

Analysis of biomass plastic bags

Part 2: Pyrolysis (Py)-GC/MS

[Background] In the previous note (PYA3-028E), the results on evolved gas analysis (EGA)-MS of two types of biomass plastic bags were described. In this note, the characterization by pyrolysis (Py)-GC/MS is described for the same plastic bags as in the previous one.

[Experimental] A Py-GC/MS system in which a Multi-Shot Pyrolyzer (EGA/PY-3030D) was directly interfaced to the GC injector was used for all measurements. The unprinted part of each of two types of plastic bags was cut out using a cutting knife and the pieces were placed in an Eco-Cup LF. Then the sample cup was dropped into the furnace at 600 °C for flash pyrolysis.

[Results] The pyrograms obtained by the flash pyrolysis of two biomass plastic bags are shown in Fig. 1. Biomass plastic bag A gave a peak profile consisting of triplet peaks, characteristic of polyethylene, indicating that the major component is polyethylene. Similarly, Biomass plastic bag B is also shown to have polyethylene as its major component. The other peaks in the pyrogram of Biomass plastic bag B, designated as peaks a, b, and e, are derived from polypropylene, and peaks c, d, and f from polysaccharides.

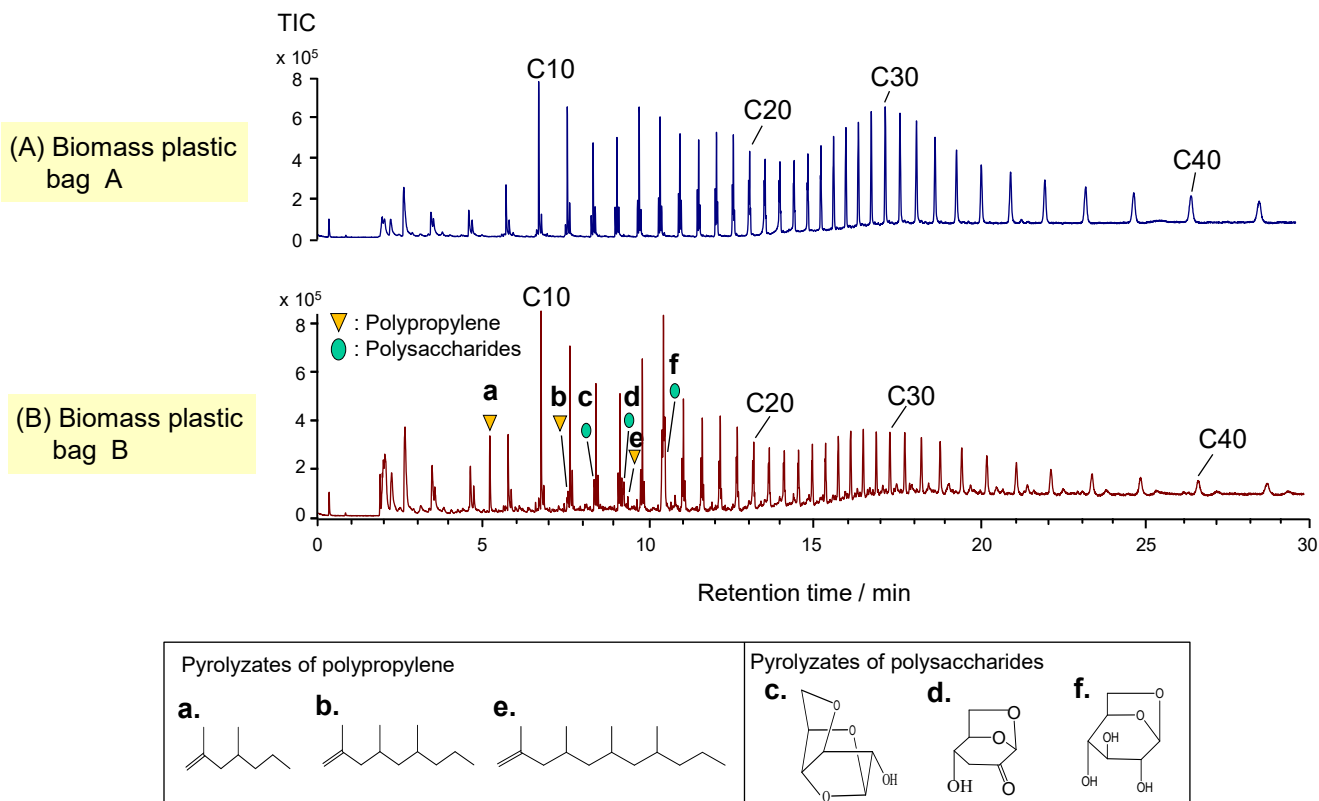


Fig. 1 Pyrograms of two types of biomass plastic bags

Furnace temp.: 600 °C, GC inj. temp.: 300°C, GC oven temp.: 40 (2 min hold) - 320°C (20 °C/min)
 Split ratio: 1/100, Separation column: UA⁺-5 (5 % diphenyl 95 % dimethylpolysiloxane), L=30 m, i.d.=0.25 mm, df=0.25 μm)
 Column flow rate: 1.0 mL/min (He), MS scan range: m/z 29 - 600, Sample amount: 100 μg

Keywords : Py-GC/MS, Biomass plastic, Plastic bag

Products used : Multi-functional pyrolyzer, Eco-Cup LF, UA⁺-5, Vent-free GC/MS adapter, F-Search

Applications : Bioplastics, General polymer analysis

Related technical notes : [PYA3-028E](#), [PYA1-120E](#)

Please forward your inquiries via our web page or send us a fax message.

R&D and manufactured by :
Frontier Laboratories Ltd.

Phone: (81)24-935-5100 Fax: (81)24-935-5102
www.frontier-lab.com