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Manned Spacecraft Center

Rapid Method for Sampling Metals for Materials Identification

A rapid, non-damaging, and seemingly non-contaminating method of obtaining metal samples for spectrographic analysis has been developed and successfully tested.

The method is an electrochemical process, essentially a variation of electrochemical machining. The anode of a DC power source is attached to the metal to be identified. The cathode lead is a stylus consisting of a carbon element wrapped in a piece of cotton gauze. The gauze has been moistened with an etching solution. Utilizing an electromotive force of 6-8 volts the surface is etched for 0.01-0.02 ampere-hours; of course, this can vary depending on the etching solution and subject metal. Finally, a sample of the subject metal is collected on the cotton swab in much the same manner as a metal skin collects on the cathode plate during an electroplating process.

This method is very useful in obtaining metal samples for identification from places inaccessible to conventional sampling methods. This includes drilling, machining, or filling, or where these conventional methods would be hazardous or contaminating to the specimen being identified.

The method would be of interest to those metallurgists in the field of analytical metallurgy, quality control units in the steel and metals industry, and as a quality control sampling tool in other industries where metals or metal alloys play a vital role. These include the construction, automobile, and aircraft manufacture industries.

Note:

No additional documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
Manned Spacecraft Center, Code JM7
Houston, Texas 77058

Patent status:

No patent action contemplated by NASA.

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