

VICTORIAN LIGNITE FORUM
Fukuoka, 6 OCT 2015



九州大学
KYUSHU UNIVERSITY

OPENING REMARK

Jun-ichiro Hayashi
Research and Education Centre of Carbon Resources (CCR)
Kyushu University

Japanese coal researchers
love brown coal, in particular,
Victorian brown coal.

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Google Scholar Search

	Hits
Loy Yang x Australia	5,180
Loy Yang x Japan	8,250
brown coal x Australia	130k
brown coal x Japan	123k
brown coal x Germany	187k
brown coal x Monash University	591
brown coal x Kyushu University	549

Brown coal

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Negative properties

High moisture content
Low calorific value
High risk of spontaneous ignition

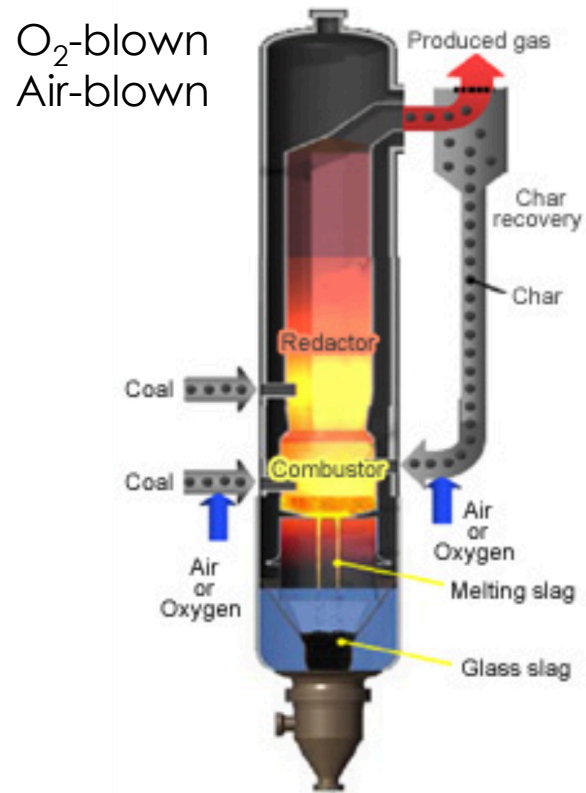
Positive properties

Inherent catalyst
Soft & flexible in physical/chemical sense

- Upgrading (modification)
- Addition of **new (special) properties**

Gasification

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Two-stage Entrained-flow Gasifier
(Mitsubishi Heavy Industries, Ltd.)



Steam/O₂-blown Gasification

Chemical quenching of hot gas

Cold gas Efficiency $\approx 90\%$

Electrical efficiency up to 54%



Loy Yang

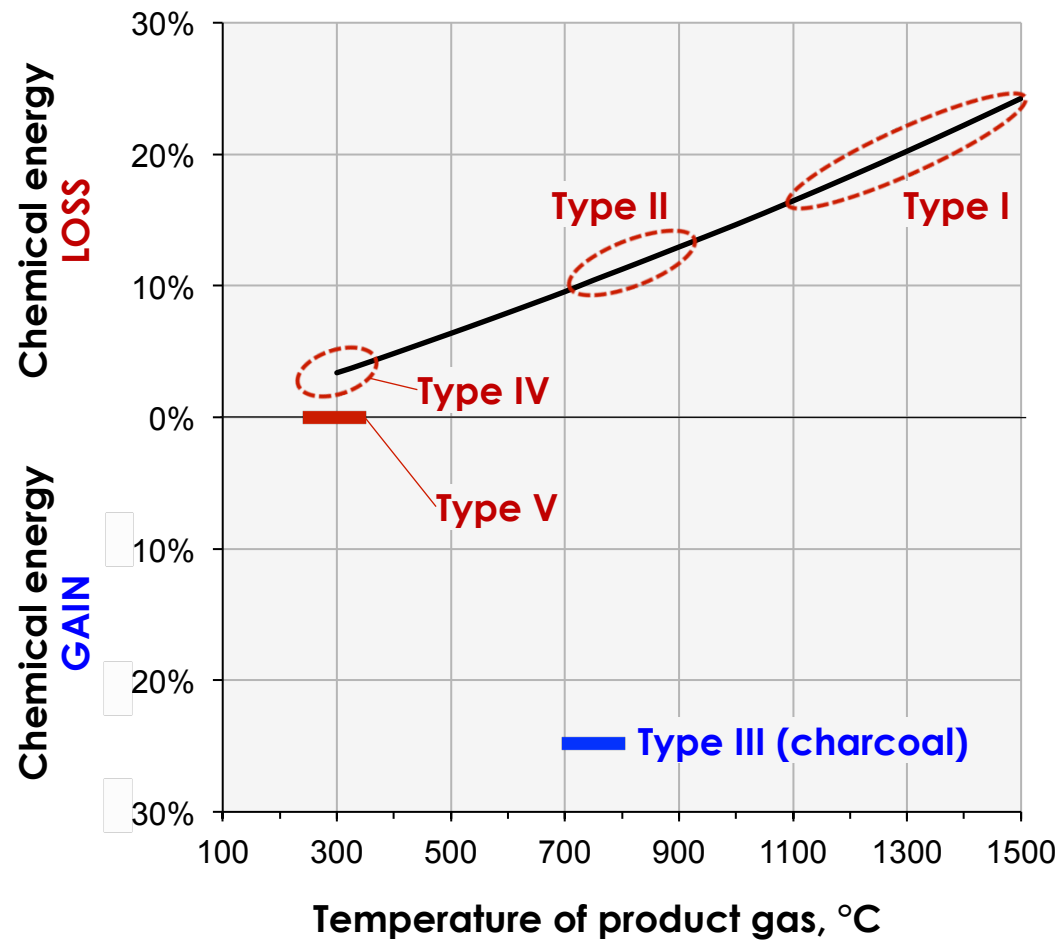
Most suitable fuel

Proposed by Central Research Institute
of Electric Power Industry (CRIEPI)

Advanced Gasification

Make the best use of particular features of brown coal

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Proof-Of-Concept of
Type II – V Gasification
has been done
at laboratory scale,

Brown coal is the best fuel
among coals.

Metallurgical COKE

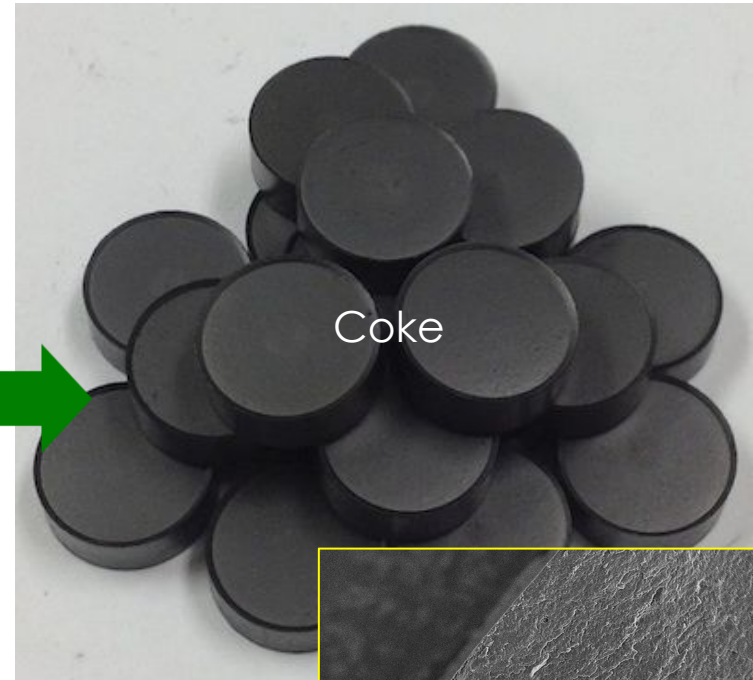
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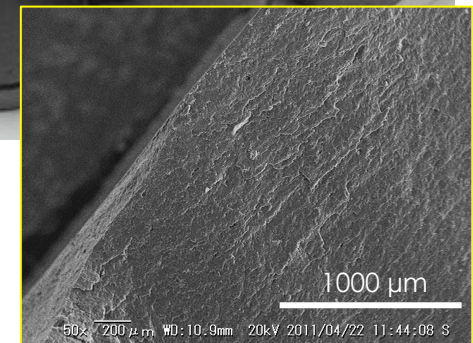
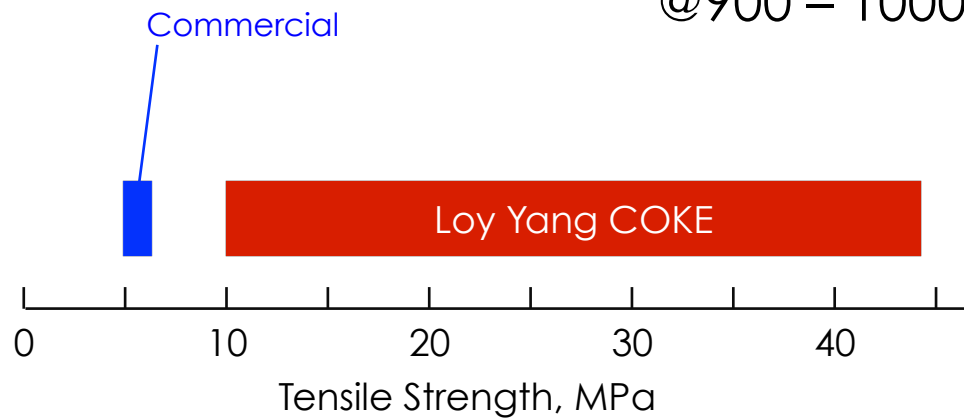
Loy Yang

Binderless hot briquetting
@130 – 200 °C

Carbonisation
@900 – 1000 °C



Coke



Tar-free Charcoal & Light Oil



Pyrolysis
@600 °C
with
Internal Recycling
of Tar

Tar Carrier = Loy Yang

Tar-free Charcoal



NO TAR

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Collaboration

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Japan

Industries
METI, NEDO
Academia



as C.O. R/D activities
Consortium organizer

BCIA Members



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