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Revision G
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ORGANIZATIONAL WORK INSTRUCTION

EM50

VASE ELLIPSOMETER

Revision G

APPROVING AUTHORITY	NAME	TITLE	ORG	DATE
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VERIFY THAT THIS IS THE CURRENT VERSION BEFORE USE

DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Revision	A	6-1-99	Revision to incorporate re-organizational changes
Revision	B	8-3-99	Clarification of system initialization and lamp stabilization procedures
Revision	C	02-22-00	Change QMS documents to directives
Revision	D	6-28-02	Revision made to incorporate applicable OWI changes and correct errors
Revision	E	2-3-04	Applicable Documents section update and correct errors
Revision	F	9-3-04	Revision to accommodate NASA HQ actions for document standardization
Revision	G	04-27-05	Changes made due to reorganization

VASE ELLIPSOMETER

1. SCOPE

1.1 Scope

This document establishes the standard operating procedure for the VASE ellipsometer.

1.2 Purpose

The purpose of this document is to outline the steps necessary for ellipsometry analysis of material samples or other items.

1.3 Applicability

This document only applies to the VASE ellipsometer. This operating procedure is not a substitute for formal training in instrument operation. Untrained personnel should not attempt to use this document to operate this instrument unless supervised by trained, experienced personnel.

2. APPLICABLE DOCUMENTS

EM50-OWI-002 – Work Request Process

EM50-OWI-003 - Control of Records

EM50-OWI-004 - Control of Customer-Supplied Product

3. DEFINITIONS

3.1 VASE—Variable Angle Spectroscopic Ellipsometry

3.2 Ellipsometer - An instrument that analyzes the effect of reflection on the polarization of light directed upon the surface of materials, to acquire measurement data identifying properties of the material. Interpretation of the data yields the optical constants of the material or, if the material surface is film-covered, the thickness and optical constants of the film.

4. INSTRUCTIONS

4.1 The VASE shall be operated per instructions specified in the hardware manual located near the VASE.

4.2 Modeling and analysis of the acquired data shall be done per the WVASE32 software manual found near the VASE computer keyboard.

4.3 Initialization of the system shall be completed before system operation.

4.4 The Monochromator lamp shall be turned on and ignited at least 30 minutes prior to calibration to allow for proper stabilization. When surface analysis is completed, turn off power to the lamp.

4.5 Each time the system is powered up, a coarse calibration followed by a fine calibration shall be necessary to properly reconfigure the system. A Fine calibration of the VASE using the vendor supplied calibration wafer shall be performed every 2 to 3 hours of continuous operation by the operator per the VASE Hardware Manual page 4-10.

5. NOTES

None

6. SAFETY PRECAUTIONS AND WARNING NOTES

None

7. APPENDICES, DATA, REPORTS, AND FORMS

7A. APPENDICES

WVASE32, Microsoft Windows based software for Variable Angle Spectroscopic Ellipsometry, Data Acquisition and Analysis Users Guide. Software for VASE and M-44 Ellipsometers

VASE, Variable Angle Spectroscopic Ellipsometer, Hardware Manual., Horizontal systems, September 20, 1996, Descriptions and Adjustment Procedures for the VASE System Hardware

01-001, Monochromator, Users Manual

LPS-220/250, Power Supply and Igniter, Operation Manual

A1010, Lamp Housing, Operation Manual

7B. DATA

All data collected will be stored on the VASE computer with a unique file name which is logged into the lab notebook.

7C. REPORTS

Reports shall be generated using the format of data presented within the VASE software, as a minimum the thickness of the film and a display of the Psi curve fit will be presented for the modeling of data.

7D. FORMS

The data forms generated by the VASE software shall be used in reporting the data.

8. RECORDS

A work request form per EM50-OWI-002, may accompany the sample which shall have a Group tracking number. This information shall be logged into the lab log book located near the VASE. This entry shall identify the sample, the requester and VASE tracking number and any other unique identifiers. After completion of analysis a report shall be generated of the data and reported to the requester. A copy of this report shall then filed in the Group archive. These records shall be in compliance with MPG 1441.1 per EM50-OWI-003.

9. TOOLS, EQUIPMENT, AND MATERIALS

Equipment required includes the VASE, monochromator, lamp power supply and igniter and lamp housing. This equipment is described in the appropriate manuals referenced in 2.0.

10. PERSONNEL TRAINING

VASE ellipsometer operators shall be trained by a qualified user in all aspects of this instrument. They shall be approved by the Group Lead to be a qualified user before being left alone to generate data to be reported outside the Group.