# High Concentration Solar Furnace

**High concentration solar furnaces involve efficient interconversion of energy from sunlight to produce electricity, heat and fuel. Each form of energy has storage challenges; e.g. spectrum-splitting photovoltaics produce electrical power, hybrid PV–thermal systems produce electricity and heat, while ultra-high solar concentration furnaces can be used to manufacture solar fuels.**

## Competitive advantage

- Development of novel optical systems applied to industrial-scale solar concentrators opens up new possibilities for high temperature solar furnaces. Integration of fluid lens optics and optic fibre provides a versatile platform for deployment of new high temperature reactors, as well as retro-fitting to existing systems.

## Impact

- Enabling a range of high-temperature thermochemical cycles that may be used for the production of renewable solar fuels
- Extraction of metals from their ores using solar energy could position Australia as an exporter of clean and high value raw materials

## Successful outcomes

- High efficiency photovoltaic devices
- High concentration solar cell architectures
- Development of new modelling tools for solar concentrators
- Design integration with concentrating solar power technology for deployment at scale

## Capabilities and facilities

- 3D freeform optical surface growth for optimal non-symmetric optical concentrators
- Heliostat field integration and solar receiver optimisation
- Spectrum-splitting optics and high-efficiency photovoltaics
- Concentrating solar receiver design
- Thermodynamics of the interconversion of heat, electricity and light
- Characterisation of optical materials

## Our partners

- Heliosystems Pty Limited
- Peritar Pty Limited
- Raygen Resources Pty Limited

## More Information

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