

Production of Hydrogen Out of Woodchip

Demonstration of Continued Bench Scale Production with Carbon Dioxide Absorbed by Calcium

The Biomass Technology Research Laboratory (BTRL) of the National Institute of Advanced Industrial Science and Technology (AIST), an independent administrative institution, succeeded in a demonstration experiment of CO₂ absorption gasification from biomass in collaboration with the Center for Coal Utilization, Japan (CCUJ), a juridical foundation. Using a 10 kg/day throughput continuous production plant, clean fuel gas without including CO₂ was produced: hydrogen 83 %, methane 15 % and output 0.5 Nm³/h. The successful production in continuous mode will open the way to the biomass utilization at a commercial level.

- While there have been successful cases of clean fuel gas production in batch mode on a laboratory scale, step-up to continuous production has not been readily implemented.
- Continuous production of clean gas without CO₂ is the first feat in the world, and upgrading of gas quality to hydrogen concentration 80 % or higher is also leading the world.

The future efforts will be focused on stable operation, long-term operation and optimization, to establish the prospect for commercial production.



Photo. A picture of bench scale gas production plant.

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Metrology and Measurement Technology

Development of a new goniophotometer for accurate absolute calibration of total luminous flux

The luminous flux is the quantity to represent the optical power that is perceived as light by the human eye, and its scale, lumen is one of the most important photometric quantities. Accurate luminous flux calibration is crucial in many scientific and industrial fields, for example, for quality systems in manufacturing light sources or for reliable evaluation of newly developing light sources such as LEDs and OLEDs. A new goniophotometer system for absolute calibration of total luminous flux has been developed at AIST. The new goniophotometer has the long photometric distance (2.7 m) to minimize the uncertainty due to the lamp alignment. The goniophotometer is calibrated against the illuminance responsivity scale directly traceable to the AIST high-accuracy cryogenic radiometer. The new calibration facility based on the AIST goniophotometer has also been developed. AIST is now offering new calibration services for the total luminous flux of lamps according to Japan Calibration Service System (JCSS).

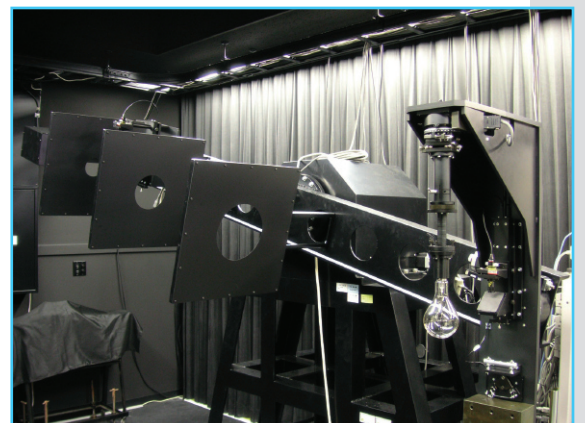


Fig. Photograph of the new AIST goniophotometer

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