Early History of the AVS Topical Conferences
On Quantitative Surface Analysis

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1. The Start (1986)

2. 1987 through 2003

3. Later Years
1. The Start (1986)

- One-day meeting at NBS (NIST)
- Three invited talks, each followed by long discussion period
- 16 contributed papers (some oral, some poster)

Invited talks:
M. P. Seah: Reference Data and Reference Materials for AES and XPS
J. T. Grant: Data Processing for Quantitative Analysis in AES and XPS
S. Hofmann: Sputter Depth Profiling: Reference Data, Reference Materials, and Recent Advances in Ni/Cr Multilayer Profiling with AES
2. 1987 through 2003

- Two-day meetings on Friday and Saturday prior to AVS Symposium, but two one-day meetings were held as part of the AVS Symposium program to avoid conflicts with ISO/TC 201 meetings
- QSA usually held at a different location but “near” to AVS Symposium
- Primary sponsorship by AVS Applied Surface Science Division (ASSD), and additional support from local AVS Chapters, ASTM Committee E-42 on Surface Analysis, VAMAS Surface Chemical Analysis TWA2, and instrument vendors
- Organizing committee from AVS ASSD membership, with CJP as chair
- Programs consisted mainly of invited talks, each followed by long discussion periods (up to 45 minutes), contributed papers (oral and poster), and sometimes discussions of special topics (e.g., instrumental software, reference data and reference materials for surface analysis)
Invited talks:

**H. Oechsner**: Developments and Applications of Sputtered Neutral Mass Spectroscopy

**M. T. Bernius**: High Resolution Ion Microscopy

**S. Tougaard**: Inelastic Intensities in XPS: Background Removal and Non-Destructive In-Depth Analysis

**N. R. Armstrong**: Deconvolution and Fitting Approaches to the Removal of Background in Auger and Photoelectron Spectra

**M. P. Seah**: Programme for an AES Interlaboratory Comparison

**D. R. Baer**: Methods of Charge Compensation in Surface Analysis
(b) QSA-3, 1989 (Salem, MA; J. D. Geller, Local Chair)

Invited talks:
R. Shimizu: Monte Carlo Calculations as Applied to Quantitative AES and SEM
S. Gaarenstroom: Recent Advances and Trends in Data Reduction for Electron Spectroscopy
M. Prutton: Multispectral Surface Analytical Microscopy
R. Kelly: The Conflict between the Roles of Chemistry and Ballistics in Ion-Impact Processes
M. J. Pellin: Optical Techniques for the Detection of Sputtered Atoms
Invited talks:
P. M. A. Sherwood: Methods for Data Analysis and Interpretation in Photoelectron Spectroscopy
S. A. Chambers: Auger and X-ray Photoelectron Diffraction and Implications for Quantitative Surface Analysis
M. P. Seah: Random and Systematic Uncertainties in Electron Spectroscopy
K. Yoshihara: Common Data Processing System for Surface Analysis
P. H. Holloway: Non-Destructive Depth Profiling by Angle-Resolved X-ray Photoelectron Spectroscopy
D. S. Simons: Quantitative Depth Profiling of Ion-Implanted Silicon by SIMS, RBS, and Thermal Neutrons
J. Fine: Evaluation of Sputter-Induced Interface Broadening Processes in Multilayered Materials
A. Benninghoven: Quantification in Molecular SIMS
B. D. Ratner: Separating Sample and Instrument Considerations
R. W. Linton: Quantitative Imaging of Surfaces: Data Acquisition, Display, and Processing Issues
Invited talks:
W. S. M. Werner: Survey of Developments in Quantitative AES/XPS
J. H. Thomas, III: Beam Effects on Quantitative Analysis
D. L. Allara: Quantification of Chemical Structure by Photon-Based Techniques
S. Hofmann: Recent Progress in High-Resolution and Quantitative Depth Profiling
F. A. Stevie: An Overview of the Methods Used for Quantitative SIMS Analysis
I. V. Mitchell: Ion Beam Methods and Quantitative Surface Analysis
I. S. T. Tsong: Scanning Tunneling Microscopy Studies of Ion-Bombarded Surfaces
M. Prutton: Surface Analysis of Inhomogeneous Materials: Can We Cope with the Rough as Well as the Smooth?
Invited talks:
M. P. Seah: A High Resolution Data Bank of True Spectra for AES Intensities
K. Goto: Reference Auger-Electron Spectra Measured with a High-Performance Cylindrical Mirror Analyzer
S. Tougaard: Surface Structure Determination for Surface Chemical Analysis
P. M. A. Sherwood: Data Analysis Methods in Surface Analysis
G. LeClerc: Reporting the Statistical Analysis of Surface Science Data
Invited talks:
J. B. Malherbe: Surface Composition and Topography of Compound Semiconductors after Sputtering
D. S. Simons: Ion-Implanted Reference Materials for the Semiconductor Industry
B. D. Ratner: Quantitative Analysis by Static SIMS: Exploiting All the Information in the Spectra
C. S. Fadley: Final-State Effects in Quantitative XPS Analysis: The Ion and the Photoelectron
J. E. Castle: Creating a Rulebase for Interpretation of XPS: A Guide for Both Human-Based and Computer-Based Experts
Invited talks:

**M. Prutton:** Surface Imaging for Scanning Auger Microscopy: Might It Be Possible and Useful?

**B. Tyler:** Multivariate Statistics for the Analysis of TOF-SIMS Data

**P. M. A. Sherwood:** Overview of the IUVSTA Workshop “XPS: From Physics to Data” held in Hungary

**M. G. Dowsett:** Establishing Accuracy in Ultra-Shallow SIMS Depth Profiling

**P. J. Cumpson:** Depth Profiles from Angle-Resolved XPS: How to Do It Most Accurately, Simply and Reliably

**C. W. Magee:** Secondary Ion Mass Spectrometry in the Climate of ISO 9000: Precision, Accuracy, and Documentation

**M. P. Seah:** Reliable Quantitative Analysis by AES and XPS
Invited talks:

F. A. Stevie: Emerging Needs for Characterization of Devices at High Spatial Resolution

A. Spool: Characterizing GMR Metal Multilayers

B. Stoehr: Analytical Challenges in Advanced Photomask Manufacturing

W. S. M. Werner: Quantitative Interpretation of the Energy and Angular Distributions of Auger- and Photo-Electrons Emitted from Solid Surfaces

M. Nicholas: Imaging, Chemometrics, and Static SIMS Quantification of Polymer Mixtures

E. Niehuis: Complementary Use of MEIS and SIMS for the Analysis of Ultra-Thin Gate Oxides and Shallow Junctions

D. W. Moon: Complementary Use of MEIS and SIMS for the Analysis of Ultra-Thin Gate Oxides and Shallow Junctions

A. C. Diebold: Comparison of Materials Characterization and Metrology Measurement Needs for Silicon Dioxide, Silicon Oxynitride, and High Dielectric Constant Thin Films
Invited talks:

J. E. Castle: Modules for an XPS Expert System: Applications in Corrosion Science


N. Winograd: Molecular Characterization of Biomaterials with TOF-SIMS Imaging


M. P. Seah: Intercomparison of Silicon Dioxide Thickness Measurements Made by Multiple Techniques: The Route to Accuracy
3. Later Years

- QSA meetings continue to be held, generally on a two-year cycle
- Dave Simons and Fred Stevie were QSA co-chairs for QSA-11 (Peabody, MA, 2005), QSA-12 (Bellevue, WA, 2007), and QSA-13 (Albuquerque, NM, 2010)
- Tony Ohlhausen was chair for later QSA meetings that were held on the Sunday prior to AVS Symposia: QSA-13 (Tampa, FL, 2012), QSA-14 (Baltimore, MD, 2014), and QSA-15 (Nashville, TN, 2016)