

## PhD Scholarship in Solar Steam Generation

Australia is 'girt by sea' and blessed with high solar resources, but we suffer frequent droughts. At present, many of our capital cities have installed conventional RO desalination plants, but they are energetically (i.e., grid electricity) and financially expensive to run, costing ~ \$4 per kL of water produced. Can you help us find a better solution? This PhD project will investigate fundamental materials and heat & mass transfer issues to unlock new type of solar-driven desalination system. **Note: The project is restricted to Australian citizens.**

The aim of this project is to address key heat and mass transfer bottlenecks with micro/nano-structured materials to enhance condensation and evaporation within a solar-driven desalination *system*. The project will have an experimental focus and it will address the fact that recent, high impact research has discovered numerous intriguing new solar-direct vapor generation materials, but no analogous condensation materials or, indeed, full systems have been devised. This project will close these key gaps by designing and testing condensation materials and complete systems to create a new platform for the efficient, and sustainable production of potable water from salt water.

The desalination industry is a 13 Billion/year industry, so this research will have economic, environmental, and societal benefits if it can boost performance and make us less reliant on fossil fuel inputs for water production. It also addresses two UN Sustainable Development goals simultaneously: Clean Water (#6) and Clean Energy (#7). The project will be enhanced through international collaboration with Lawrence Berkley National Labs (Energy Technologies Area) and Arizona State University (SEMTE Dept.).

If you would like to know more about this project, please feel free to contact A/Prof. Robert Taylor ([Robert.Taylor@unsw.edu.au](mailto:Robert.Taylor@unsw.edu.au)), or Dr. Amr Omar ([amr.omar@unsw.edu.au](mailto:amr.omar@unsw.edu.au)).