



**UNSW**  
SYDNEY

## Advanced Functional Composites

**Advanced expertise in the design, modelling, optimisation, manufacturing and testing of lightweight fibre-reinforced composites enabling new materials and structures.**

### Competitive advantage

- Advanced expertise in lightweight fibre-reinforced composites and polymer materials
- Expertise in design analysis, including computational modelling and optimisation
- Advanced manufacturing techniques, including autoclave, thermal oven, resin infusion, compression moulding, solution casting, and 3D printing
- Advanced testing facilities for static and fatigue loading, wear, impact, environmental (temperature) degradation, non-destructive evaluation, mechanical properties, durability

### Impact

- Lighter, stronger materials for improved performance

### Successful applications

- Flame-retarding composites
- 3D non-crimp fibre preforms for polymer composites
- Carbon fibre wheel to drive clean technology
- Structural health monitoring
- Aligning and chaining carbon nanofillers in fibre composites to improve damage tolerance and diagnosis

### Structural batteries

- Electrically conductive polymer coating
- Nanocomposites for cryogenic hydrogen storage, Lockheed Martin, USA
- Stretchable sensors

### Capabilities and facilities

- Comprehensive facilities for prototyping and testing including:
  - Automated composite manufacturing robots
  - Vacuum infusion devices
  - Industrial-scale autoclave
  - Extensive range of 3d printers
  - Ultrasonic system, laser vibrometer, shaker, piezoactuators, wet-chemical, and three roll mill

### Our partners

### More Information

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