

VINCE CRIST, PhD

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MATERIALS CHARACTERIZATION

Dedicated to career in materials characterization. By applying solid and solution state analytical instrumentation to the development of advanced materials, materials processing, failure analysis, problem solving, forensics, quality control, and thin films, my efforts have helped makers save millions. As a result of on the job and hands-on experience, I bring lab management skills plus the following expertise:

Thin Film Processing • Surface Derivatization • Surface Cleaning • Depth Profiling • Surface/Bulk Analysis
Organic Synthesis • Inorganic Synthesis • Particle Analysis • Data Interpretation
Spectral Data Processing • 6-Sigma Black Belt • Root Cause • Clean Room • Surface Contamination

The combination of a PhD in analytical organic chemistry and years of on-the-job materials science experience provides exceptional credibility and authority with customers, engineers and executives. 15 yrs in thin film, materials and semiconductor industries.

SELECTED ACCOMPLISHMENTS

- Initiated 6-sigma project that solved micro-particle contamination issue causing 4% yield loss
- Exceeded quota, and achieved 35% increase in surface analysis lab sales revenue for Accurel
- Solved thousands of thin film production line problems in hard disk and semiconductor industries
- Recognized as international expert in XPS & AES. Expert at surface chemical analysis and particle analysis using AFM, FE-AES, SEM-EDX, ToF-SIMS, XPS
- Initiated and developed ISO document standards on surface chemical analysis issues

EXPERTISE (years of Hands-on use)

- **Solid State Materials Analysis:** AFM (4 yrs), CD (4 yrs), FE-AES (10 yrs), HR-XRD (1 yr), Laser-XPS, (2 yrs), REELS (8 yrs), SEM-EDX (3 yrs), ToF-SIMS (1 yr), XPS / ESCA (15 yrs), XRR (1 yr)
- **Solution State Materials Analysis:** IR (6 yrs), FT-NMR (8 yrs), UV-Vis (6 yrs), GC-MS (6 yrs), FL/PL (3 yrs)
- **Routine Measurements of Surface/Bulk:** Elemental composition, chemical composition, chemical state, surface roughness, film thickness, depth profiling, contamination, homogeneity, angle-resolved, imaging, mapping, degradation, gas capture, re-oxidation, kinetics, Good vs Bad, fractured, scraped
- **Chromatography Analysis:** GC (8 yrs), HPLC (5 yrs), IC (1 yr)
- **Surface Chemistry:** Derivatization, Capping, Plasma Cleaning, Oxidation, UV Exposure, Degradation, Damage. Contamination, Particle Analysis
- **Experienced with:** Rutherford Backscattering Spectroscopy (RBS), Transmission Electron Microscopy (TEM), Chemometrics, MiniTab, FMEA, DFSS, Glow-Discharge OES (GD-OES)
- **Materials Knowledge:** Polymer, Glass, Ceramic, Metal, Alloy, Semiconductor, Paint, Catalyst, Paper, Lubricant, Release Agent, Ink, Coating, Oxide, Medical Implants, Medical Devices, Tapes, Bond Pads Treatments using UV, Plasma, Ozone, Heat, Halogens, RIE, Laser, Oxidizers, Reducers

PROFESSIONAL EXPERIENCE

Komag Inc, San Jose, CA, USA • 2005-2007

Sr. Project Engineer

- Discovered true surface chemistry of Ni(P) media is not NiO, but mainly Ni(OH)₂ and NiCO₃. Wrote first white papers on inorganic surface chemistry and surface reactions of electroless-plated Ni(P).
- Solved hundreds of production loss problems by applying XPS, AES SEM-EDX, ToF-SIMS, TEM, AFM

- Developed new thin film processes to improve performance and reliability of surface of hard disc media

Applied Materials, Santa Clara, CA, USA • 2004-2005

Surface Chemistry (XPS) Consultant – One Year Contract

- Characterized performance of prototype 300 mm metrology tool and liasoned with Thermo Electron to correct significant performance problems. Based on report, ThetaProbe upgraded and returned.
- Developed correlated XPS, AES & AFM analysis protocol to define etch rates of pure elements.
- Introduced super-fast depth profiling method, GD-OES, for thin film troubleshooting. Purchase on hold.
- Proved that nickel mesh screen method improved charge control and that charge gun was bad.

Seagate Technologies, Milpitas, CA, USA • 2002-2004

Staff Scientist

- Solved hundreds of thin film production contamination problems and failures using FE-AES, SEM-EDX, XPS, AFM, TEM, OSA (Candela). Defined root cause of texture ridge-scratch that caused 1-2% yield loss.
- Determined root cause of surface embedded particles that cost 4% (\$XXM) of media yield.
- Applied 6-Sigma tools and training to thin film surface chemistry problems and reliability issues.

Accurel Systems International, Sunnyvale, CA, USA • 1999-2001

Surface Analysis Lab Manager

- Exceeded sales quotas of contract analytical services 6 months after expanding customer base. Solved hundreds of materials problems using FE-AES, XPS, AFM, RBS and PIXE
- Advanced sales revenue by 35% for Accurel in fiscal 2001. Marketed instrument capabilities and benefits to customer through all-day, on-site demonstrations, at trade shows and via website.
- Increased visibility of chemical analysis business through personal marketing efforts. Marketing information very limited. Utilized PowerPoint to modify presentations to suit needs of client base.

XPS INTERNATIONAL KK, Tokyo, JAPAN • 1994-1999

Demo Lab & Sales Director

- Gained instant recognition and sales by building informational website and negotiating agreements with five small to mid-sized technical sales companies in UK, Japan, Korea, USA and Germany.
- Led initial sales campaign; conducted all sales of startup software, publishing and contract business. Directed advertising, market development, production, R&D and business relationships.
- Contracted to Fisons Instruments and Marubun to promote VG Scientific XPS & AES systems

Hakuto Co. Ltd, Tokyo, JAPAN • 1987-1994

XPS & AFM Sales and Applications Engineer

- Gave sales demos 2-3X per week in support of analytical system sales. Developed applications and demonstrated capabilities. Traveled with sales people to work with customers in day long sessions.
- To initiate sales of XPS from new, unknown maker in Japan, collected application data for application notes. In spare time collected data from 3 elements, oxides and polymers to promote sales.

Surface Science Labs, Mountain View, CA, USA • 1985-1987

Sr. Surface Scientist

- Exceeded sales quotas for surface chemical analysis systems one year after joining SSL. Solved thousands of materials problems using XPS, SEM-EDX and FT-IR.

EDUCATION

Post-doctorate Fellow, **Stanford University**, 1985
 PhD, Analytical Organic Chemistry, GPA 3.7, **University of Nevada, Reno**, 1985
 BS, Chemistry, **The Ohio State University**, 1981

CERTIFICATES, LANGUAGE & PUBLICATIONS

6-Sigma Black Belt, DFSS, FMEA, Intermediate level **Japanese speaker** 10 years of living & selling in Tokyo. **Author** of 8 technical books, 50+ articles & one **patent** (Laser-XPS), secretary of **ISO TC/201 SC5**