Operational Principle of MicroJet Cryo Trap (MJT-1030E)

Analysis of dilute components in gases or volatile components desorbing from heated sample in a wide band range requires trapping of these components at the head of column by cooling, followed by rapid thermal desorption. We have developed MicroJet Cryo Trap (MJT-1030E) which consists of a mechanism to liquify N₂ gas and micro jet tube for cooling and thermal desorption at the head of column.

The flow scheme of MJT-1030E is shown in Fig. 1 and the operation of micro jet tube in cooling and thermal desorption modes is shown in Fig. 2. N₂ gas from N₂ cylinder is liquified through thermal exchange coil immersed in liquid N₂ and is fed to micro jet tube located in the GC oven via N₂ transfer tube. Inside the micro jet tube are a temperature sensor and column holder (metal tube), and the separation column runs through the column holder and is secured. Liquid N₂ jet is blown against the column in the column holder, and the portion of the column is cooled down to -180°C or below. Liquid N₂ goes out from the both ends of the micro jet tube and is rapidly evaporated, preventing moisture to get into the micro jet tube to become frozen. Once the liquid N₂ micro jet is turned off, heated air in the GC oven will rapidly heat the cooled portion of the column at 800°C/min, causing the trapped components to be thermally desorbed.

Keywords:
Operational Principle

Products used:
MicroJet Cryo-Trap

Applications:
General Polymer Analysis

Related technical notes: