

INDUSTRIAL NANO-PHYSICS

Technical Specialist/Image Analyst

TEM/SEM/Optical & Spectral Micro-Analysis

Product Development and Manufacturing Support

Charles Jeffrey Day “Jeff”

3208 Statler Dr. • Mesquite, Texas 75150

Phone: 972-681-2546 • email: wa5ekh@juno.com

cell:792-537-7660 (24/7 text, voice mail, direct)

(web presence: www.apo.LyondellBasell.com)

Occupational Objectives: Maintain "hands-on" Material Science Production and Product Development Support Activities. Use all previous experiences to provide in-house technical disciplines necessary to effectively support the highest level of product development, production and marketing, continuous product and process improvement, and promote simultaneous cost reduction.

Instrument Specialist and In-Depth Understanding of the Capabilities of:

- SEM
- TEM
- WDS/EDS
- Optical Image Analysis
- Production Support
- Failure Analysis
- Spectroscopic Analysis
- Optical Microscopy
- IR/NIR/UV/VIS/XRAY
- SPMs

Education:

University of North Texas
BA (Physics Major/Math Minor)

Denton, Texas
June, 2000

Experience:

Senior R&D Technician/Image Analyst

1995 to present

LyondellBasell Advanced Polyolefins (Previously **Solvay Engineered Polymers** until 2-2008
/Prev. D&S Plastics)

Grand Prairie, TX

Company Profile: Thermo-plastics (TPO) Compounder and Supplier of basic thermoplastic polyolefin resins for the European, American Domestic, Asian Transplant and Chinese Automotive Industry (Honda, Hyundai, Nissan, etc.) Injection Molding Industry

Job Functions:

- Produce Traditional and Experimental Polymer-blend Morphology
- Macro- and Microscopic Defect
- Mixing Level and Dispersion Analysis
- Morphologic Reverse Engineering

(LBAP ‘job functions’ continued)

- Inorganic Spectroscopy
- TEM, SEM, EDS(x-ray), ESEM, STEEM(T-ESEM)
- Optical Microscopy
- Micro-FTIR(intentionally limited)
- AFM/SPM(experimental-limited)
- Cryo- Ultramicrotomy (ambient micro-freeze fracture)
- **Film Build Analysis-Coating, Interface, Adhesion, Composition**
- Surface Defect and Process Analysis
- Coatings Interface Failure Analysis
- QC-QA Support

Texas Industrial Investments/DBA (self employed)

1993-1995

(Simultaneous Income Activity with DART Weekend Shift)

- Industrial Sales
- Service
- Surplus Asset Liquidations
- Broker

Temp./Contractor DART(Dallas Area Rapid Transit)

1993-1995

- Week-end ‘special projects’
- Integration into standard Facilities Maintenance
- Machinetool Maintenance

SEMATECH, (Now International SEMATECH) Austin, TX

1989-1993

Engineering Associate

Company Profile: US Semiconductor Equipment Consortium (of IBM, Intel, AMD, ATT, NCR, Texas Instruments, National Semiconductor, LSI, MICRON, Harris Data and DARPA/ARPA)

- 0.25 um Fab Support; and Phase I(0.65 um 6"),
- Phase II(0.6 um,6",two level metal), Phase III(0.5 um,8")
- Ramp-up Team; litho-, etch-, metal-, implant-, polish planarization-support; TEM-, AFM-,Micro-Auger, Mag and Quad & Ion Mass Spectrometer.
- AFM tip modifications: high aspect ratio/high durability.
- AFM process development to produce TEM quality cross sections from the bulk cross section (not thin).

TII (Self Employed)

~1989

Texas Industrial Investments/DBA (self employed)

Dallas, TX

- Used Machine Tool Sales- industrial sales and liquidation of surplus equipment.

**LTV, Missiles Div., Electron Optics Development Lab, Grand Prairie, TX 1984-1989
Research and Development Tech**

- SEM, EDS, IR-NIR spectroscopy of multi-layer metal and ceramic devices.
- Thin film super conductor- reactor development.
- Active electro-optic device material development and characterization. Superconductor development.

**Engineering Tech. MOSTEK (Fab5) Weekend Shift 9/83 to 1/84
Carrollton, Texas**

(Now ST Microelectronics)

- Lead-person in DC & functional test
- Probe (pre-pacification), Metallization (2 Variants), Implant (5 Variants), SEM metrology, Metal Wet Etch Area

**Outside Sales and Marketing, Dallas Machine Tool, Inc. 1978-1983
Dallas, TX**

- Used Machine Tool and Fabricating Sales, leasing, financing, liquidation, Real Estate, appraisals, collections, maintenance, transportation, and consulting.

**Research Associate, University of Texas Dallas, TX 1973-1978
Southwest Medical School at Dallas, Cell Biology**

- **Freeze Fracturing** -Mitochondria Inner Membrane Surface Lab, TEM
- **Freeze Fracture**; Deep Etching, Ligand Tagging, Thin Sectioning, Negative Staining, Cryogenic rapid fixation, photography, Vacuum and Metal Deposition *(techniques developed from independent# personal literature search and experimental process development./# though I prefer the efficiency of a team environment)

**Sr. Chem. Tech Texas Instruments, Inc., Central Research & Engineering
Richardson, TX 1972-1973**

- SEM, TEM, EDS, WDS, Thin Sample Preparation, Photography,

Equipment Experience

Electron Microscopes:

- Hitachi TM1000 Benchtop Microscope (ESEM)-recent
- Electroscan ESEM (0.8-20 torr)+Tracor Noran EDS/E-STEM(modification)(‘STEEM’)
- JEOL T3000 SEM + Tracor EDS
- AMRAY 1830SEM, 300mm Automated Stage SEM+ Tracor Northern EDS (ultrathin+Be window)
- JEOL 845 (lab6)+ Tracor EDS
- JEOL 35C and CF SEMs+ Tracor Northern EDS
- JEOL U2-(modified- sub Kev, solid state)
- Philips 300 TEM
- JEOL 100C
- JEOL 100B
- JEOL 100CX
- RCA
- ARL-Wavelength Dispersive Analyzer/SEM/Microprobe

AFM:

- Digital/Veeco (limited)
- Quesant

Vacuum Systems-Deposition

- VEECO Lab Coater
- Varian Lab Coater
- JEOL Lab Coater
- Denton Lab Coater
- Balzers, Denton, SPI, etc. Sputter coaters
- Varian Production Sputter Coaters
- Balzers Freeze Fracture Plant (also cryo-pre-shrouded deposition)

Vacuum Systems

RIE/Plasma:

- March Barrel Type
- Trion RIE (March Derivative Technology)

Reactor Vacuum and Controlled Atmospheric Ovens:

- Blue M
- Proprietary Designs (LTV)

Surface Profilometry

- Tencor
- Talley Step
- Varian Non-contact

- Veeco/Wyco Non-contact
- AFM (limited to ‘high aspect ratio’ tip modification)

Spectral Instrumentation

- Perkin Elmer 580 Dispersive IR (modified to ellipsometry)
- Perkin-Elmer 330 Dispersive VIS/NIR (modified for total reflectance)
- Tracor Northern Xray EDS Analyzers
- WDS /SEM-Xray Analyzers

Cross Sectioning Equipment:

- Diamond Saws
- Polishing Wheels (slurry and abrasive)
- Early Precision Micro-Fracturing
- Cryo-ultramicrotomes-Leica (FC4E & UCT), RMC(Room Temp.)
- Diamond Knives (55,45,35 degree)-Microtomy
- Glass, metal Knives-Microtomy
- Ion Mills-Gatan

Bio-tech Instrumentation:

- Freezing Osmometry
- Ion Sensors
- pH Metering
- Selective Filtering
- Ultra-Centrifuges

Model (machine tool) Shop Equipment- Limited experience (not Class 'A' Machinist)

- Lathes
- Shears
- Mills
- Press Brakes
- Radial Saws
- Punch presses
- Drill Presses
- Band Saws-H/V
- Spot Welders
- Arc Welders
- Mig/Tig Welders

Electrical/Electronics:

- Oscilloscopes (limited)
- VOM
- Current Meters
- 1 & 3 phase Motors, starters, contols-440/220/110 VAC
- AC (limited)

Transportation:

- Texas Commercial Truck Operator’s License 'A' and Hazmat Certification (expired)
- Cherry Pickers/Bucket Trucks
- Backhoe (ltd)
- Forklifts (3-15,000#)