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Single-Crystal Mullite for Fibre-Reinforcement of CMCs and MMCs

Single-crystal mullite is considered a prime candidate for reinforcement in ceramic matrix composites (CCMs) and metal matrix composites (MMCs) suitable for military armour. Processes suitable for world-first industrial-scale production of single-crystal mullite fibres

Competitive advantage

- Although mullite is recognised as the foremost reinforcement candidate for CMCs and MMCs, it is not currently available commercially.
- Through the University's globally-patented technology, and in partnership with an Australian company that holds a mining lease covering the world's largest resource of the raw material, this resource can uniquely be used to fabricate ultra-high-purity mullite fibres.

Impact

- Stronger, lighter military armour

Successful applications

- Commercialisation of the technology in collaboration with Vecor Australia Pty Limited and TopTung Limited
- Single-crystal mullite fibre-reinforced aluminosilicates for mechanical, thermal, and chemical applications
- Separable single-crystal mullite fibres for ceramic matrix composites (CMCs) and metal matrix composites (MMCs)

Capabilities and facilities

- Ceramic processing (aligned and separable fibre production)
- Materials characterisation and analysis
- Mechanical testing at both room temperature and high temperatures

More Information

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