Development of a Multi-Functional Splitless Sampler and its operating mechanism
Part 2: Operating mechanism of Backflush

[Background] In the previous note (PYT-037E), the operating mechanism of the F-Splitless Py-GC/MS using a Multi-Functional Splitless Sampler (MFS) was reported. The MFS allows not only the splitless injection of all pyrolyzates into a separation column but also backflushing of high boiling compounds trapped in a pre-column. In this note, the operating mechanism of backflushing, one of the functions of the MFS, is described.

[Operating mechanism] The configuration of the system with the MFS is shown in Fig. 1, and the operating mechanism of backflush is shown in Fig. 2. All settings and controls described below are made through the installed software. (1) On the EGA/PY-3030D control software, backflush start time is set along with pyrolysis conditions for F-Splitless method. (2) According to the procedure previously reported, the F-Splitless Py-GC/MS is started. (3) After GC/MS measurement is started, He gas is forced to flow backward from the MFS flow controller to split vent via MFS splitter at the pre-set time in (1) to backflush high boiling compounds remained in the pre-column.

Thus, high boiling compounds that are not necessary for analysis are removed from the system at an early stage, shortening the measurement time. This backflush feature also benefits from extending the life of the separation column by preventing the column contamination from high-boiling residues.

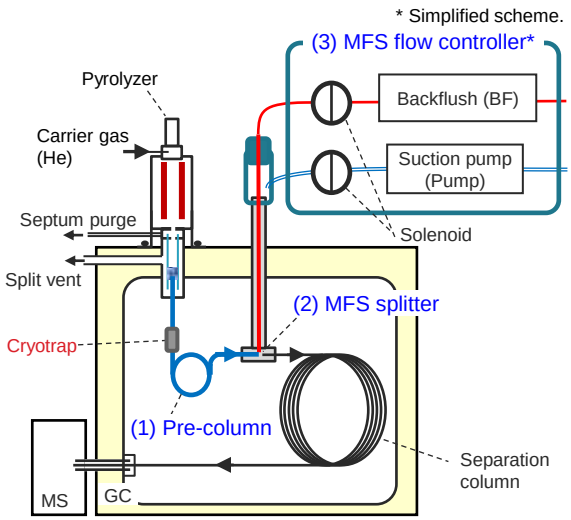

Fig.1 Py-GC/MS system equipped with Multi-Functional Splitless Sampler.

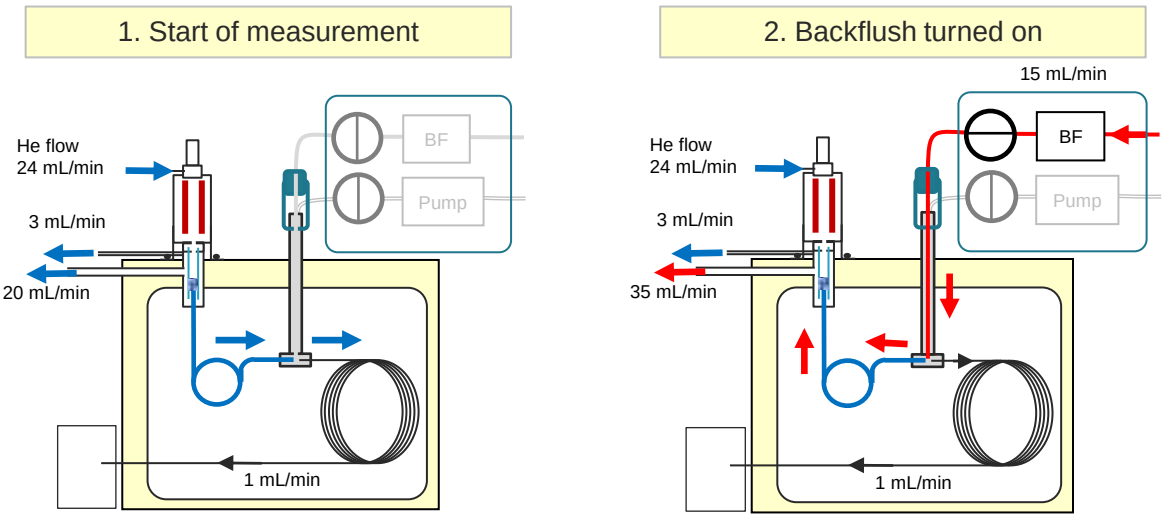

Fig. 2 Operation mechanism of backflush using MFS.

Reference: K. Tei *et al.*, *J. Anal. Appl. Pyrolysis* 168 (2022) 105707.

Keywords : Splitless analysis, High sensitivity analysis, Microplastic

Products used : Multi-Shot Pyrolyzer, Multi-Functional Splitless Sampler, MicroJet Cryo-Trap, UAMP column kit, Vent free GC/MS adapter

Applications : Microplastic analysis, Microanalysis, General polymer analysis

Related technical notes : PYT-037E (Part 1)

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