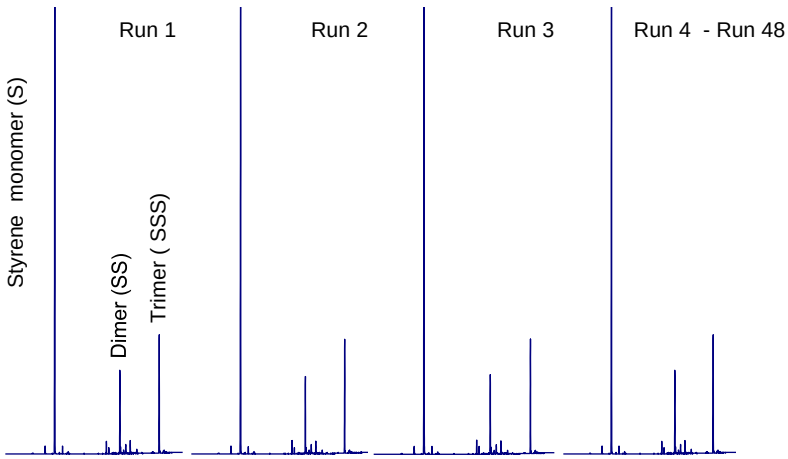
Reproducibility of Pyrograms Obtained with Auto Shot Sampler (AS-1020E) and Double-Shot Pyrolyzer®

Reproducibility of pyrograms obtained by Auto Shot Sampler coupled with Double-Shot Pyrolyzer is described here. Double-Shot Pyrolyzer® with vertical furnace system employs free-fall introduction of sample cups into the furnace. In order to examine the reproducibility of pyrograms obtained through the combination of Auto Shot Sampler and Double-Shot Pyrolyzer®, 48 specimens of 30µg each of polystyrene were placed in sample cups and continuous analysis was performed. Fig. 1 shows an example of pyrogram obtained. It was found that average peak area ratio of styrene monomer against styrene trimer was 14.29%, and that its reproducibility (relative standard deviation) was 1.60%. This result demonstrated that using Auto Shot Sampler variations of results between analysts could remain minimal. Also, automated repetitive analysis eliminates sample and unexpected data variations, leading to improved reliability of analytical results obtained.



Run #	SSS/S(%)
1	14.52
2	14.30
3	14.24
4	14.28
≀	≀
48	14.27
Ave.	14.29%
RSD	1.60%

Fig. 1 Reproducibility of Pyrograms of Polystyrene

Pyrolysis furnace temp: 530˚C, Sample size: 30µg, Carrier gas: He 140kPa, Total flow rate: 80mL/min, Split mode, Separation column: Frontier Lab Ltd. UA5-30-0.25F (5% diphenyldimethylpolysiloxane) Length 30m, Id 0.25mm, Film thickness 0.25µm, Injection port temp: 320˚C, GC oven temp: 70˚C~320˚C (20˚C/min), Detector: FID

Reference: Sato, et al., 5th Polymer Analysis Symposium, III-2, p71-72 (2000)

Keywords : Auto Shot Sampler, Polystyrene Pyrogram, Reproducibility

Products used : Multi-functional pyrolyzer, Auto-Shot Sampler, UA-5

Applications : General Polymer Analysis

Related technical notes :

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