

Sweden-UK Roundtable Posters

Posters that were presented on the day



Sustainability:

"...the world's most complex engineering challenge..."

Strategic Intent:

The UK is recognised as the **world leader** in the application of **composite**

solutions that enable global sustainable solutions.

The National Composite Centre seeks a future where:

- composites are a choice material to enable sustainable products and solutions;
- end-of-life and life-cycle impact are prioritised at project inception;
- the whole **supply chain** work effectively and cohesively to enable system circularity
- Government, business and individual behaviours are educated to ensure a transition towards a sustainable future





AIRCRAFT RESEARCH ASSOCIATION ARA

ARA is a leading independent centre of excellence providing an extensive range of complementary aerodynamic services > Transonic Wind Tunnel testing to Mach 1.4 - Store Separation - Gust Rig - Innovative optical visualisation techniques > Instrumented model design and manufacture > Design & unable complementary of the act experientiated technique

- > Design & analysis consultancy using state of the art computational techniques



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Delivering Confidence to Fly

AEROSPACE TECHNOLOG

Project ideas from RISE SICOMP

- Smart composite structures:
 - >Automated composite manufacturing
 - Pick & Place, automated handling of composites
 - Force controlled operations (Forming, assembly),
 - Collaborative applications between robot and operator.
 - Implemented sensors
 - Wireless sensors
 - Sensors made of graphene
 - Printed electronics
 - Optical fibres

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Joining composite to metal



Possible partners



OXEON -elitkomposit







DevTMF II

Development of Innovative Experimental and Predictive Tools to Characterise Thermo-**M**echanical Fatigue Behaviour and Damage Mechanisms of a New Structural Alloy

At present 3 Gtonnes of CO₂ are produced every year by air travel. This is completely unsustainable and is driving the need for greater efficiency in aeroengines.

Future jet engine designs are expected to utilise higher core temperatures and lower component weights in order to meet these targets.

The project aims to increase service life of present and future gas turbine components and reduce CO₂ emissions, by enabling more accurate predictions of design life.





Bridging Chemistry & Engineering

Diverse research interests in composite/coatings/adhesives technology:







- Strengths in novel synthesis and polymer formulation
- Cure chemistry and network formation
- Composite processing (compression moulding and RTM)
- Probing matrix-fibre interfacial chemistry & fibre surface characterisation
- Extensive experience in epoxy resins
- 'Exotic' high performance polymers used in aerospace engineering:
 - Thermosets Cyanates, BMIs, BCIs, PETIs, polybenzoxazines
 - Engineering thermoplastics PES, PSU, PEI, PAI, PEEK, PBI.
- Nano-structured additives (POSS, CNTs, GO, and clays)
- Sustainable composites (recycled discontinuous fibres)

For publications: http://www.bristol.ac.uk/engineering/people/ian-hamerton/overview.html



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EPSRC Centre for Doctoral Training in Advanced Composites for Innovation and Science

Areas of Interest for Research

- IVHM
- Model based development of complex systems
- Multifunctional materials
- Composite technology
- ATM systems
- RPAS and Drones
- Avionic systems





MTC Innovation Ecosystem



MANUFACTURING INNOVATION





Additive Manufacturing



Non-Conventional Machining



High Integrity Fabrication





Advanced Tooling and Fixturing



Electronics Manufacturing



Robotics and Autonomous Systems



Design and Simulation



Manufacturing Informatics



Metrology and NDT

National Centre for Additive Manufacturing

Hosted at MTC, Coventry; DRAMA pilot AM factory

 Demonstration factory taking raw material and part designs and producing fully finished parts



MTC also hosts the European Space Agency (ESA) AM Benchmarking Centre since May 2017



ASTM AM Center of Excellence since May 2018



MTC - Project topics

Scalable Cyber security for Supply chains

- Connectivity and 5G
- ➤ AM for Supply chain
- > AM for better more efficient composite tools
- Human oriented automation; Co-bots, mobile robot platforms
- > AI in manufacturing for supply chains
- Training; AM, Automation, Robotics





Potential topics for ATI-collaboration

- Supply Chain Development New materials
- New material forms AM / 3D-print
- Advanced manufacturing

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- Non Destructive Testing
- Manufacturing simulations

