



# Parker Centre

Parker Cooperative Research Centre for Integrated Hydrometallurgy Solutions

**Parker centre Hydrometallurgy R&D and the Asia Pacific Partnership**

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MD





**CRC Program established by the Australian Federal Government in 1990.**

## **With the objective:**

*“to enhance Australia's industrial, commercial and economic growth through the development of sustained, user-driven, cooperative public-private research centres that achieve high levels of outcomes in adoption and commercialisation.”*

## **Parker Centre Established 1993 Incorporated Collaborative Research Joint Venture**

Improving hydrometallurgical processes for the extraction of metallic compounds such as alumina and metals such as gold, nickel, copper and zinc from minerals using aqueous solutions



# Parker Centre Participants

## Core Participants

- Alcoa World Alumina
- AngloGold Ashanti Australia Pty Ltd
- Aughinish Alumina Ltd
- BHP Billiton Innovation Pty Ltd
- Billiton Aluminium Australia Pty Ltd
- **CSIRO Process Science and Engineering**
- **Curtin University of Technology**
- Hatch Associates Pty Ltd
- **Murdoch University**
- Queensland Alumina Limited
- Rio Tinto RTI
- Rio Alcan
- **The University of Queensland**
- VALE
- WA Department of Industry and Resources

## Supporting Participants

- Barrick Gold Australia
- Central TAFE
- BASF Australia Ltd
- Hydro Aluminium
- Minara Resources Ltd
- Minerals Council of Australia
- Nalco Company
- Outokumpu Technology Pty Ltd
- Straits Resources Ltd
- Worley Parsons
- Nyrstar



## Operating Results 2008-09

- PC did business with 104 mining and associated service industry companies
  - Industry investment \$6.7M (Industry investment 2005-2009 \$23M)
  - Commonwealth government investment \$2.9M
  - WA State Gov investment \$300K
  - Research partner in-kind \$7.7M



## Eg: Industry Research Projects

- ↑ efficiency of alumina production from high silica and organics Bauxites
- Nickel laterite heap and high pressure acid leaching
- ↑ efficiency of Ni recovery from leach with solvents
- Bioleaching of metals (Cu, Zn, Ni)
- ↑ efficiency of Gold cyanide leaching in low grade polymetallic ores
- ↑ efficiency of Uranium alkaline heap leach
- Tailings management, contaminant behaviour,
- Product recovery/impurity rejection – EW, SX, SSX



## Example Industry Funded Alumina Project

- Industry Costs
  - Research Costs \$50K
  - Implementation cost delivered \$400K
  - Implementation cost Planned \$400K
- Benefit NPV
  - Delivered \$5M
  - Planned \$11.8M
  - (Potential) \$14.7M
- Ratio 20:1



# Education & Training

- Honours (58/36)
  - Masters
  - PhD (61/30)
  - Student Industry Research Program
  - Extractive metallurgy 'short courses'
  - Mining company commissioned training courses
  - Industry placements – 'up skilling'
- Over 50% of graduates and post-graduates enter employment with the mining or mining services sector

Developing people: investing in Australia's future



## Parker Centre/CSIRO Involvement in APP- on Clean Development and Climate

- Task Force Aluminium
  1. Management of Bauxite Residue (ATF-06-03)
  2. Processing of High Silica Bauxite (ATF-06-04)Australia Lead Partner Country





# Management of Bauxite Residue

series of residue reviews now available on APP website

[http://www.asiapacificpartnership.org/english/pr\\_aluminium.aspx#Aluminium\\_Project\\_3](http://www.asiapacificpartnership.org/english/pr_aluminium.aspx#Aluminium_Project_3)



Residue management  
Utilization options  
Residue chemistry  
Priority research areas  
First 3 currently being re-edited for publication in *Hydrometallurgy*





**Independently recognised world leader**

*“The Parker Centre continues to be the world leader in hydrometallurgical research...and has established its strategic importance to the Australian economy through the independently measured dollar value added to the minerals sector.”*

**Independent review of the Centre by the Commonwealth CRC Program and Industry Expert Panel, February 2009**

<http://www.parkercentre.com.au>