



## THE PROBLEM

On the Moon's unilluminated side and in deep space, photovoltaic panels are not a practical option due to limited availability of solar energy and harsh environments of dust and large temperature variations.

Radioisotope thermoelectric generators (RTGs) are often the only viable option. The advantages over other power sources, include; the absence of moving parts, long service life, high power density, and low weight.



## RESEARCH CAPABILITY

### UniSQ - Centre for Future Materials (CFM)

Provides novel design, manufacture and testing for aerospace, space and defence industries.

Expertise in:

- DFT-calculation and modelling guided materials design.
- nanostructure engineering through rational synthesis control.
- electron microscopy characterisation.
- high-performance thermoelectric materials.
- thermoelectric device design based on FEA simulations.



## THE SOLUTION

This project aims to develop high-performance materials to convert heat into electricity for high efficiency Radioisotope Thermoelectric Generator (RTG) technology. This entails the development of high-performance materials and synthesis methods, including radiation testing, shielding, and assembly of thermoelectric components for RTGs as well as demonstrating and validating these components in simulated RTG systems.

The project aims to enhance the efficiency and output of RTGs by creating high-performance thermoelectric devices. This will enable more reliable and consistent electrical power generation for moon missions and deep space probes.



## PROJECT PARTNERS



University of  
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### CONTACT DETAILS - PROJECT LEAD

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