

台科大永續能源發展中心簡介

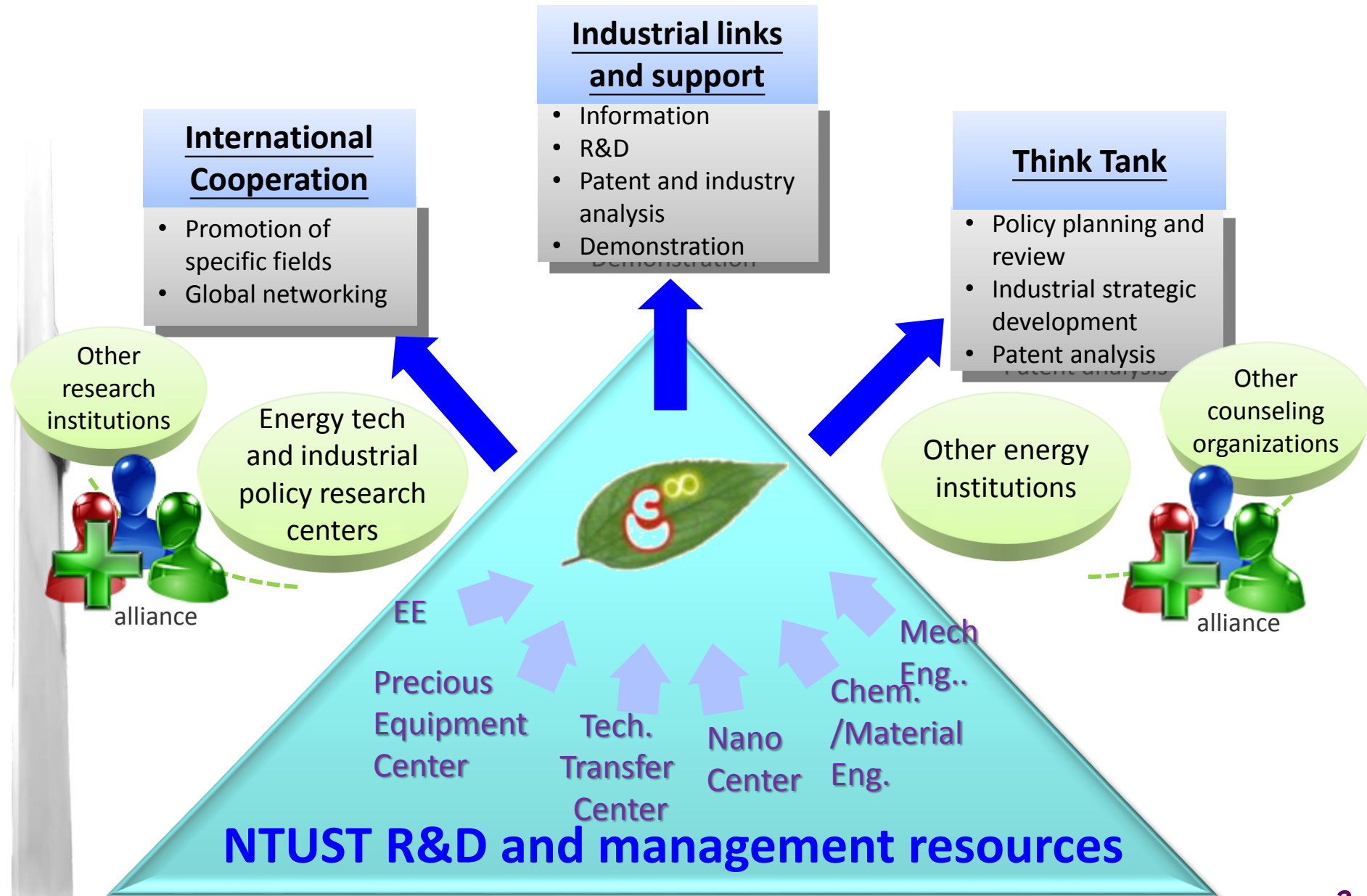
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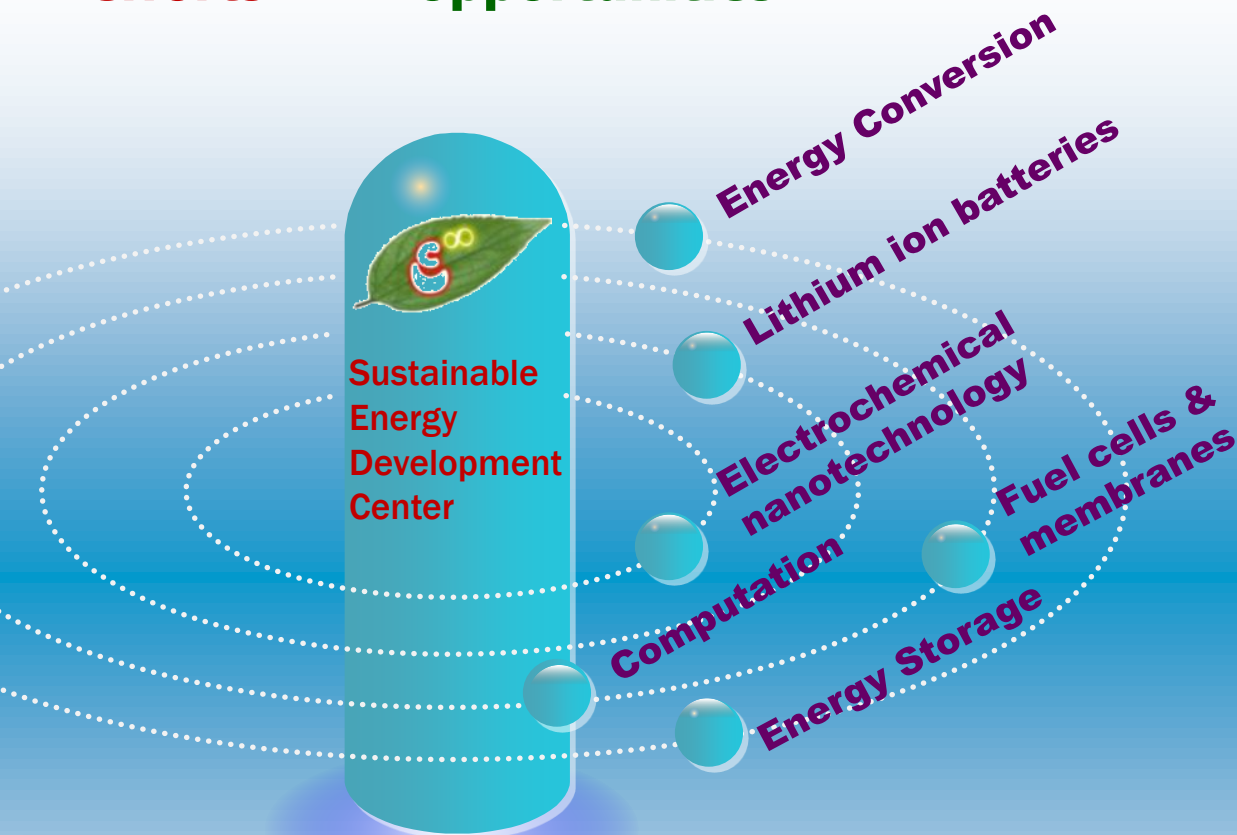
The sustainable energy development center **pursues applied research and technology for sustainable development of the community.** With emphasis on the energy education, the sustainable energy development center advocates **fundamental research on materials and systems**, disseminates research outcomes and promotes the applications in green communities, buildings and transportation.

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∞ efforts = ∞ opportunities



台灣科技大學
National Taiwan University
of Science and Technology



E^∞ center advocates fundamental research on materials and systems, disseminates research outcomes and promotes the applications in portable devices, green communities, buildings and transportation.

2012 -2014

- 31 projects – Government funded
- 7 International projects
- 80 SCI papers
- 102 Conference papers
- 32 Patents applications
- 8 Grated patents
- 5 Technology transfer

6

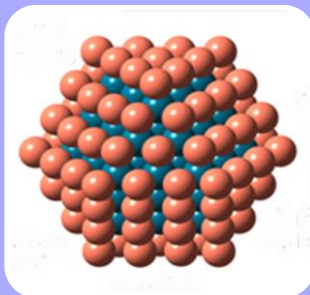
**industrial projects have been
successfully conducted in 2015**

> 50 since 2006

NT\$ 22 M

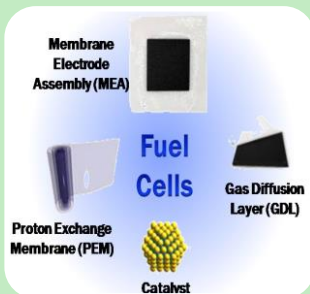
technology transfer fund in 2015





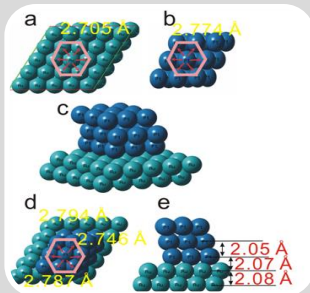
Electrochemical nanotechnology

- Bimetallic nanoparticles
- Synchrotron-assisted characterization



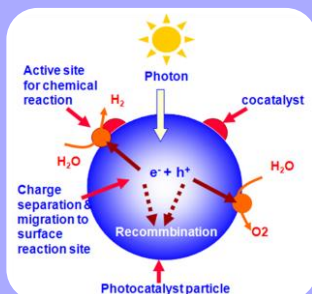
Fuel cells

- Novel composite membranes
- Core-shell nanocatalysts
- Non-carboneous catalyst support



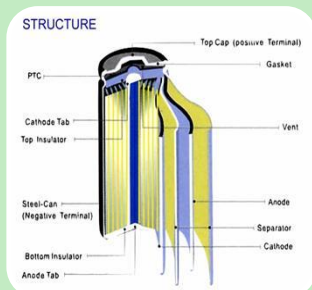
Computation

- Exploration of nanoscience combining theoretical and experimental works
- Establishment of a database for the design of electrocatalysts



Solar fuel and energy conversion

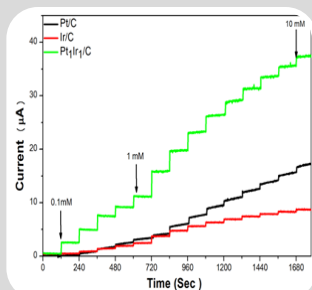
- Visible light-driven photocatalyst
- Photocatalytic reactor for hydrogen production
- Non vacuum process for CIGS solar cells
- Quantum dots and application in solar cells



Lithium ion batteries

- Development of new materials (cathode, electrolyte, additives)
- Study and characterization of the SEI layer
- In-situ measurement techniques

Image source: http://www.techwithoutwires.com/wp-content/uploads/Battery_04.jpg





















Bio-sensors









- Bimetallic nanocatalyst/glucose oxidase composite electrode
- Hydrogen peroxide detector
- Surface-enhanced Raman Scattering (SERS) for bio- and medical diagnosis

Patent-indexed research activities













Total >70

  Binder for cathode material
  High capacity anode
  Package process and application
  Non-flammable electrolyte
  High capacity
  Lithium battery
  Electrode material
  Surface modification
  Composite & making methods

**Battery & supercapacitor -
>22 patents and applications**

  Chalcopyrite thin film
  Photovoltaic cell
  Photoelectrode
  CIGS thin film

**Solar energy & conversion –
9 patents and applications**











  Catalytic liquid fuel
  Composite catalyst
  Electrode by electrophoresis
  Non-carbon catalyst support
  Mediator-type photocell
  Polymer electrolyte membrane

Fuel cells - >20 patents & applications

  CO₂ absorbing ceramics
  Self-stablized inorganic nanocomposites
  Fluid separation device
  Nano-catalyst/enzyme composite electrode

**Nanoscience –
11 patents and applications**

issued application

	TW	
	US	
	JP	
	EU	
	CN	

Thanks for your attention!

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