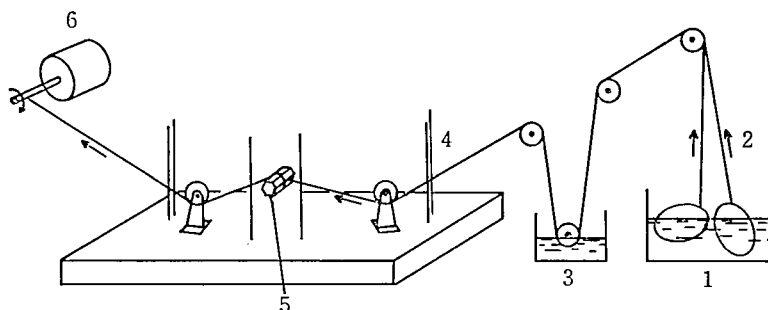


An Apparatus Suitable for Cutting Brittle Materials or Crystals

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The mechanically strong solid materials or crystals are grinded in the usual way to prepare the materials having both a smooth flat surface and a suitable shape. However, it is difficult to cut a brittle and/or tiny material such as an inorganic metal complex crystal smoothly, because it tends to be damaged even by picking it up carefully with a pair of tweezers.

We have devised an apparatus capable of slicing any brittle material to a thin plate. The schematic illustration of the apparatus is shown in the accompanying Figure.



A skein of thread (2) is spinned with a motor (6) rotating at a low speed, out of two or more cocoons (1) which float on water in a 200 ml beaker. The silk thread is soaked in either a solvent (e.g. H_2O , EtOH , C_6H_6) or a decomposition reagent (3) (diluted mineral acid, e.g. H_2SO_4 solution) which is capable of dissolving the materials, followed by several pulleys through a couple of standing needles (4) to run the silk thread continuously. Thus, the thread plays the role of a 'saw' to cut the material. The brittle material (5) is tightly fixed on the top of a glass-rod with an adhesive agent. When the crystal pushes the thread up toward the upper side, the solvent (which holds on the thread and carries together) dissolves the material from the surface to make a ditch. Finally, the material can be com-

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pletely cut by these operations. If one thread ($2\sim 3\ \mu\text{m}$ diameter) were used as a saw, it would be impossible to cut the material, because the solvent could not be removed from the ditch. Moreover, it is better to spin the thread slowly in order to ensure efficiency. The cross section of material may be cut in any direction.

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