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AMSEL-LG-LS/ub (27-60p)

10 October 1989

MEMORANDUM FOR: Defense Technical Information Center, ATTN:
DTIC-FDAC, Cameron Station, Alexandria, Virginia 22314

SUBJECT: Patent Applications Available for Licensing
U.S. Serial No. 406,930, filed 13 Sep 1989
entitled METHOD OF IDENTIFYING THE COMPOSITION OF
A MATERIAL SAMPLE by Donald W. Eckart and Joel R.
Shappirio, CECOM Docket No. 4496

1. The enclosed patent application is submitted in duplicate for
(1) publication by NTIS for potential licensing and (2) foreign
filing consideration.

2. CECOM Bottom Line: THE SOLDIER.

FOR THE CHIEF COUNSEL:

Michael Zeleuka

Encls.

MICHAEL ZELENKA
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CF:
HQDA (JALS-PC)

AD-D014 251



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DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

PATENT

DONALD W. ECKART
JOEL R. SHAPPIRIO

CECOM Docket No. 4496

METHOD OF IDENTIFYING THE COMPOSITION OF A
MATERIAL SAMPLE

The invention described herein may be manufactured,
used, and licensed by or for the Government for governmental
5 purposes without the payment to us of any royalty thereon.

This invention relates in general to a method of
identifying the composition of a material sample, and in
particular, to such a method when the material sample is in a
remote location.

10

BACKGROUND OF THE INVENTION

→ Certain material samples useful in microelectronics and
other disciplines can be exceedingly sensitive to the rigors of
transportation including damage and contamination. Modern assay
15 methods require sophisticated analysis tools, often at a remote
location. A method is therefore needed for identification of a
material sample that permits safe shipment, without
contamination, for analysis.

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SUMMARY OF THE INVENTION

— The general object of this invention is to provide a
method of identifying a material sample, particularly when the

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material sample is in a remote location. A more particular object of the invention is to provide such a method that permits safe shipment of the material sample, without contamination, for identification.

5 It has now been found that the aforementioned objectives can be attained by rubbing the material sample with an abrasive material until streaking appears in the abrasive indicating that the material sample has become embedded in the abrasive material and then analyzing the abrasive material using qualitative and
10 quantitative chemical analysis.

More particularly, according to the invention ^{the} the sample material is rubbed with an abrasive coated paper or cloth such as emery paper until streaking appears on the emery paper. The emery paper is then analyzed in the laboratory for the
15 composition of the material sample embedded within it by a method such as energy dispersive x-ray spectroscopy (EDS). Because analytical techniques such as EDS can perform qualitative and quantitative chemical analysis on very small quantities of sample down to micron or submicron dimensions, it is necessary to have
20 only a representative sampling of the material sample in question. The emery paper accomplishes this sampling by containing the sample material because it is embedded in the abrasive material even during transportation.

The emery paper may be glued to the standard sample
25 holder used in the EDS system for ease of handling.

The types of sample materials that can be analyzed

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Cont'd

include plating on metals, metals, corrosion products, coatings, residues, glasses, ceramics, minerals, and ores. *Page 10*
APPLICATIONS. (AW)

It is also noted that the method of the invention allows the identification of a sample material in a remote location
5 without having to ship the sample material to a laboratory or to take the sample material apart.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Metal shelter bolts are being used as electrical grounds
10 in the field at a remote location. The specification calls for the bolts to be plated with nickel. As the bolts are becoming corroded, it is felt that they might not be plated with nickel. It is further felt unsafe to send chemical kits for chemical analysis into the field. Therefore, the plated bolts are rubbed
15 with emery paper until streaking occurs in the emery paper indicating that the sample of plated bolt is imbedded in the emery paper. The emery paper is sent to the laboratory and found by EDS to contain cadmium and no nickel.

We wish it to be understood that we do not desire to be
20 limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art.

Claims not included

ABSTRACT OF THE DISCLOSURE

A material sample is rubbed with an abrasive material until streaking appears in the abrasive indicating that the material sample has become embedded in the abrasive and the
5 abrasive material then analyzed using qualitative and quantitative chemical analysis.

IN THE UNITED STATES PATENT AND
TRADEMARK OFFICE COMBINED DECLARATION
AND POWER OF ATTORNEY

Attorney's Docket No. CECOM 4496

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD OF IDENTIFYING THE COMPOSITION OF A MATERIAL SAMPLE

the specification of which

(Check one)

X is attached hereto.

 was filed on as

Application Serial No.

and was amended on (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

APPLICATION NUMBER	COUNTRY	DATE OF FILING (day, month, year)	PRIORITY CLAIMED
<u> </u>	<u> </u>	<u> </u>	<u> </u> YES <u> </u> NO
<u> </u>	<u> </u>	<u> </u>	<u> </u> YES <u> </u> NO
<u> </u>	<u> </u>	<u> </u>	<u> </u> YES <u> </u> NO

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112.1 acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application S.N.	Filing Date	Status
<u> </u>	<u> </u>	<u> </u> (patented, pending, abandoned)
<u> </u>	<u> </u>	<u> </u> (patented, pending, abandoned)

And I hereby give irrevocable control of this application for Letters Patent to the Government of the United States, as represented by the Secretary of the Army, and appoint

SHELDON KANARS, #20,693; MICHAEL J. ZELENKA, #27,970; KENNETH J. MURPHY, #27,578; ROY E. GORDON, #18,917; ANN M. KNAB, #33,331; ROBERT A. MAIKIS, #18,091; JOHN M. O'MEARA, #27,221.

or any of them, our attorneys or agents with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to sign the drawings, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith.

Direct telephone calls to: ROY E. GORDON (201) 532-3373

Direct correspondence to: Commander, U.S. Army Communications-Electronics Command,
ATTN: AMSEL-LG-LS, Fort Monmouth, NJ 07703-5000

Wherefore I pray that Letters Patent be granted to me for the invention or discovery described and claimed in the foregoing specification and claims, and I hereby subscribe my name to the attached specification and claims, declaration, power of attorney, and this petition.

END

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