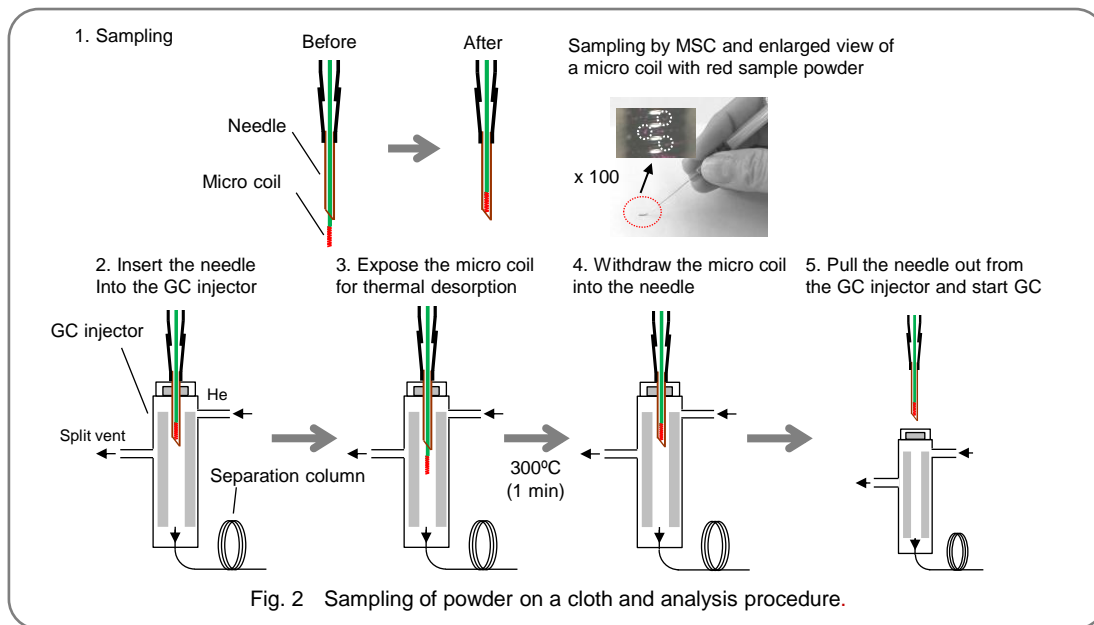
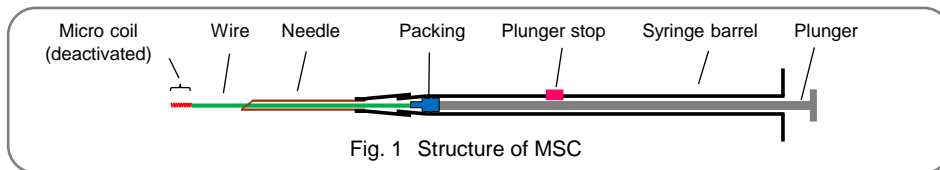


# Development of a micro-sample collection tool (Micro Sample Collector: MSC)

**[Background]** Various sampling tools such as needles and precision tweezers are used to pick up micro-sized samples on cloths and other surfaces. Referring a sampling device reported by Kaneko *et al.*,<sup>1)</sup> we newly developed the “Micro Sample Collector: MSC” with some modifications to the original design. The design and structure of the MSC are described below.

**[Structure]** The structure of the MSC is shown in Fig. 1. The tip of the MSC is a deactivated micro coil (o.d.=0.3 mm, L=5 mm) which is attached to the end of a wire. The detachable micro coil can be withdrawn into the syringe needle (i.d.=0.37 mm) or exposed from the needle by moving the plunger back and forth. Sampling can be done by touching or rubbing the surface of interest. The sample collected on MSC can be analyzed by thermal desorption (TD)-GC/MS. If the sample is a polymer, the micro coil is removed from the wire and placed in a sample cup of a pyrolyzer, and the sample can be analyzed by TD-GC/MS and/or pyrolysis GC/MS.

**[Principle]** Usage of MSC to capture small-sized powders on a cloth and the subsequent analytical procedures are shown in Fig. 2. When the micro coil is exposed, a small amount of powder is collected by gently touching the cloth surface. The coil is withdrawn into the needle. After inserting the needle into the GC injector which is held at a set temperature, the plunger is pushed and the micro coil is positioned in the GC injector. The sample is thermally desorbed. Finally, pull the plunger to withdraw the micro coil into the needle, and pull the needle out from the GC injector. Start the GC analysis.



1) T. Kaneko *et al.*, “Development and Applications of a Sampling Device Using Micro Coil for GC”, *Bunseki Kagaku* (Japanese), **64**, 363-369 (2015).

**Keywords :** Sampling tool, Micro-sized/small-sized sample, Small amount sample, Thermal desorption-GC/MS

**Products used :** Micro Sample Collector, UA<sup>+</sup>-5, Vent-Free GC/MS adapter

**Applications :** Forensic science, Foreign material analysis

**Related technical notes :**

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