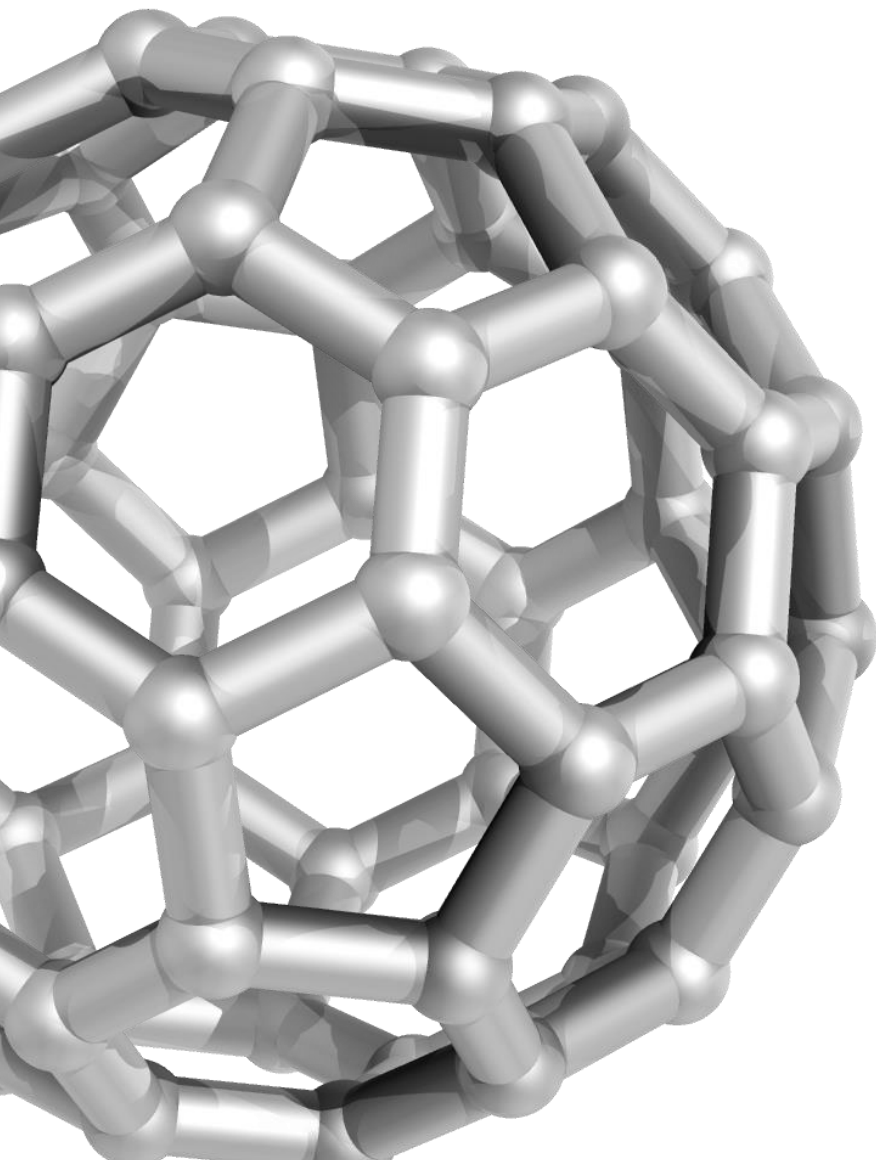


Nanotechnology Expert Services

BREC Solutions Limited is one of the leading consultancies in nanotechnology innovation. We offer services in research and development, information tracking, technology scouting and investor briefings. We publish bespoke reports on the most important developments in nanotechnology innovation, standards and regulation. We provide technology scouting, market analysis, sales intelligences and investment assistance in nanotechnology area.



Nanotechnology Consultancy and Representation

BREC Solutions are one of the leaders in the nanotechnology innovation, standardisation and regulation services. Our aim is to facilitate commercialisation of applications in nanotechnology. This process is facilitated by our knowledge of regulation and standards in nanotechnology. We work with international standards bodies (ISO, CEN, IEC and ASTM). We provide an independent advice to large corporations, lobbying groups, governments and academic institutions. This takes form of independent reports, direct consultations or hands on innovation and work with development teams.



Technology Scouting



Tracking information about the market developments, competitor behaviour or regulatory changes is difficult and time-consuming especially if your business operates in several geographic markets. We search for an appropriate technology, expertise and intellectual property on behalf of our clients. In some cases we start with an existing technology or intellectual property and scout for applications and potential products.

Market Evaluation

Having an invention or an idea in nanotechnology or other area may not be sufficient for successful commercialisation. It is important to have a market and competitor analysis. In some cases the new technology is pitched against the existing one. We have our own methodology to extract the market information.



Nanomaterials Sales Intelligence



If you are looking to sell your nanomaterials, equipment or services you may need contacts and distribution networks. Contacting the right decision makers is critical. We provide this intelligence and allow your sales team to do their work properly. Most of our clients want to sell nanomaterials in EU and USA. We put them in contact with the right people and make sure their products follow local regulation and standards.

Nanomaterial Characterisation

Nanomaterials (powder or dispersion form) present challenges for characterisation of key parameters such as particle size, size distribution, particle shape, specific surface area, dispersion stability or particle level of agglomeration. BREC provides traceable characterisation services for all our clients using the state of the art facilities under certified ISO procedures.

| Technique / Instrument | Parameters | Standards |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
|  Dynamic Light Scattering (DLS) <i>Malvern Zetasizer Nano ZS</i> | Particle size, Particle Size distribution, Zeta potential | ISO 22412:2008 Accreditation range: 20nm - 450nm ISO 13099-1 and -2 Accreditation range: 40mV - 40mV |
|  Particle Tracking Analysis (PTA, NTA) <i>Malvern Nanosight NS500</i> | Particle size, particle size distribution, mean particle size | ASTM E2834-12 Accreditation range: 20nm-450nm |
|  Energy-dispersive spectrometry (EDS) <i>Bruker Quantax 400</i> | Chemical composition in microareas. | ISO 22309:2011 Accreditation range: from Z=11 to Z=92 |
|  Scanning Electron Microscopy (SEM) <i>Zeiss ULTRA PLUS</i> | Surface structure, particle shape, size and structure | Testing procedure P5.10, version 5:9.10.2013 Accreditation range: magnification from 100 to 200 000 |
|  Gas Pycnometry <i>AccuPyc II 1340 Micromeritics</i> | Skeleton density | ISO 12154:2014 |
|  BET method - gas adsorption <i>Gemini 2360 Micromeritics</i> | Specific surface area | ISO 9277:2010 |
|  Static Multiple Light Scattering (SMLS) <i>Turbiscan LAB Formulation</i> | Dispersion time stability, mean particle size, changes in aggregation state | Manufacturer specification |
|  Low Temperature Simultaneous thermal analysis (LT-STA) <i>STA 449 F1 Jupiter® Netzsch, stainless steel furnace</i> | Temperature of phase transition and enthalpy of transition, sample mass loss during temperature program. | Internal Laboratory Procedures From -150°C to 800°C |
|  High Temperature Simultaneous thermal analysis (LT-STA) <i>STA 449 F1 Jupiter® Netzsch, SiC furnace</i> | Temperature of phase transition and enthalpy of transition, sample mass loss during temperature program. | Internal Laboratory Procedures From RT to 1400°C |
|  EGA- Evolved Gas Analysis (DSC TG-QMS) <i>STA 449 F1 Jupiter® Netzsch, SiC furnace QMS Aeolos 403</i> | Analysis of gases released during temperature program. Temperature of phase transition and sample mass loss during temperature program. | Internal Laboratory Procedures From 2amu to 120amu Internal Laboratory Procedures From RT to 1400°C |

Nanotechnology Investment



Investment in high tech in general and nanotechnology in particular can be complicated and risky. BREC Solutions works with inventors, researchers, entrepreneurs and investors. We provide independent evaluation of technology (competitive advantages, risks and benefits). We also offer investors an opportunity to earn money on our own (in-house) innovation in selected areas. Contact us for more information.

Nanotechnology Newsletter

One of our activities is the distribution of our monthly newsletter. The newsletter is focussed on the industrial, commercial, regulatory, scientific and standards aspects of nanotechnology. It is distributed to over 11,000 nanotechnology professionals. It is the most comprehensive news portal for nanotechnology industry and nanotechnology events, conferences and exhibitions. We offer limited space for advertising of companies and events. Please contact admin@brec-solutions.com for more information.



Key expert: Dr Denis K Koltsov



Denis Koltsov was born in Moscow in 1976, graduated from Cambridge University in 1998 and obtained his PhD in Nanotechnology in 2003 from the same university. He worked as a research associate in Cambridge Nanoscience Centre before taking up lecturing position at Lancaster University in 2005 where he led nanotechnology work and outreach services till 2009. Dr Koltsov is now running nanotechnology consulting practice (BREC Solutions limited). Dr Koltsov is the author of several patents, numerous publication and confidential reports to stakeholders. He is a recognised authority in nanotechnology innovation, standardisation, regulatory and social trends. Dr Koltsov is an expert working for industry and serving as expert on BSI, ISO, CEN, committees. He is currently the chairman of the ISO TC229 (Nanotechnologies) committee for standardisation. He has conducted a number of industry-led consultations in nanotechnology sector and reported to relevant regulatory authorities. For any enquiries please contact on denis@brec-solutions.com.

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