Advanced Composite Materials and Structures

Investigating various applications of advanced composite materials in the aerospace, civil infrastructure, and marine industries, including: the development of new structural design and analysis methods; experimental characterisation of new materials; and studies of structural performance and manufacturing effects.

More Information

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Competitive advantage

- Advanced expertise in the mechanics of composite materials and structures
- Internationally recognised expertise in composite technology (modelling, design and analysis, material characterisation, sample and prototype manufacture and testing)
- Advanced computational mechanics (nonlinear numerical, thermal and thermal-mechanical, progressive damage, and buckling analyses)

Impact

- Higher performance of composite materials and structure

Successful applications

- Composite sandwich panels with improved structural characteristics
- Novel materials for photonics, materials for nano-antennas, and new high temperature ceramics
- Damage detection in polymer composites using vibration measurements
- Analysis and experimental assessment of adhesively bonded metal-composite joints
- Additive manufacture and characterisation of LENS 3-D printed titanium - titanium carbide functionally graded composites
- Influence of a steel strike face on the ballistic response of an UHMWPE hybrid composite
- Photopolymer resin extrusion 3-D printing

Capabilities and facilities

- Composites manufacturing laboratory including:
- Autoclave
- Hot press (thermoplastic composite manufacture)
- Heat blanket vacuum bagging
- Mechanical testing facilities

Our partners

- Directorate of Aviation (Specialist) Engineering Defence Aviation Safety Authority (DASA) (DAVENG-DASA)
- Defence Science and Technology (DST)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)