

Subsurface half-grabens in the Kanto Plain, central Japan, and its effect for long-period strong motion

Asymmetrical up-and-down structure of basement rocks beneath the western part of Kanto Plain has been first recognized, based on a new geological interpretation of geophysical data. Many half-grabens, formed when the Japan Sea opened (ca. 16.5-15.0 million years ago), cause this complicated basement structure. Simulation analysis strongly suggests that a long-period ground motion, especially of around 4s components, would be amplified by such deep geological structure. As this period (4s) matches the own period of high-rise buildings of about 200m tall, it is necessary to recognize subsurface geologic structure in the Tokyo metropolitan areas.

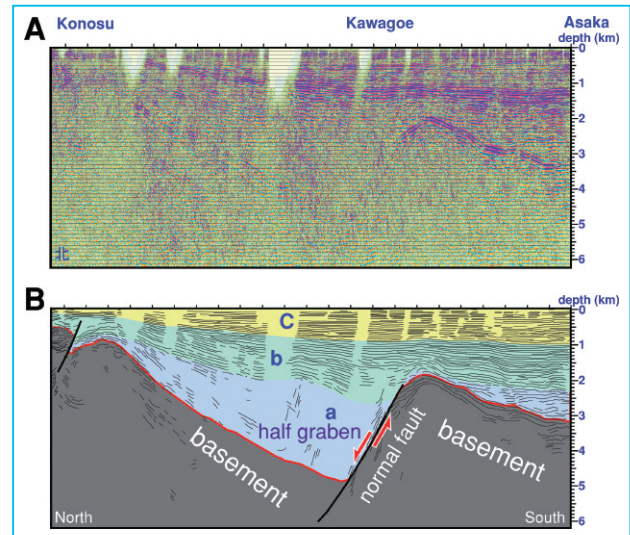


Figure : Asaka-Konosu seismic profile (A) and its geologic interpretation (B). a: half-graben fills; b: post-rift deposits; c: Kazusa-Shimousa Groups.

Masaki Takahashi
Institute of Geology and
Geoinformation

E-mail:
msk.takahashi@aist.go.jp

AIST TODAY Vol.5, No.7 (2005)
p.18-21

Environment & Energy

Fuel-gas production from waste plastics

Conventional pyrolysis of waste plastics gives fuel oil of wide boiling ranges, which uses a tank reactor or a kiln. For the effective conversion of polyolefins into fuel gas, a new type of a thermal process using a moving-bed reactor has been developed. The gas production at 70-94 wt% was achieved in the operation research. The key points are the reactor design and the reaction control considering polymer-decomposition mechanism.

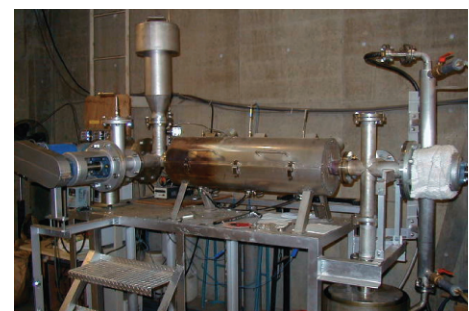


Photo : A bench scale plant of a moving-bed reactor

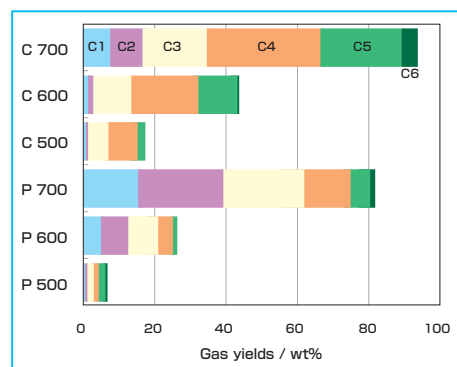


Figure: Yields and compositions of gaseous products from polypropylene under various conditions. The letters C and P designate catalytic decomposition and pyrolysis, respectively. The figures 500, 600, and 700 designate reactor temperatures (°C). The yields are weight percents to a feed polypropylene. C1: methane, C2: ethylene, ethane, C3: propylene, propane, C4: butanes, C5: pentanes, C6: hexanes.

Reaction conditions; As a feed, polypropylene (0.8 kg) was mixed with sand (7.2 kg) in pyrolysis, or mixed with sand (6.8 kg) and silica-alumina catalyst (0.4 kg) in catalytic decomposition. Residence time for all runs was 10 min.

Yoichi Kodera
Research Institute for
Environmental Management
Technology

E-mail:
y-kodera@aist.go.jp

AIST TODAY Vol.5, No.7 (2005)
p.22-23