

## Development of Flexible Heat-Resist Gas Barrier Film

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A novel gas barrier film is developed by optimizing composition of clay materials and additives, as well as preparation process. A flexible and translucent gas barrier film can be prepared through the compact lamination of clay crystal platelets of thickness around 1 nm each. The gas permeability of the film at room temperatures to hydrogen, oxygen, nitrogen and other inorganic gases is lower than the detection limit: comparable to that of aluminum foil. Besides, the gas barrier performance of the film remains unchanged up to temperatures as high as 1000 °C.



Outlook of the translucent clay film, 0.04mm thick

## Energy Science & Technology

### Biogas Plant to Recover Hydrogen and Methane Quickly

- A semi-pilot biogas plant based on two-stage fermentation process -

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AIST has established a high efficiency hydrogen/methane fermentation semi-pilot plant to decompose kitchen refuse, paper waste and food waste with anaerobic microbes and to recover hydrogen and methane at the AIST Tsukuba West, in collaboration with Nishihara Environment Technology, Co., Ltd, Ebara Corp., Kajima Corp. and Japan Bioindustry Association. (See Photo.) This plant is a world first semi-pilot plant to recover hydrogen and methane separately from kitchen refuse, paper waste and food waste through the two-stage fermentation process. Percent energy recovery could be extensively improved from 40~46 % to 55 %. This work is supported by NEDO, Japan.



An outer view of the semi-pilot plant