

***RITE's Activity with Australia :  
the present and the future***

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## *Overview of RITE(1/2)*

- **What is RITE ?**

In 1990, Japan announced "New Earth 21", a 100-year plan to clean up our natural environment which has been degraded by human industry over the past 200 years.

RITE (Research Institute of Innovative Technology for the Earth) was established as an international center of excellence which would work toward implementing this plan.

- Development of Innovative Environmental Technologies
- Expansion of CO2 Sinks

- **Fundamental Property:** Approx. 10billion JPY  
Supported by Governments (the Japanese and local), industrial circles
- **Objective:** R&D of industrial technologies that  
contribute to the conservation of the global environment  
And the progress of the world economy.
- **Location:** Kansai Science City, Kyoto

## *Overview of RITE(2/2)*

- **What does RITE do?**

**RITE is a collaborative effort of government, industry, and educational institutions where researchers from around the world can work together to resolve our environmental problems, specially the problem of reducing CO<sub>2</sub> in our atmosphere.**



- **Staffs: Director-General Dr. Yoichi Kaya**

Approx. 180 (including approx. 150 researchers)

- \*CO<sub>2</sub> storage research gr: 20
- \*Chemical research gr: 55
- \*Molecular Microbiology & Biotech. gr: 60
- \*System analysis gr: 15

- **Focuses of RITE Activities:**

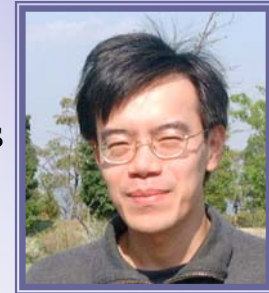
- Promotion of Flagship Projects
- Expansion of International Cooperation
- Strengthening Research Infrastructure / Development of Policy-oriented Research
- Active promotion of cooperation with industrial world / Quick realization of developed technology



# *Research Laboratory of RITE*

## **- System analysis group: Gr Leader Dr. Keigo Akimoto**

- Scenario making for global warming mitigation using models
- “DNE(Dynamic New Earth)-21 Energy flow model” integrates environment, energy, and macro-economy
- Contribution to the Japanese government and the IPCC



## **- CO<sub>2</sub> storage research group: Gr Leader Dr. Shigeo Murai**

- Demonstration and evaluation
- Safety evaluation for public acceptance
- CO<sub>2</sub> injection in field demonstration
- CO<sub>2</sub> geological storage experiment

## **- Chemical research group: Gr Leader Dr. Yuichi Fujioka**

Capture and separation of CO<sub>2</sub> by chemical process from exhaust gas

- Absorption by solvent
- Adsorption by material
- Separation by CO<sub>2</sub> permeable membrane



## **- Molecular Microbiology & Biotechnology group: Gr Leader Hideaki Yukawa**

- Biorefinery technology research and development
- Ethanol Production System from Cellulosic Biomass
- Development of butanol and hydrogen production technologies

## *Interrelationship between RITE and Australia(1/2)*

- ***the Federation of Australia***

- *Mr. John Hartwell made a presentation on CCS Development Strategy and State of CCS Projects at RITE Workshop on 23 Feb. 2009.*
- *MOU between Dep. of Resources, Energy and Tourism, Australia and RITE was signed by both sides for RITE to become a founding member of GCCSI on 25 May 2009.*

- ***State Government of Victoria***

*Discussion on the possibility of project formation under the scheme of Energy Technology Innovation Strategy with ETIS delegation on 23 Oct. 2008.*

- ***State Government of Queensland***

*METI delegation made a visit to Queensland for data collection of CCS on March 2008.*



## *Interrelationship between RITE and Australia(2/2)*

- ***CSIRO (Commonwealth Scientific and Industrial Research Organization)***
  - *Dr. John Wright made a presentation at CCS Workshop on Nov. 2005.*
  - *Information exchange on chemical absorbent since confidential agreement was made between RITE and CSIRO since 2006.*
- ***CO2CRC (The Cooperative Research Center for Greenhouse Gas Technologies)***
  - *Dr. Dennis R Van Puyvelde made a presentation at CCS Workshop on Sep. 2008.*
  - *RITE visited Mr. Berry Hopper for information exchange at CO2CRC in Melbourne on Feb 2009.*
- ***ZeroGen***
  - *RITE made a visit to ZeroGen as a member of METI delegation for data collection of ZeroGen project on March 2008.*
  - *RITE provided ZeroGen with information on RITE Nagaoka CO2 injection Pilot Test.*
  - *ZeroGen took part in RITE CCS Forum on June 2008.*
  - *RITE made a visit to ZeroGen for information exchange of ZeroGen project on April 2009.*

## *CSIRO-RITE Symposium on Amines for Post Combustion Capture*

- The symposium was held on 26<sup>th</sup> - 27<sup>th</sup> May at Kyoto, sponsored by Asia Pacific Partnership on Clean Development and Climate Australian Federal Government.***



- The seminar is highlighted to recent advances in CO<sub>2</sub>-amine chemistry and performance at pilot plants and provide a forum to discuss future research.***
- The number of attendance is about 120 from Japan, Korea and China.***



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*Collaboration of CSIRO & RITE on  
 PCC (Post Combustion Capture) technology*

- ***ETIS by DPI in Victorian Government has been supporting the CSIRO development of PCC with amine solution at Loy Yang.***
  - ***RITE proposed to DPI to evaluate RITE amine solution and DPI arranged the collaboration with CSIRO.***
  - ***RITE will send the RITE amine solution from Japan and the solution will arrive at Loy Yang power station early July.***
  - ***CSIRO will find the best operation conditions at its pilot plant with the RITE solution and show the performances.***
  - ***Experiments at Loy yang between CSIRO and RITE will start at Aug 3<sup>rd</sup> and continues until Oct. 13<sup>th</sup>.***



Absorber (2 columns)  
 D: 0.21 mf  
 H: 1.35 m x 2 section  
 (Total 5.4 m)

Stripper  
 D: 0.16 mf  
 H: 3.9 m

CSIRO 1000 t/a CO<sub>2</sub> Capture Pilot plant

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## *Summary*

- ***RITE has good relationships with the researchers in Australia to develop CCS technologies.***
  - *Technology information exchange*
  - *Collaboration on novel PCC technologies*
- ***RITE hopes to continue the collaboration for next time.***
  - *CSIRO*
  - *CO2CRC*
  - *ETIS2*