Designation: E996 – 10

Standard Practice for Reporting Data in Auger Electron Spectroscopy and X-ray Photoelectron Spectroscopy[1]

This standard is issued under the fixed designation E996; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 Auger and X-ray photoelectron spectra are obtained using a variety of excitation methods, analyzers, signal processing, and digitizing techniques.

1.2 This practice lists the desirable information that shall be reported to fully describe the experimental conditions, specimen conditions, data recording procedures, and data transformation processes.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E673 Terminology Relating to Surface Analysis (Withdrawn 2012)[3]

E902 Practice for Checking the Operating Characteristics of X-Ray Photoelectron Spectrometers (Withdrawn 2011)[3]

E983 Guide for Minimizing Unwanted Electron Beam Effects in Auger Electron Spectroscopy

E995 Guide for Background Subtraction Techniques in Auger Electron Spectroscopy and X-Ray Photoelectron Spectroscopy

E1078 Guide for Specimen Preparation and Mounting in Surface Analysis

E1127 Guide for Depth Profiling in Auger Electron Spectroscopy

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide, refer to Terminology E673.

4. Summary of Practice

4.1 Report all experimental conditions that affect Auger and X-ray photoelectron spectra so spectra can be reproduced in other laboratories or be compared with other spectra.

5. Significance and Use

5.1 Include the experimental conditions under which spectra are taken in the "Experiment" section of all reports and publications.

5.2 Identify any parameters that are changed between different spectra in the "Experiment" section of publications and reports, and include the specific parameters applicable to each spectrum in the figure caption.

6. Information To Be Reported

6.1 *Equipment Used:*

6.1.1 If a commercial electron spectroscopy system is used, specify the manufacturer and model. Indicate the type of electron excitation source and electron analyzer as well as the model designation of other equipment used for generating the experimental data, such as a sputter ion source.

6.1.2 If a spectrometer system has been assembled from several components specify the manufacturers and model numbers of excitation source, analyzer, and auxiliary equipment.

6.1.3 Identify the model name, version number, and manufacturer of software packages used to acquire or process the data.

6.2 *Specimen Analyzed:*

6.2.1 Describe the specimen as completely as possible, for example, its bulk composition, history, any methods of cleaning or sectioning, pre-analysis treatments, and dimensions.

6.2.2 Describe the method of mounting and positioning the specimen for analysis, for example, mounted on a carousel, or mounted between strips of a particular metal. If the specimen

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[1] This practice is under the jurisdiction of ASTM Committee E42 on Surface Analysis and is the direct responsibility of Subcommittee E42.03 on Auger Electron Spectroscopy and X-Ray Photoelectron Spectroscopy.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

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