), and energy applications of graphene derivatives (EU-Graphene Flagship).



**Harry Kleijnen**, (*Speaker*)  
Key Account Manager  
Additive Industries b.v.

Since 2006 **Harry Kleijnen** is involved in metal additive manufacturing process development and setting-up a large volume series production facility of 3D printed parts at Philips healthcare. In 2015 he

joined Additive Industries where he, in his actual responsibility as Key Account Manager, is working on joined turn key projects with Additive Industries' customers. He studied Electronic Engineering completed with education in business administration.



**Jamil Kanfoud** (*Speaker*)  
Brunel Innovation Center (BIC)  
Brunel University London  
Cambridge  
Web: <https://www.brunel.ac.uk/>

**Jamil Kanfoud** received the Master's degree in general engineering from l'Ecole Polytechnique de Tunisie, Tunisia, and the M.Phil. degree in numerical modelling from l'Universite' de Technologie de Compiègne, Compiègne, France. He is the head of with the Brunel Innovation Centre, Uxbridge, U.K. Before joining Brunel University, he worked on modelling and optimizing a novel porous noise cancelling solution for the Ariane V launcher fairings using BIOT-Allard theory. He has five years 'academic experience, including two years heading the Electromechanical Department, ESPRIT. At TWI, he worked on active and passive vibration damping, and developed condition and structural health monitoring strategies and technologies for aerospace, renewable energy, and oil and gas using techniques ranging from vibration to acoustic emission. Since joining Brunel University, he has been working on developing research areas in nondestructive testing and condition monitoring including the development of novel sensing techniques (plenoptic cameras), the adoption of machine learning for inspection, and monitoring applications. He has a track record of proposing and managing collaborative projects and building strategic partnerships with industrial partners to increase technology readiness level of novel technologies in the field of structural integrity.



**Dr. Elias Koumoulos** (*Speaker*)  
Innovation in Research and Engineering Solutions  
IRES  
Web: <http://innovation-res.eu/>

**Dr. Elias P. Koumoulos** is the Founder, Managing Director and Principal Consultant of IRES company. Chemical Engineer by his Bachelor studies with MSc on Materials Science and PhD in Nanotechnology, Dr. Koumoulos holds the necessary background to support industrial needs, upscale of promising technologies (lab to fab) and succesful TRL transition. Till now, he has the authorship of over 70 published papers in ISI journals, 6 book chapters, 90 participations in national/international conferences.



**Dr Yarjan Abdul Samad** (*Speaker*)  
Cambridge Graphene Centre,  
Engineering Department,  
University of Cambridge,

**Dr Yarjan Abdul Samad** is a Research Associate in the Cambridge Graphene Centre and the Engineering Department of Cambridge University. He is in the Nanomaterials and Spectroscopy Group in the Electrical Engineering Division.

**Joe Stallard** (*Speaker*)  
University of Cambridge,  
Department of Engineering



**Christine Boyle MBE** (*Speaker*)  
Senergy Innovations  
Web: <https://www.senergyinnovations.co.uk/>

**Christine Boyle** Bsc (Hons) Queens University Belfast. CEO, responsible for driving innovation strategy. Brought together a team of global leading engineers from both Queens University and Ulster University alongside experienced polymer manufacturing companies based in Northern Ireland who currently export polymer products to 70 countries worldwide. Raised over 600K whilst retaining 100% equity and sole ownership of the company.



**Dr Bojan Boskovic** (*Speaker and Organiser*)  
CEO, Cambridge Nanomaterials Technology  
Web: [www.cnt-ltd.co.uk](http://www.cnt-ltd.co.uk)

**Dr Bojan Boskovic** is the Founder, Managing Director and Principal Consultant of the company. He has more than 20 years of hands-on experience with carbon nanomaterials and composites from industry and academia in the UK and Europe. Previously, he worked as a R&D Manager at Nanocyl, one of leading carbon nanotube manufacturing companies in Europe. He also worked on carbon nanotube synthesis and applications as a Principal Engineer-Carbon Scientist at Meggitt Aircraft Braking Systems, as a Research Associate at the University of Cambridge, and as a Senior Specialist at Morgan Advanced Materials. During his PhD studies at the University of Surrey he invented low temperature synthesis method for production of carbon nanomaterials that has been used as a foundation patent for the start-up company Surrey Nanosystems. He was a member of the Steering and Review Group for the Mini-IGT in Nanotechnology that advised the UK Government on the first nanotechnology strategy policy document. Dr Boskovic was working as an advisor for the European Commission (EC) on Engineering and Upscaling Clustering and on setting up of the European Pilot Production Network (EPPN) and European Materials Characterisation Cluster (EMCC). He has experience in exploitation and dissemination management on a number of FP7 and H2020 European projects, including UltraWire, NanoLeap, OYSTER, M3DLoC, Genesis and nTRACK. Also in UK Government InnovateUK funded projects, such as UltraMAT and GRAPHOSITE He is also a leader of two private membership based consortiums: Nano-Carbon Enhanced Materials (NCEM) and Advanced Materials for Additive Manufacturing (AMAM).

## UltraWire 2019 - nanoMAT<sup>3D</sup> Workshops - Participating Organisations

### AIRBUS Defence and Space AIRBUS Group



Web: [www.airbus-group.com](http://www.airbus-group.com)

**Airbus Group** is a European industrial flagship which unites the capabilities of three market leaders: Airbus, Airbus Defence and Space and Airbus Helicopters. EADS has been rebranded as Airbus Group from January 2014. Airbus Military, Astrium and Cassidian are in formation to merge as Airbus Defence and Space. This broad range of products turns the new Division into a top-10 world player in defence and space. **Astrium** is Europe's No. 1 space company and is ranked third worldwide. Part of the international EADS Group and now Airbus Group, they are the only European space company that covers the entire space business, from civil and defence systems to services and applications. Their design, manufacturing and test facilities are among the most advanced in the world. They have unrivalled expertise in the techniques and key technologies required for developing and delivering major space systems. The 18,000-plus employees of Astrium are all driven by the same ambition: to make space technology work for everybody. Their skills, energy and entrepreneurial spirit have contributed to the success of many of the most important projects in space, including Ariane, the International Space Station, ATV, Herschel, Spot & Pléiades constellation, Mars Express and Skynet 5.

### ArcelorMittal



Web: <http://corporate.arcelormittal.com/>

**ArcelorMittal** is the world's leading steel and mining company. Guided by a philosophy to produce safe, sustainable steel, it is the leading supplier of quality steel products in all major markets including automotive, construction, household appliances and packaging. ArcelorMittal is present in 60 countries and has an industrial footprint in 19 countries.

### Johnson Matthey



Web: <http://matthey.com>

**Johnson Matthey** (LSE: JMAT) is a British multinational speciality chemicals and sustainable technologies company headquartered in the United Kingdom. It has five global divisions, each of one focussed on the development of high value added, high technology products and services. With 200-year commitment to innovation keeps them at the forefront of technological breakthroughs that make the world a better place. Enabled by their science, manufacturers across many industries, including automotive, petrochemicals and pharmaceuticals, apply their innovations to improve the function, performance and safety of their products at a lower environmental cost.

### Prysmian Group



Web: <http://www.prysmiangroup.com>

**Prysmian Group** is world leader in the energy and telecom cables and systems industry. With nearly 140 years of experience, sales of over €7.5 billion in 2016, 21,000 employees across 50 countries and 82 plants, the Group is strongly positioned in high-tech markets and offers the widest possible range of products, services, technologies and know-how. It operates in the businesses of underground and submarine cables and systems for power transmission and distribution, of special cables for

applications in many different industries and of medium and low voltage cables for the construction and infrastructure sectors. For the telecommunications industry, the Group manufactures cables and accessories for voice, video and data transmission, offering a comprehensive range of optical fibres, optical and copper cables and connectivity systems. Prysmian is a public company, listed on the Italian Stock Exchange in the FTSE MIB index.

## EMPA

Feuerwerkerstrasse 39,  
CH-3602 Thun,  
Switzerland  
Web: [www.empa.ch](http://www.empa.ch)



As an interdisciplinary research institute, **EMPA**, the Swiss Federal Laboratories for Materials Science and Technology, conducts cutting-edge materials and technology research. Its activities focus on the requirements of industry and the needs of society, and thus link applications-oriented research to the practical implementation of new ideas. Through an efficient technology transfer EMPA is turning research results into marketable innovations.

## Centro Tecnológico LEITAT

Web: <https://www.leitat.org/english>



Leitat is a private technical institute with more than 110 years of experience in industrial innovation processes. We transform technological and scientific results into economic and competitive value for our clients and collaborating entities. Over 1500 customers benefit from our talent, creativity and strong commitment. We bring knowledge and innovation to our customers through applied research and technical testing in the fields of chemistry, energy, environment, materials, engineering and life sciences. We rely upon our 240 highly skilled team members who deliver flexible solutions to face any industrial challenge.

## Haydale Composite Solutions Ltd

Web: [www.haydale.com](http://www.haydale.com)



**HAYDALE Composite Solutions** is an independent research and development company based in Loughborough, UK specialising in the development of advanced composites and nanomaterial enhanced composites and their applications. The company employs highly qualified engineers with mechanical engineering and material science backgrounds.

The company has extensive knowledge of both thermosetting and thermoplastic based composites, manufacturing processes, structural design and applications across a broad range of industries. The company utilise the latest in computer aided design systems and have access to its own prototyping workshops.

We are a global technology solutions company passionate about creating the next generation of advanced materials. We bring together cutting-edge technology with engineering know-how to enhance the performance of products and materials thus delivering business value for our customers.

## TWI

Web: <https://www.twi-global.com>



TWI is one of the world's foremost independent research and technology organisations, with expertise in materials joining and engineering processes as applied in industry. TWI specialises in innovation,

knowledge transfer and in solving problems across all aspects of manufacturing, fabrication and whole-life integrity management.

Established in Cambridge, UK in 1946, the organisation has gained a first-class reputation for service through its teams of respected consultants, scientists, engineers and support staff. With around 800 employees, it works with over 1800 Industrial Member companies in over 70 countries.

TWI currently operates from 54,000 square metres (581,000 square feet) of manufacturing, testing and training space; five UK and 13 overseas facilities serve both its Industrial Membership and its training and examination needs. A successful international Training and Examinations programme sees around 25,000 students trained each year in welding and inspection technologies.

### The University of Strasbourg



Web: <http://www.en.unistra.fr>

The **University of Strasbourg** is now a unique, comprehensive university covering all the fields of higher education. It is also the largest French university: 41058 students (including 20.5% foreign students), 11423 trainees in lifelong education, 4635 permanent staff (including 2477 teaching staff, 1872 technical and administrative staff), associated with 1386 researchers, engineers, technicians and administrative staff of the research organizations (CNRS, Inserm and INRA). Courses are taught in 37 faculties, schools and institutes, and research performed in 86 laboratories and research centers. The University of Strasbourg is strongly research-oriented and nearly 400 doctoral theses are submitted annually. It is also a university in the heart of the city of Strasbourg, located on 4 major sites and several other locations in the region of Alsace, counting more than 110 buildings (600 000 m<sup>2</sup>) and 80 hectares of land. The University of Strasbourg has also a strong commitment to build an Upper Rhine academic community with the Universities of Basel, Freiburg, Karlsruhe and Mulhouse.

### R-NANO National Technical University of Athens



Web: <http://nanolab.chemeng.ntua.gr/?lang=en>

The "Research Unit of Advanced, Composite, Nano Materials & Nanotechnology", R-NanoLab is situated at the School of Chemical Engineering (Department of Materials Science and Engineering) of National Technical University of Athens (NTUA). It is established since 2006; its research group has extensive experience in Designing, Production and Characterization of Advanced-, Composite- and Nano- Materials.

### IMDEA Materials



Web: <http://www.materials.imdea.org/groups/mng/>

IMDEA Materials (Madrid Institute for Advanced Studies of Materials) is a non-profit independent research institute promoted by the Madrid regional government (Comunidad de Madrid) to perform research in Materials Science and Engineering. IMDEA Materials Institute belongs to the Madrid Institute for Advanced Studies network, a new institutional framework created to foster social and economic growth in the region of Madrid by promoting research of excellence and technology transfer to industry in a number of strategic areas (water, food, energy, materials, nanoscience, networks and software).

IMDEA Materials Institute is committed to three main goals: excellence in Materials Science and Engineering research, technology transfer to industry to increase competitiveness and maintain technological leadership, and attraction of talented researchers from all over the world to Madrid to work in an international and interdisciplinary environment.

### The Nanoscience Centre

Cambridge University nanofabrication and characterisation facility  
Web: <https://www.nanoscience.cam.ac.uk>



The **Nanoscience Centre** is an 1800m<sup>2</sup> research facility completed in January 2003 and located at the north east corner of the University's West Cambridge Site. The Centre provides open access to over 300 researchers from a variety of University Departments to the nanofabrication and characterisation facilities housed in a combination of Clean Rooms and low noise laboratories. Office space is primarily home to the Department of Engineering's Nanoscience Group, technical and administrative staff and members of other research groups who require long term access to facilities.

### CAMETICS Cambridge Advanced Metals Ltd.

Web: [www.cametics.com](http://www.cametics.com)



**CAMETICS Cambridge Advanced Metals Ltd.** is an innovative company focused on utilization of unique properties of nanostructured graphitic materials and metals or metal alloys, providing specialised engineering services including design and fabrication of metal/alloy/composite products and welding techniques for aerospace, automotive, nuclear and offshore applications and also developing innovative and unique solution for bonding carbon-based components to other carbon or metal components mainly, but not exclusively, for electrical and thermal applications.

### ARUP

Web: [www.arup.com](http://www.arup.com)



Arup is a multi-disciplinary engineering firm, offering a variety of services across the built environment from planning to environmental consultancy and traditional SMEP engineering to specialist materials consulting. Operating with over 15,000 staff in 95 offices across 36 countries. We have had input to many landmark projects over the years including historically the Sydney Opera House or more recently Heathrow Terminal 5 to name but two.

### Graphene 3D Lab

Web: <http://www.graphene3dlab.com/s/home.asp>



**Graphene 3D Lab, Inc.** is capitalizing on groundbreaking properties of graphene and other advanced materials. The company is offering high-tech solutions in several areas including:

**Blockchain and Cryptocurrency Mining:** The Company is developing innovative hardware for harvesting the heat generated by the cryptocurrency mining computational hardware and converting it into heating and/or refrigeration solutions.

**R&D Materials:** These diverse materials have a wide spectrum of commercial, research, and military applications. The Company's wholly-owned subsidiary, Graphene Laboratories Inc., currently offers over 100 graphene and related products to a client list comprised of more than 14,000 customers worldwide, including nearly every Fortune 500 tech company and major research university. Some notable clients are NASA, Ford Motor Co., GE, Apple, Xerox, Samsung, Harvard University, IBM, and Stanford University. The Company's suite of products is available online at the company's e-commerce platform Graphene Supermarket ([www.graphene-supermarket.com](http://www.graphene-supermarket.com)).

**3D Printing:** The 3D printing division of the Company offers a portfolio of 3D printable filaments. These materials can be purchased through multiple distribution networks worldwide or directly from the web-store [www.blackmagic3D.com](http://www.blackmagic3D.com).

**High-Performance Epoxies:** Adhesive materials produced by the company are distributed under the G6-Epoxy trade name.

### Imperial College London



Web: <http://www.imperial.ac.uk/>

**Imperial College London** is a science-based university with an international reputation for excellence in teaching and research.

Consistently rated amongst the world's best universities, Imperial is committed to developing the next generation of researchers, scientists and academics through collaboration across disciplines.

Located in the heart of London, Imperial is a multidisciplinary space for education, research, translation and commercialisation, harnessing science and innovation to tackle global challenges.

### Additive Industries



<https://additiveindustries.com/>

Additive Industries is accelerating industrial additive manufacturing of high quality, functional, metal parts by offering a modular, end-to-end laser powder bed fusion system, MetalFAB1 system, and seamlessly integrated information platform, Additive World Platform, to high end and demanding industrial markets. With substantially improved reproducibility, productivity, and flexibility, Additive Industries redefines the business case for series production of additive manufacturing applications in aerospace, automotive, medical technology and high-tech equipment.

Established in 2012 in the “Brainport Ecostructure” around Eindhoven in The Netherlands, Additive Industries is the world’s first dedicated equipment manufacturer for industrial metal additive manufacturing systems

### Brunel Innovation Center (BIC) Brunel University London



Web: <https://www.brunel.ac.uk/research/Institutes/Institute-of-Materials-and-Manufacturing/Structural-Integrity/Brunel-Innovation-Centre>

Brunel Innovation Center (BIC) is part of the Institute of Materials and Manufacturing of Brunel University.

BIC was founded in 2009 in collaboration between Brunel University London and TWI, and is based in Granta Park, Cambridge.

The research carried out at BIC is predominantly in the field of NDT, CM, SHM, Power Ultrasonic and related areas, including:

- SHM / CM (Acoustic emission & ultrasonic guided waves)
- Ultrasonic Cleaning / De-icing / Material Processing
- Smart NDT (automation, wireless, IMUs)
- Sensors and transducers (aggressive environments; high temperature)
- Signal / Image Processing/Machine learning
- Systems (hardware-software) integration

### IRES



Web: <http://innovation-res.eu/>

IRES, is an R&D consulting company, is dedicated to new and innovative nanotechnology solutions. Headquartered in Brussels (Belgium), IRES is a team of key collaborators that provide supporting services such as IP, market research, environmental solutions and marketing advice. Currently, IRES is a member of 10 EU funded research projects consortia, in the field of advanced materials, piloting, research ethics and nanosafety. Our mission is to deliver to our customers world-class innovative solutions for development of materials based products. Our experience in combination with the use of strong analysis tools, provides us the chance to provide our consumers with high-quality consulting services. More specifically, inhouse risk & safety tools on demand successfully identify possible business risks and provide respective sustainable solutions depending on our customers' needs. Overall, we ensure sustainability through the whole lifecycle of products through the holistic evaluation of social, environmental and economic aspects based on EU standards and regulations.

### Cambridge Graphene Centre University of Cambridge



Web: <https://www.graphene.cam.ac.uk/>



The mission of the Cambridge Graphene Centre is to investigate the science and technology of graphene, carbon allotropes, layered crystals and hybrid nanomaterials. This engineering innovation centre allows our partners to meet, and effectively establish joint industrial-academic activities to promote innovative and adventurous research with an emphasis on applications.

The facilities and equipment have been selected to promote alignment with industry, by filling two main vacuums. The first is the lack of intermediate scale printing and processing systems where the industrial upscale and optimization of inks based on graphene, related carbon nanomaterials, and novel two dimensional crystals can be tested and optimized. The second vacuum stems from the challenge posed by the unique properties of graphene: the centre facilities aim to fully cover those properties necessary to achieve the goal of "graphene-augmented" smart integrated devices on flexible/transparent substrates, with the necessary energy storage capability to work autonomously and wireless connected. gate the science and technology of graphene, carbon allotropes, layered crystals and hybrid nanomaterials. This engineering innovation centre allows our partners to meet, and effectively establish joint industrial-academic activities to promote innovative and adventurous research with an emphasis on applications.

### University of Cambridge Department of Engineering



Web: <http://www.eng.cam.ac.uk>

**The Department of Engineering** is the largest department at the **University of Cambridge** and one of the leading centres of engineering in the world. Renowned for both its teaching and research, the Department's aim is to address the world's most pressing challenges with science and technology. To achieve this aim, the Department collaborates with other disciplines, institutions, companies and entrepreneurs. The Department's strength lies in its integrated approach to research and teaching; the unique way in which it applies its capability across all aspects of engineering and gathers partners to find solutions. To build even stronger integration, speed and agility, the Department's philanthropic development campaign will create a new home for Engineering at West Cambridge. The new campus will set the course for 21st century engineering around the world by seamlessly interweaving research, teaching and partnership with industry. The campaign will also open opportunities for the next generation of engineers with new academic posts, studentships and schools outreach.

## SENERGY



Web: <https://www.senergyinnovations.co.uk>

With a background spanning almost 20 years in the commercial roofing industry, **Senergy** are a Belfast based enterprise that design and manufacture SMART Solar Thermal Panels. By combining our roofing expertise with that of global leading engineers, we have developed the Senergy solar thermal panels. Unlike current solar thermal panels that are made from glass, copper and aluminium, Senergy panels are manufactured using advanced nanocomposite plastics.

Being aware of the sun's potential to deliver limitless amounts of solar energy, Senergy was inspired to design an architecturally attractive solution that would reduce the upfront cost of a solar heating system making it affordable to harness the sun's renewable energy.

## E.G.O. Elektro-Gerätebau GmbH



Web: <http://www.egoproducts.com/en/home/>

E.G.O. is an international high-tech company and one of the leading global manufacturers of domestic appliance technology, components and products. Other industries, ranging from medical technology through building services to automotive technology, benefit from our pioneering spirit, our experience and our expertise. Ever since the company was founded in 1931 we have been inventing sophisticated technology that makes people's day-to-day lives easier. Carrying on this tradition is what drives us on each and every day.

## EUROCAT



Web: <https://eurecat.org/en/>

Eurecat is the leading Technology Centre of Catalonia. It provides the industrial and business sector with differential technology and advanced expertise, offers solutions to their innovation needs and boosts their competitiveness in a fast-paced environment.

If you are interested in speaking, participating and/or exhibiting at the **UltraWire Workshop 2019** you get more information about the workshop including **registration form** and agenda by sending an email to Mónica Spreadbury and/or Bojan Boskovic: [info@ultrawire.eu](mailto:info@ultrawire.eu) or [info@cnt-ltd.co.uk](mailto:info@cnt-ltd.co.uk)