nanoMATexpo Carbon Nanotube Symposium

CNT Synthesis, Manufacturing and Applications

Venue:	Homerton College, Cambridge, UK - *ZOOM (hybrid)*
Date & Time:	**8 October 2025 (09:00 – 17:30 UK Time)**
Registration:	https://nanomatexpo.net/cnt-symposium/

A full agenda, including delegate profiles and speaker presentations, will be provided to all symposium attendees who register.

Programme

09:00	**Arrival, Registration, Networking & Refreshments at Fellows' Dining Room (in person participants)**
09:15	**Online Session opens**
09:30	**Welcome & introduction to the Symposium and Online Exhibition** *Dr Bojan Boskovic, Managing Director, Cambridge Nanomaterials Technology Ltd (CNT), UK*
09:45	**Round table introduction of all participants**
10:00  HENRY ROYCE INSTITUTE	**KEYNOTE SPEAKER** *Prof. Ian Kinloch, Chief Scientific Officer, Royce Institute - Advanced Nanostructures Group, Department of Materials and the National Graphene Institute, The University of Manchester, UK*
10:30	*Coffee Break & Networking*
10:45 	*Prof. Mark Bissett, Professor in Nanomaterials, Materials Engineering, University of Manchester, UK* **Title: CVD Growth and Applications of Carbon Nanomaterials**

MANCHESTER 1824 The University of Manchester	
11:15  ibs CMCM	*Prof. Rodney S. Ruoff, Director, Center for Multidimensional Carbon Materials (CMCM), Institute for Basic Science (IBS) (Republic of Korea), Department of Chemistry, Ulsan National Institute of Science and Technology (UNIST) (Republic of Korea)* **Title: Macroscale Single Crystal Graphene: Basic Science of Tensile Loading Mechanics and Broader Impact** The macroscale tensile loading mechanics of monolayer single crystal graphene (SCG) is presented. We have measured the Young's modulus, strain at failure, and tensile strength, as a function of crystallographic orientation. SCG is grown on either single crystal Cu(111) or on single crystal Ni(111) foils, and 'dog bone' samples with gauge length of 10 mm and width 2 mm are found to have remarkably high tensile strength values, which we suggest bodes well for applications, particularly for 'lightweighting' in space and aerospace, among others. An earlier version of this study (in progress) has been archived, please see [1]. Supported by the Institute for Basic Science (IBS-R019D1).
11:45	**Discussion** *Moderate by: Dr Bojan Boskovic, Cambridge Nanomaterials Technology Ltd (CNT)*
12:30	*Lunch break at Fellows' Dining Room (visit to the virtual EXPOs)*
13:30  CHASM	*Dr Ricardo Prada Silvy, CTO, Chasm Advanced Materials - Adjunct Professor, University of Oklahoma, USA - Vice President of R&D at SouthWest Nanotechnologies (SWeNT)* **Title: Decarbonization, Valorization of Residual Gases, and Clean Energy Generation in the Oil and Petrochemical Industry Through the Catalytic Conversion of Light Hydrocarbons Into Carbon Nanomaterials and Hydrogen** Greenhouse gases such as CO_2, CH_4, and NO_x intensify global warming by trapping solar radiation and limiting heat dissipation. In 2024, global CO_2 emissions reached 40.8 billion tons, with 35.5 bt from energy generation, 3.2 bt from construction material production, and 321 million tons from routine gas flaring. Flaring not only drives environmental degradation but also wastes recoverable energy resources. Global climate action plans aim to reduce CO_2 emissions by 25–95% by 2050 to keep temperature rise below 1.5 °C, beyond which glacier melting, sea level rise, and extreme weather events would accelerate. Our company has developed an innovative catalytic process that converts residual gases into carbon nanotubes and hydrogen without producing CO_2. Carbon nanotubes, used in lithium-ion batteries and lightweight, high-strength materials for automotive, aerospace, wind energy, and construction industries, support greenhouse gas reduction. The hydrogen produced can replace natural gas in clean energy generation. We are building the world's largest carbon nanotube reactor, with a capacity of 1,500 metric tons per year, scheduled to begin operations at our

	Norman facility in Q3 2026, marking a key milestone in the transition to a low-carbon energy system.
14:00  Novarials a nanowire technology builder	*Dr. Xinjie (Jeff) Zhang, President and Founder of Novarials Corporation and QuantumCarbon, - ex-Research Scientist, Hyperion Catalysis, USA* **Title: The Past, Present and Future of Carbon Nanotubes** Carbon nanotubes (CNTs) have evolved from a laboratory curiosity into a cornerstone of advanced nanotechnology, with their development spanning over seven decades. Initially observed in the 1950s, CNTs gained momentum in the 1980s and 1990s with the discoveries of multi-walled (MWNTs) and single-walled nanotubes (SWNTs). Early commercialization efforts, led by pioneers such as Hyperion Catalysis, established CNTs as viable conductive additives in composites. Subsequent innovations, including breakthroughs by Xinjie Zhang and collaborators, advanced large-scale synthesis, purification, and application of CNTs, leading to ultra-long MWNTs, high-purity products, and novel structures such as CNT membranes and fibers. Currently, CNT production is dominated by Asia, particularly China and South Korea, with large-scale MWNT manufacturing focused on conductive pastes for batteries. Europe, represented by OCSiAl, leads in SWNT commercialization, though costs remain high. North America, through companies like Novarials, emphasizes technological leadership, cost-effective production, and application to energy storage. CNT morphology, effective length, and chirality continue to define performance metrics, especially for battery applications, where CNTs serve as conductive additives, current collectors, and advanced materials for electric vehicles and energy storage systems. Looking ahead, CNTs are expected to play a pivotal role in the global energy transition. Market forecasts project a multibillion-dollar demand for CNT-based materials in North American battery manufacturing by 2030. Key research directions include achieving longer, defect-free SWNTs with controlled chirality, scaling production with lower costs, and balancing MWNT and SWNT coexistence. The ultimate “Holy Grail” is the mass production of SWNTs with perfect cylindrical structures, high tensile strength, and metallic conductivity at costs below $20/kg. With transformative applications in batteries, electric vehicles, robotics, and advanced electronics, CNTs stand at the intersection of science, industry, and sustainable technology, promising profound impacts on energy and materials industries worldwide.
14:30  RICE	**Title: Past, present and future of Carbon Nanotube Research: Progress in 3 Decades** *Prof. Sivaram Arepalli, Adjunct Professor, Department of Materials Science and NanoEngineering, Rice University, ex Chief Scientist of the Applied Nanotechnology Program at NASA-Johnson Space Center, USA*
15:00	*Coffee Break & Networking*

15:30 	*Dr Mark Banash, President & Chief Scientist, Neotericon LLC - ex- VP-Chief Scientist, Nanocomp Technologies, USA* **Title: Modifications to the Distributed Activation Energy Model To Enhance Thermogravimetric Analysis of Carbon Nanomaterials** Thermogravimetric Analysis (TGA) remains one of the most reliable and widely used techniques for carbon nanomaterial quality control and process development. The Distributed Activation Energy Model (DAEM), widely used in combustion studies of carbonaceous materials, provides a useful framework for interpreting the TGA results. One can extract identifying features such as the mean activation energy as well as how the activation energies are distributed statistically, an insightful measurement of surface homogeneity. Here we modify the DAEM by replacing the Arrhenius kinetic equation with the Eyring-Polanyi model. This provides much greater thermodynamic information about the nanomaterial's surface than just the DAEM. By introducing reasonable limits based on known properties of the materials, the DAEM can be reduced to a relatively simple numerical approximation. The results from actual carbon nanomaterials are presented, including comparison/contrast between traditional analysis and the new model.
16:00  PennState College of Earth and Mineral Sciences	*Prof. Mauricio Terrones, George A. and Margaret M. Downsbrough Department Head (Department of Physics) and Evan Pugh University Professor, Penn State University, USA* **Title: Carbon nanotube technology: An efficient platform for virus enrichment and virus strain detection** The global COVID-19 pandemic had devastating impact on individual livelihoods, local communities, and the global economy. Accurate, real-time, and widespread testing is needed in order to track the disease, prevent further infections, and gain basic fundamental understanding of the disease, such as the number of infections, infection rate, etc. This talk will discuss the design and fabrication of disposable cartridges using a label-free virus enrichment platform consisting of microarrays of aligned carbon nanotubes (CNTs) in conjunction with gold metal nanoparticles. These trapped viruses are detected and identified using Raman spectroscopy in conjunction with Machine Learning models. More importantly, after viral capture, these viruses remain viable permitting subsequent in-depth characterizations by various conventional methods. This technology successfully enriched rhinovirus, influenza virus, coronavirus and parainfluenza viruses, and maintained the stoichiometric viral proportions when the samples contained more than one type of virus, thus emulating coinfection. Viral capture and detection took only a few minutes with a 70-fold enrichment enhancement; detection could be achieved with as little as 102 EID50/mL, with a virus specificity > 95%. This enrichment method coupled to Raman virus identification constitutes an innovative system that could be used to quickly track and monitor viral outbreaks in real-time.
16:30	Panel Discussion: Moderator: Dr Bojan Boskovic – Panel: Speakers – Participants: All

17:30	*Conclusions and Wrap up*

CNT Synthesis, Manufacturing and Applications – Speakers

Dr Bojan Boskovic (Organiser)
CEO,
Cambridge Nanomaterials Technology
14 Orchard Way
Lower Cambourne
Cambridge CB23 5BN - 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 Charaterisation 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).

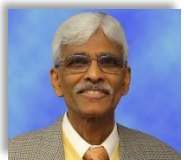
Prof. Ian Kinloch (Keynote Speaker)
Chief Scientific Officer
Henry Royce Institute
Manchester
UK

Ian became Professor of Materials Science at the University of Manchester in 2012. He has driven research strategy across a number of departments within the university and collaborated with researchers at other universities and in industry. He is recognised for taking a 'holistic' research approach that follows nanomaterials from their production through to their processing and ultimately to applications in the composites and the energy transition. His research bridges the academia-industrial divide with industrial collaborations including the co-development of a nanotube production route which was commercialised during his post-doctoral position at the University of Cambridge through to his current RAEng Research Chair with Morgan Advanced Materials.

Since 2024, Ian has held the role Chief Scientific Officer at the Henry Royce Institute, where he leads Royce's national science research strategy, working with the Royce Research Area leads and their Steering Groups as they support national programmes and initiatives.

Prof. Mark A. Bissett (Invited Speaker)
Head of Research
Dept. of Chemistry
University of Manchester
UK

Prof. Mark A. Bissett obtained his BSc and PhD in Nanotechnology from Flinders University (Adelaide, Australia) in 2011. In 2012 he joined the Institute for Materials Chemistry and Engineering in Kyushu University (Japan) as a postdoctoral researcher and in 2013 was appointed as a Research Assistant Professor. At the beginning of 2014 he joined the University of Manchester in the Dept. of Chemistry as a Postdoctoral Research Associate, before moving to the Dept. of Materials at the beginning of 2016. In November 2016 he was appointed as a Lecturer in Nanomaterials within the Department of Materials, and was promoted to Senior Lecturer in 2019, then Reader in 2022, and Professor in 2025. He is currently the Head of Research for the Department. His academic research group focuses on the formulation and integration of low-dimensional materials, particularly graphene and other 2D materials, into electrochemical energy storage applications as well as polymer nanocomposites. This includes the synthesis, functionalisation and characterisation of carbon nanotubes and novel two-dimensional materials, such as graphene and transition metal dichalcogenides, and their integration into devices such as photovoltaics, flexible composites, and batteries/supercapacitors.



Sivaram Arepalli (Invited Speaker)
Adjunct Professor
Department of Materials Science and NanoEngineering,
Rice University
USA

Dr. Arepalli is an Adjunct Professor in the Department of Materials Science and NanoEngineering at Rice University. He received his Ph.D. from IIT Kanpur and did postdoctoral work at Univ. of Pennsylvania and Cornell University. During 2013 to 2014, he was the Vice President at the National Institute of Aerospace (NIA), Hampton, Virginia and supported NASA Langley. From 2009 to 2013, he was a Senior Professor in the Department of Energy Science at Sungkyunkwan University in Korea. He was the Chief Scientist of the Applied Nanotechnology Program and Reentry Plasma Diagnostics Program at NASA-Johnson Space Center, Houston and worked there for 22 years. He received global recognition for his work on single wall carbon nanotubes. He is an Associate Fellow of AIAA and was nominated as a Fellow of APS. His current focus is on nanomaterials for energy applications as well as nanocomposites for aerospace structures, environmental sensors and bioimplants.

Dr Mark Banash (Invited Speaker)
President & Chief Scientist,
Neotericon LLC
USA

Mark Banash is President and Chief Scientist at Neotericon LLC, a consultancy specializing in nanoscience, nanomaterials, and nanotechnology. He was VP-Chief Scientist at Nanocomp Technologies (now Huntsman Chemicals) where he was responsible for the fundamental science of how Nanocomp made their carbon nanomaterial-based sheet and yarns as well as identifying and proving the links between their unique nanoscale features and the performance of end products. Prior to

Nanocomp, he was the Director for Production and Quality for Zyvex Corporation, where he managed manufacturing operations and initiated the industry's first supply chain certification process to qualify carbon nanotubes. He holds a Ph.D. in Physical Chemistry from Princeton University, an MBA from the University of Maryland University College, and a B.A. with honors in Chemistry from the University of Pennsylvania. He is a member of the International Standards Organization (ISO) U.S. Technical Advisory Group on the measurement of nanomaterials and has worked closely with NIOSH in their efforts to develop and deploy nanomaterial health and safety programs.

Dr. Xinjie Zhang (Invited Speaker)
President and Founder of
Novarials Corporation and QuantumCarbon,
USA

Dr. Zhang founded Novarials Corporation in 2010 and serves as its President since then. Dr. Zhang is a top industry expert on one-dimensional (1D) nanomaterials and an energetic entrepreneur. He has more than twenty years of industry research and development experience on nanomaterials, and a proven track record in commercializing new technologies. He was a group leader at SINOPEC Research Institute of Petroleum Processing (RIPP) in Beijing from 1992 to 1996. The work during this period led to the construction and successful operation of a brand-new N-methylpyrrolidone (NMP) factory, Nanjing Jinlong Chemical Co., Ltd., in 1996. Dr. Zhang led the pilot production of the catalyst and the starting work of the commercial factory. He was awarded the “Scientific and Technical Progress Award” in 1996, a ministerial award in recognition for this significant contribution. From 2000 to 2001, Dr. Zhang was a Research Fellow of the Royal Society in St. Andrews University under the sponsorship of the Royal Society of UK. From 2001 to 2003, Dr. Zhang worked in DOE Pacific Northwestern National Laboratory (PNNL) on developing novel solid acid catalysts and a new process for the conversion of sorbitol to isosorbide. The developed technology was licensed by Battelle to Iowa Corn Promotion Board in 2005. From 2003 to 2010, Dr. Zhang was the leading scientist on carbon nanotube growth in Hyperion Catalysis International – the world’s first carbon nanotube commercialization company. He was the scientist in the world who first grew single-walled carbon nanotube forest back in 2004 (3 days earlier than the Science journal paper), and he also held two more groundbreaking breakthroughs on carbon nanotube growth. Dr. Zhang has 13 issued patents and 15 peer-reviewed journal publications. His recent focus is on the large-scale preparation, processing, application, and commercialization of one-dimensional nanomaterials including multi-walled carbon nanotubes and single-walled carbon nanotubes. Under his leadership, Novarials is commercializing over two dozen inorganic nanowires, a series of unmatched carbon nanotube technologies, and three revolutionary nanowire membrane platform technologies. He earned his Ph.D. degree in Chemistry from Peking University in 1999.

Dr. Ricardo Prada Silvy (Invited Speaker)
Chief Technology Officer
CHASM
USA

Dr. Ricardo Prada Silvy is CTO of Chasm Advanced Materials and an Adjunct Professor at the University of Oklahoma, internationally recognized for his expertise in catalytic process development and scale-up for oil refining, petrochemicals, and carbon nanomaterials. With over 35 years in industry and academia, he has held executive and technical/managerial leadership roles, driving the development and commercialization of innovative technologies. He designed and patented the world’s

largest carbon nanotube reactor, set to begin operation in 2026, and is the inventor of 40+ international patents, most of which have been commercialized. He has published over 120 articles in leading scientific and Oil & Gas journals and is an invited speaker at international conferences on catalysis, energy, and carbon nanotube technology.

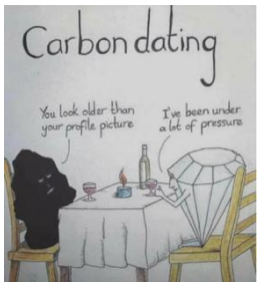
Prof. Mauricio Terrones (Invited Speaker)
George A. and Margaret M. Downsbrough Department Head
(Department of Physics) and Evan Pugh University Professor,
Penn State University
USA

Mauricio Terrones, obtained his B.Sc. degree in Engineering Physics with first class honors at Universidad Iberoamericana, and was distinguished as the Best Student of Mexico in Engineering Physics in 1992. In 1994 he started his doctorate degree with Sir Prof. Harold W. Kroto (Nobel Laureate, FRS), and received his D.Phil. degree from University of Sussex in 1998. He has co-authored more than 650 publications in international journals and counts with more than 96,000 citations to his work (His H index is 130; Google Scholar H=150). He has published in Nature, Science, Phys. Rev. Lett., Nano Lett., Nature Nanotechnology, Nature Materials, Nature Communications, Nature Chemistry, ACS Nano, PNAS, Science Advances, etc. Some of his accomplishments include: 1) Fellow of APS, AAAS, TWAS and RSC; 2) Highly Cited Researcher (WoS; 2017-present); 3) The Jubilee Professorship at Chalmers University of Technology (Sweden; 2016), 4) Visiting Fellow, Trinity College, University of Cambridge (UK; 2012), 5) “The Somiya Award for International Collaboration” (IUMRS; 2009), 6) “The Japan Carbon Award for Innovative Research” (Japan Carbon Society; 2008), 7) “TWAS Prize in Engineering Science,” Academy of Sciences of the Developing World, 8) UNESCO-Javed Husain Prize for Young Scientists and Albert Einstein Medal (France, 2001), 9) Alexander von Humboldt Fellowship, Max-Planck-Institut für Metallforschung (Stuttgart, Germany), 10) The Best Student of Mexico Award (Mexico, 1992).

Mauricio Terrones is Evan Pugh University Professor and the George A. and Margaret M. Downsbrough Department Head (Department of Physics, Penn State). He is also Professor of Physics, Chemistry and Materials Science & Engineering at Penn State. He is also the Founder Director of the Center for 2-Dimensional and Layered Materials at Penn State, and the NSF-IUCRC Center for Atomically Thin Multifunctional Coatings (ATOMIC). He is also the Editor-in-Chief of the journal Carbon (IF=11.6).

Research: Mauricio Terrones works on low dimensional materials that mainly involve 1- and 2-Dimensions, ranging from carbon nanotubes and graphene nanoribbons to graphene, boron nitride and chalcogenide monolayers (e.g. WS2, MoS2, NbS2 , etc.). His group concentrates on challenging synthesis of novel nanoscale materials (1D and 2D) with unprecedented physico-chemical properties. Within his group and with close collaborators, he performs theoretical first-principles calculations that predict electronic, chemical, optical and magnetic properties. He also focuses on performing state of-the-art characterization of the produced materials using electronic transport, photo-transport, Raman spectroscopy, aberration corrected transmission electron microscopy, photoluminescence, electron energy loss spectroscopy, etc.

Prof. Rodney S. Ruoff (Invited Speaker)
Director
IBS Center for Multidimensional Carbon Materials (CMCM)
South Korea



Dr. Ruoff UNIST Distinguished Professor (The Departments of Chemistry and Materials Science, and The School of Energy Science and Chemical Engineering), directs the *Center for Multidimensional Carbon Materials* (CMCM), an Institute for Basic Science Center (IBS Center) located at the Ulsan National Institute of Science and Technology (UNIST) campus. Prior to joining UNIST in 2014, he was the Cockrell Family Regents Endowed Chair Professor at the University of Texas at Austin from September, 2007. He earned his Ph.D. in Chemical Physics from the University of Illinois-Urbana in 1988, and was a Fulbright Fellow in 1988-89 at the Max Planck Institute für Strömungsforschung in Göttingen, Germany. He was at Northwestern University from January 2000 to August 2007, where he was the John Evans Professor of Nanoengineering and director of NU's *Biologically Inspired Materials Institute*, and did research at the Molecular Physical Laboratory, SRI International for 6 years after being a postdoctoral fellow at IBM TJ Watson Research Center. Further information about Rod is at http://cmcm.ibs.re.kr/ and https://en.wikipedia.org/wiki/Rodney_S._Ruoff

CNT Synthesis, Manufacturing and Applications – Organisers

Cambridge Nanomaterials Technology Ltd (CNT)

Web: www.cnt-ltd.co.uk

The **Cambridge Nanomaterials Technology** Ltd (CNT Ltd) is an innovation management and nanotechnology consulting company based in Cambridge. The CNT Ltd helps companies, academic and government institutions to develop world-class innovative solutions for nanomaterials related R&D and IPR strategy, partnership, products, technologies, funding and markets. CNT Ltd is specialised in carbon nanomaterials R&D consulting and collaborative R&D project management, including exploitation and dissemination management, consortium and supply chain building. CNT has done a number of patent landscaping and market research analysis studies regarding production and use of various nanomaterials helping to link inventors and technology developers with end-users and investors. The CNT Ltd is a leader of two private membership-based consortiums: Nano-Carbon Enhanced Materials (NCEM) and the new Advanced Materials for Additive Manufacturing (AMAM) with members coming from leading multinational companies and research institutions.

CNT Synthesis, Manufacturing and Applications – Speakers' and Participating Organisations

Henry Royce Institute

Web: www.royce.ac.uk

The **Henry Royce Institute** is the UK's national institute for advanced materials research and innovation.

With its Hub at the University of Manchester, the Royce is a partnership of eleven leading institutions – the universities of Cambridge, Imperial College London, Liverpool, Leeds, Oxford, Sheffield, the

National Nuclear Laboratory, and UKAEA, and associates the University of Strathclyde and Cranfield University.

Royce aims to undertake world-class research in materials science, to accelerate the commercialisation of materials research for economic and societal benefit and to train the next generation of materials scientists and engineers to tackle some of our most pressing global challenges.

Making available £330m of materials research capability; the Royce equipment, facilities, and expertise are open to UK academics and industry alike. Our vision is to design, make, and test advanced materials systems, cost-effectively and at speed. Whether you are from a large company or SME with a problem to solve or an academic looking for support with research, Royce is here to support the UK materials community.

University of Manchester

Web: https://www.materials.manchester.ac.uk/

MANCHESTER 1824
The University of Manchester

We are the largest Department of Materials in Europe, excelling in both materials science and engineering, and fashion business and technology.

Material scientists are shaping our world and in the Department of Materials you will develop a true understanding of the science behind the fashion - in practical subjects that meet the needs of an ever-changing industry.

We attract the best research talent from across the globe, offering invaluable hands-on experience in custom laboratories and digital design studios. We are the home of graphene and our continued investment in materials includes the creation of our £235 million Henry Royce Institute and our £60 million Graphene Engineering Innovation Centre.

Rice University

RICE UNIVERSITY

Web: www.rice.edu

Boasting a 300-acre tree-lined campus in Houston, Rice University is ranked among the nation's top 20 universities by U.S. News & World Report. Rice has a 6-to-1 undergraduate student-to-faculty ratio, and a residential college system, which supports students intellectually, emotionally and culturally through social events, intramural sports, student plays, lectures series, courses and student government. Developing close-knit, diverse college communities is a strong campus tradition, which is why Rice is highly ranked for best quality of life and best value among private universities.

CHASM

CHASM™

Web: www.chasmtek.com

CHASM is pioneering using carbon nanotubes (CNTs) and CNT hybrids to create solutions that offer superior performance, lower cost, sustainability, and greater scalability than traditional material solutions. Chasm advanced solutions are adopted in cement decarbonization, water purification, and printed electronics.

The printed electronic solutions provide transparent, highly efficient defogging and de-icing heaters for automotive advanced driver assistance systems (ADAS), strengthening road safety and vehicle autonomy. These mass-produced solutions also enable transparency to all antennas and ensure the exponential increase of antenna deployment in the 5G acceleration.

Novarials Corporation

Web: www.novarials.com

Novarials Corporation, a leading nanowire technology builder headquartered in Greater Boston, has a technical leadership on the large scale and cost-effective manufacturing of high-quality and precisely-engineered one-dimensional nanomaterials including ceramic nanowires, semiconducting nanowires, metallic nanowires, ceramic nanotubes, carbon nanotubes, magnetic nanotubes and nanorings, etc. We have developed a variety of unmatched nanomaterials products and technologies, which are expected to have huge potential in dozens of industries.

PennState University - Department of Materials Science and Engineering (MatSE)

Web: www.psu.edu

There's a reason **Penn State** consistently ranks among the top universities in the world. Across multiple campuses and an online World Campus, our 90,000 students and 20,000 faculty and staff know the real measure of success goes beyond the classroom—it's the positive impact made across the world.

MatSE is shaping the diverse leaders of tomorrow while driving sustainable discoveries that will transform our world. Through educational innovation, pioneering research, entrepreneurial spirit, and active community engagement, we are enabling the technologies that will meet the needs of the 21st century.

For more than 115 years MatSE has been making groundbreaking contributions to materials science and engineering, we remain committed to pushing boundaries, fostering education, and advancing the materials that define the future.

MBDA

Web: www.mbda-systems.com

MBDA is a unique multi-national European group and a world-leader in the field of complex weapon systems

Established through the merging of Airbus, BAE Systems and Leonardo's missile activities, MBDA brings together state-of-the-art expertise in Complex Weapon Systems. By delivering decisive military capabilities to European nations and their allies around the world, MBDA plays a major role in supporting their strategic independence, protecting their national security and preserving their land, air and maritime sovereignty.

Innospec Inc.

Web: https://innospec.com/

Innospec is a global specialty chemical company with the talent, expertise and drive to help our customers succeed in competitive markets.

We make it our business to provide innovative ground-breaking products, combined with excellent customer service and technical support. Our suppliers and local capabilities enable us to remain flexible and dynamic to our customers' changing needs, with a continued focus on quality-driven and responsive service. Our outstanding R&D capabilities have meant that we've been successful in bringing new technologies to market which allow our customers to improve their products and operations. We continue to invest in and focus on R&D, ensuring we meet future needs with pioneering innovations.

University of Colorado-Boulder

Web: www.colorado.edu

University of Colorado **Boulder**

The University of Colorado Boulder is Colorado's leading public research university, transforming lives since 1876.

As the state's flagship university and one of only 38 U.S. public research institutions in the Association of American Universities (AAU), CU Boulder has proudly served Coloradans since the state's founding.

Home to five Nobel Laureates since 1989 and the only university to send space instruments to every planet in the solar system, CU Boulder provides a strong return on investment by aligning efforts to achieve research and creative excellence, global sustainability impact and the success of all students, faculty and staff.

Neotericon LLX

At **Neotericon** we deal with all things nanoscale, from the materials and the tools and processes used to make them up to the products in which they are used. We cover every aspect of nanotechnology: the fundamental science and engineering, quality control and finished product testing, and even product liability and regulatory issues. We can also connect with subject matter experts in research, process development, operation management, the law, and environmental and health testing.

IBS Center for Multidimensional Carbon Materials (CMCM)

Web: https://cmcm.ibs.re.kr/cmcm/?MM=02&SM=01#

ibs CMCM Center for Multidimensional Carbon Materials

The IBS Center for Multidimensional Carbon Materials (CMCM) supports a talented international team of highly collaborative researchers that design, synthesize and study new forms of carbon and related materials, many of which are expected to have exceptional physical and electronic properties. The center is located in a new building at the Ulsan National Institute of Science and Technology (UNIST), nestled in a beautiful area near the port cities of Ulsan and Busan. Ulsan is famous for its shipbuilding, automobile manufacturing, and petrochemical and chemical industries, and thus an ideal location to interface science with industry. Members and visitors of the CMCM will enjoy an intellectually stimulating environment that fosters dynamic exchange within the center and abroad through its extensive, international network of research institutions and programs.

Cranfield University

Web: www.cranfield.ac.uk/manufacturing

www.cranfield.ac.uk/centres/enhanced-composites-and-structures-centre

Cranfield has a distinctive approach to manufacturing research. We combine expertise in design, technology and management along with research into materials sciences together, all with a focus on manufacturing.

We teach more than 300 postgraduate students in areas ranging from manufacturing technology to systems and management. Research students work in fields as diverse as ultra-precision engineering to the novel application of Virtual Reality technologies to support maintenance and through-life engineering services. We work in Technology Readiness Levels (TRL) 1-6.

Cranfield offers a part-time executive manufacturing Master's programme to develop industry professionals who can lead business change and innovation. From 2016 we will also run a Manufacturing Leadership Programme for SMEs and a Manufacturing Directors Programme.

We work with more than 1500 businesses and governments around the world. Through our industry connections guest lecturers, often senior managers in leading companies, provide insight into current industry challenges. Many industry contacts actively recruit our graduates.

Cabot corporation

Web: www.cabotcorp.com

Cabot Corporation (NYSE: CBT) is a leading global specialty chemicals and performance materials company headquartered in Boston, Massachusetts, USA.

Our businesses deliver a broad range of solutions to customers in every corner of the globe, serving key industries such as transportation, infrastructure, environment and consumer. As an industry leader, we consistently push the boundaries of what is possible, harnessing our team's expertise and cutting-edge technology to develop materials that enhance performance, increase efficiency and offer sustainable benefits. We are dedicated to leveraging the power of innovative chemistry to help our customers address the world's most pressing sustainability challenges. Our commitment to innovation is driven by a passion to advance our customers' businesses through our deep understanding of their industries and the global trends that impact their operations.