

## **Materials for a hydrogen economy**

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**Project Details:** Today, most of our energy demand is covered by energy carriers based on fossil fuels and thus finite resources. Efficient use of renewable sources could lead to sustainability, however all renewable sources (e.g. solar, wind) only deliver an energy flux. We therefore need a synthetic energy carrier to link clean energy production and users. At present, the only energy carrier that can be readily synthesised without limitations is hydrogen. Furthermore, the combustion of hydrogen is clean leading to water and thus sustainability. However, the transition to a hydrogen economy is drastically limited by the lack of methods to effectively store hydrogen.

The project will focus on developing novel hydrogen storage materials through a nanoscale approach. With the aim of making a hydrogen economy possible.

**Research Environment:** The selected candidate will have the opportunity to work within a small and vibrant research team at the forefront of hydrogen storage research. The research is to be hosted within a newly refurbished laboratory with state-of-the-art instruments. You will have the opportunity to work with specialized equipment such as glove boxes for the synthesis and characterisation of nanosized hydrogen stores.

**Novelty and Contribution:** Research in hydrogen storage is highly topical. The approach to be advanced is a nanoscale strategy whereby the properties of hydrogen storage materials can be controlled by restricting their particle sizes to the nanometre range.

**Expected outcome:** It is expected that your data will validate and complement current experiments and provide additional evidences for publications and patenting new hydrogen technologies.

**Other information:** Exchange with collaborating partners is possible

**More information:** [www.merlin.unsw.edu.au](http://www.merlin.unsw.edu.au) or email: [f.aguey@unsw.edu.au](mailto:f.aguey@unsw.edu.au)