Country Presentation- New Zealand

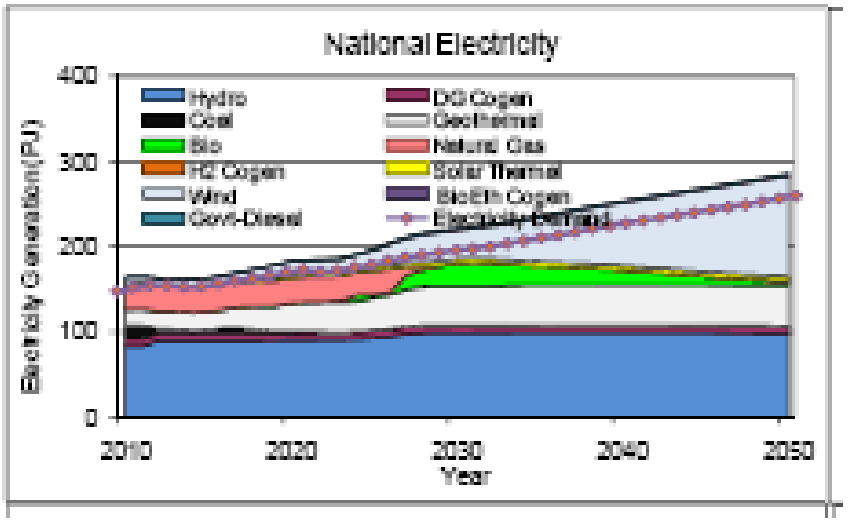
- Changes/News - Since Last Update
  - A new Government was elected in 2008
  - An Emissions Trading Scheme has been enacted
- Funding
  - Research funding in H&FCs is trending downwards
  - Approx. 1.5 million NZD/yr at present
- Recent accomplishments
  - A number of research programmes have been completed
  - Ongoing projects in four areas

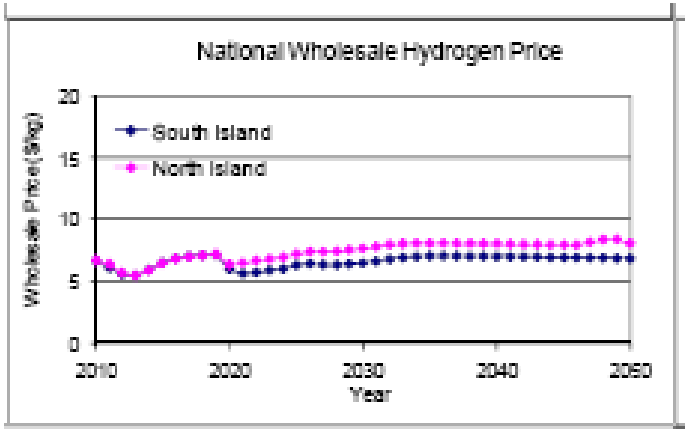
Ongoing Projects - New Zealand

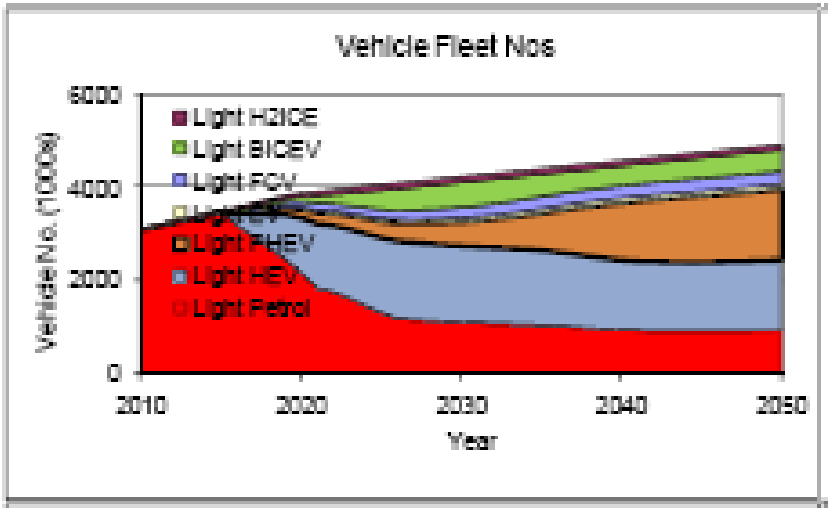
- Energy System Modeling – Unitec

  Jonathan Leaver [jleaver@unitec.ac.nz]

- UniSyD model of the NZ energy system upgraded to a test version that includes biofuels, PHEVs and HEVs
- FCVs struggle against PHEVs
- 2 further years funding

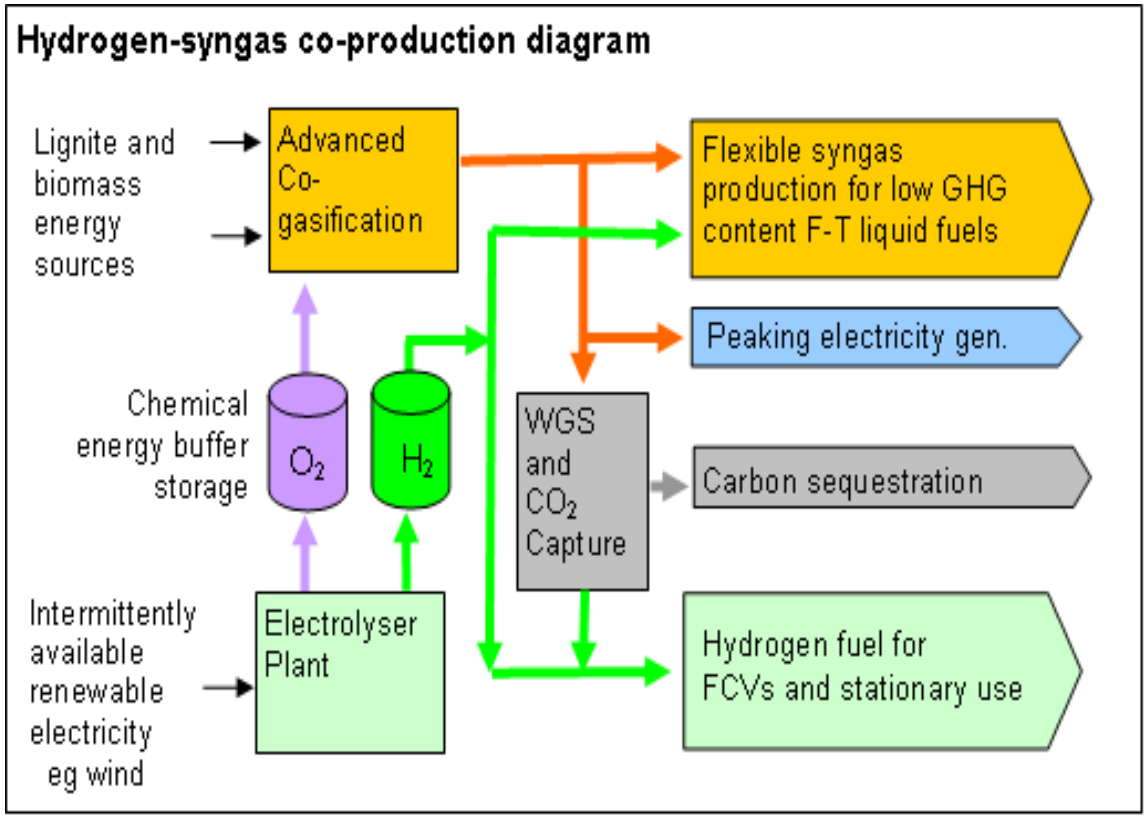






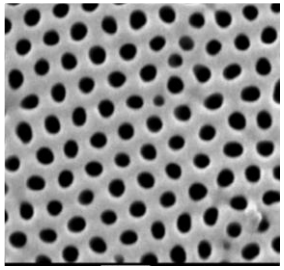
Ongoing Projects - New Zealand

- Hydrogen Production – IRL & CRL Energy [a.gardiner@irl.cri.nz]
- Pilot demonstration based on integration of co-fired lignite and biomass feedstocks with oxygen and hydrogen from renewable electricity (via electrolysis)
- Co-production of H2 and H2 enhanced syngas for F-T processing to transport fuels
- The “Co-Co” process
- 2 further years funding

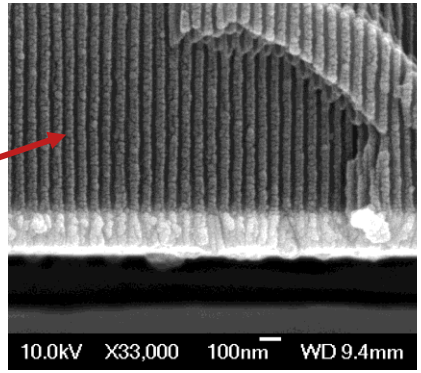


Ongoing Projects - New Zealand

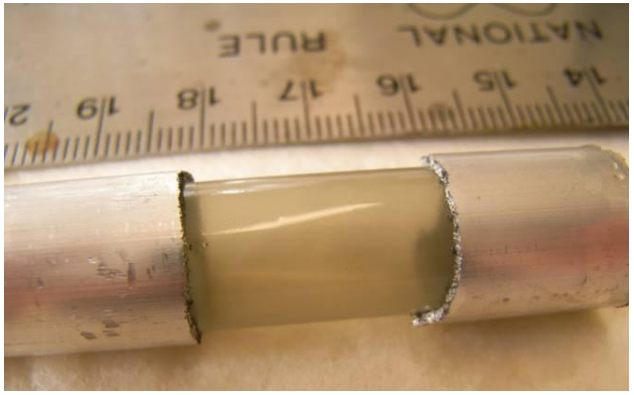
- Hydrogen Materials – IRL [i.brown@irl.cri.nz]
- Tubular Nanostructured Ceramic Membranes for Hydrogen Purification
- 2 further years funding



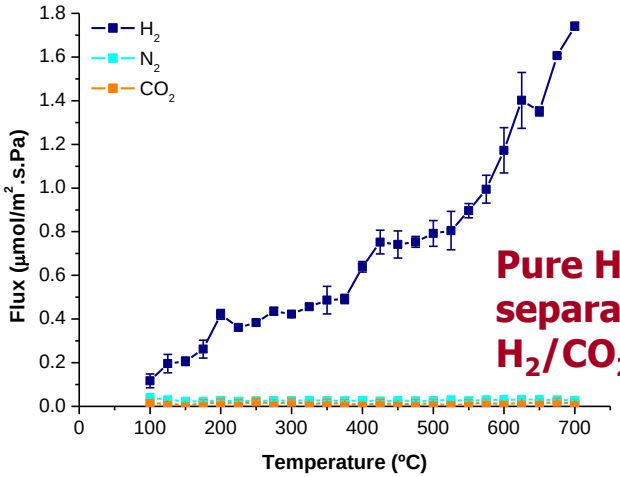
Nanopore array coated with ultrathin Palladium metal membrane



Transparent tubular membrane reactor

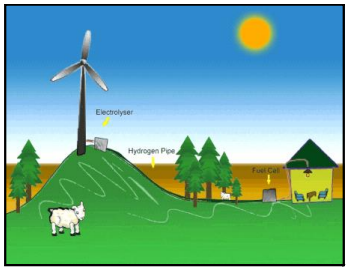


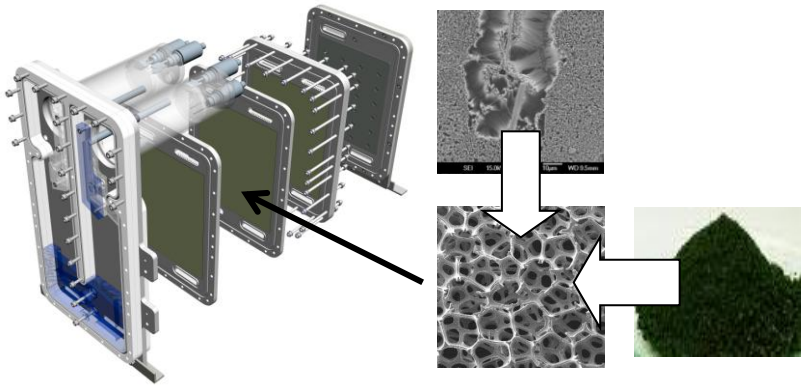
Pure Hydrogen gas separated from $H_2/CO_2/N_2$ mixture



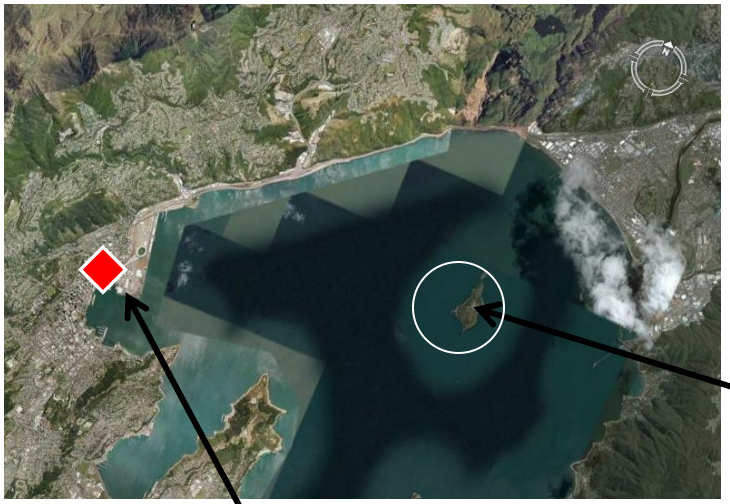
Ongoing projects - New Zealand

- Distributed Hydrogen Energy System – IRL
- Totara Valley proof of concept - IEA HIA Task 18 case study ("HyLink") [a.gardiner@irl.cri.nz]
- Next site - Matiu/Somes Island, Wellington Harbour: new IEA HIA Task 29 and EDIN demonstration project
- Electrolysis development
- 3 further years of funding





Electrolyser for remote applications



Parliament Buildings

Tuatara

Country Presentation- New Zealand

- Policy development
  - Energy strategy revisited - consultation phase just completed
  - "Environmentally-responsible development and efficient use of the country's diverse energy resources to grow the economy"
  - Aspirational target of 90% electricity generation by 2025 remains
  - Minimal mention of hydrogen and fuel cells
- Aims/timeline for Fuel Cell and Hydrogen Technologies?
  - No specific commitment to these technologies
  - Official view on transformational technologies - market will choose based on competitiveness