

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

US Patent: US 6,190,613 B1

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 N<sub>2</sub> gas and micro jet tube for cooling and thermal desorption at the head of column.<sup>1)</sup>

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. N<sub>2</sub> gas from N<sub>2</sub> cylinder is liquified through thermal exchange coil immersed in liquid N<sub>2</sub> and is fed to micro jet tube located in the GC oven via N<sub>2</sub> 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 N<sub>2</sub> 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 N<sub>2</sub> 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 N<sub>2</sub> 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.

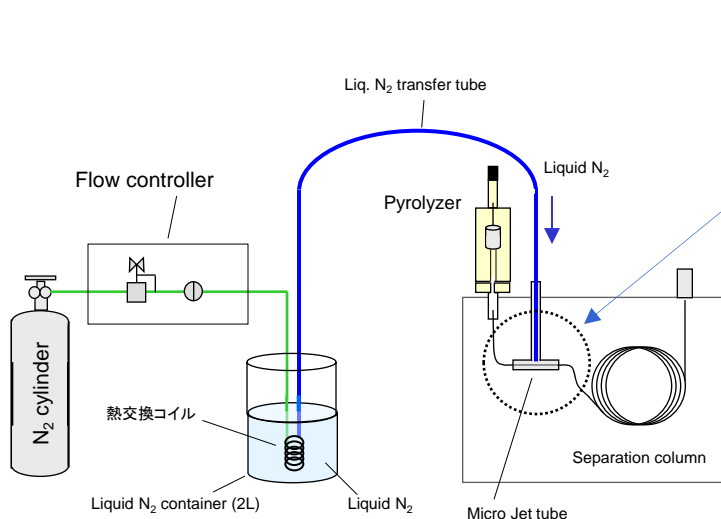


Fig. 1 Flow Scheme of MJT-1030E

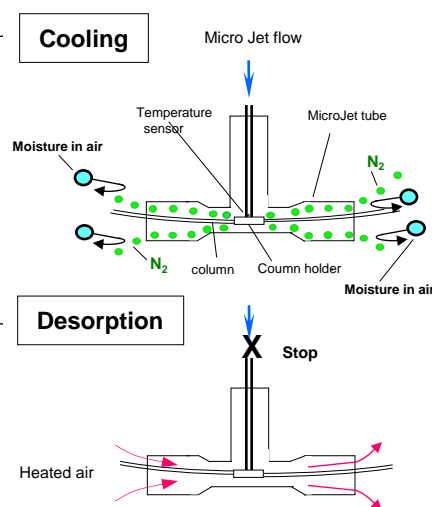


Fig. 2 How MicroJet Cryo Trap Works in Cooling and Desorption modes

1) Hosaka, et al., 3rd Polymer Analysis Symposium, I-6, p15-16 (1998)

<b>Keywords :</b> Operational Principle
<b>Products used :</b> MicroJet Cryo-Trap
<b>Applications :</b> General Polymer Analysis
<b>Related technical notes :</b>

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