



**UNSW**  
SYDNEY



## Space Photovoltaic Solar Cells

### Next generation multi-junction solar cells for powering satellites and spacecraft.

#### Competitive advantage

- Semiconductor material and processes for solar cells with higher efficiency, lower weight and greater radiation tolerance
- Extensive knowledge of multi-junction solar cells and computer simulation capabilities, coupled with collaborations with space cell manufacturers, enables rapid prototyping of devices
- Patented technology for achieving ultra-radiation hard solar cells using interstitial light trapping

#### Impact

- Reduced weight and hence payload launch costs
- Radiation hardened solar cells for longer missions and/or resilience in high radiation orbits
- Enabling high altitude persistent UAVs

#### Successful applications

- Demonstrated the use of metal nanoparticles in space solar cells in collaboration, Azur Space GmbH
- Demonstrated the feasibility for achieving radiation hard space cells, Azur Space GmbH and European Space Agency
- Demonstrated the first triple junction solar cell using silicon-germanium-tin alloys, IQE PLC
- Developing ultra-radiation hard solar cells, US Naval Research Laboratory

#### Capabilities and facilities

- State-of-the-art labs for research in multijunction solar cell fabrication and characterisation
- Solar Energy Research Facility (SERF)—an on-campus R&D pilot line for silicon wafer solar cells

#### Our partners

- IQE PLC, UK.
- Naval Research Laboratory, USA

#### More Information

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