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Principle Materials and Process Engineer

High energy, hands on, results-oriented scientist/engineer capable in a wide range of technical processes.

- **Materials Scientist** responsible for processing metals, plastics, adhesives, chemicals, crystalline and amorphous materials.
- **Process Engineer** adept at chemical, laser, & mechanical processes development & evaluation using any lab equipment.
- **Statistical Analyst** competent at process optimization; highly accomplished in DOE, SPC, and Design For Six Sigma.
- **Documentation Specialist** proficient at rapidly producing test protocols, manufacturing processes, and work instructions.
- **Teacher and Trainer** skilled at communicating complex subject in easy-to-understand manner. Strong people skills.
- **Technical Innovator** with twelve patents (nine utility and three design). Extensive personal library of technical resources.

BS, Mechanical Engineering Technology, 1988 (magna cum laude) * Henry Cogswell College, Everett, WA
AS, Chemical Technology, 1986 (honors list) * Shoreline Community College, Seattle, WA

Licensed Professional Engineer, Washington State #34757 * Trained in Classical and Design for Six Sigma

Technical training courses include Optical Light Microscopy, Corrosion, Particle Analysis, Metallurgy, Laser Processing of Materials, Design of Experiments, Statistical Process Control, AutoCAD, Pro-Engineer, ANSYS, Cosmos FEA, SolidWorks, Project Management, First Aid, Industrial Safety, Hazardous Materials Handling, Robust Design, cGMP, Mil-Stds, ISO 9001

Ultimate Survival Technologies, Monroe, WA – Military/Commercial Survival Equipment **3/07 to present**

- Designing military body armor, hand tools, decontamination stations, survival equipment. Numerous patents underway.
- Oversight for numerous ballistic tests per National Institute of Justice and Mil-Std-2105B. Developed light-weight armor systems.
- Designing composite seats to meet stringent international safety requirement; including carbon-fiber, Kevlar, and fiber reinforced polymers. Seat hardware includes specialty aluminum and titanium designs; fabrication, ornamental design post-processing.
- Oversight for crash seat testing per FiA (France) standard; developed lightweight FRP biax and woven roving layup.

HySecurity Gate, Inc., Kent, WA – Security Industry **3/05 to 2/07**

- Implemented thermal chamber testing of industrial gate operators, -40C to 120C.
- Introduced cyclic testing of gate operators, constructed hardware to allow life-testing of thousands of cycles to test hydraulic motors, bonded urethane wheel castings, and stress testing of FEA redesigned chassis.
- Established test methods for proprietary hydraulic oil; documented all technical reports per standardized format.
- Conducted rigorous failure analyses of printed wiring boards; instituted advanced in-house testing and repair facilities.

HydraMaster Corporation, Mukilteo, WA – Industrial Equipment **7/02 to 1/05**

- Wrote chemical protocols for wide variety of chemical products, including detergents, strippers, emulsifiers, deodorizers.
- Approved various chemical formulators and suppliers' quality systems, including laboratory and reported processes.
- Implemented HALT (highly accelerated life testing) Testing of new products. Eliminated catastrophic field failures.
- Upgraded welding shop HVAC to meet code, upgraded machine shop lighting (lumens/sq inch) to industrial standards.
- Co-founded and co-implemented Quality Management Systems. Vision for Malcolm Baldridge quality award.
- Managed numerous products to successful production release – expert at new product development process.
- Taught staff about robust designs and implemented robust analysis software – ensured that the new products would work nation wide in various humidity, temperature, altitude, end user variation environments. Systems are now SOP.

Honeywell International, Redmond, WA – Aerospace **1/78 to 7/96; 8/00 to 7/02**

- Used design of experiment techniques to optimize numerous accelerometer weldments for production and new product development. Hermetically welded aluminum alloys, copper, beryllium copper, stainless, Inconel, Monel, titanium.
- Considered expert at creating optimal laser processes for both Nd:YAG and CO_2 industrial laser welders and cutters.
- Pioneered the use of optical light microscopy for failure analysis; equipped and used complete particle analysis center.
- Instituted numerous corrosion control systems, including electroplating, chromate conversion coating, electopolishing.
- Capable in the use and safe handling of acids, bases, chlorinated solvents, fluorinated chemicals, surfactants, emulsifiers.
- Recommended various metal combinations to minimize weld stresses and minimize expansion stresses.
- Researched and brought into production two mobile laser cutting work stations to fit Lean Manufacturing goals.
- Developed and implemented novel photolithography/chemical process to successfully fabricate detailed, miniature fused silica components – project carried out in a clean room environment.
- Expert in the use chem lab equipment; vast experience in instrumental (AA, GC, TA, UV-Vis, IR) & wet chemical analyses.
- Capable in all areas of hybrid microcircuit manufacturing; including soldering, screen printing, die & wire bonding.
- Designed novel MEMS-Hybrid package that met thermal, cost, shock, hermeticity requirements – thousands produced.
- Developed an in-house gold reclaiming process saving the company thousands of dollars annually.
- Processed safely multiple hazardous chemicals, including sodium lump, mercury, cyanide, aqua regia, piranha etch.

MicroSurgical Technology, Redmond, WA – Medical Device **7/96 to 8/00**

- Created, refined, implemented, and installed a remote, robust chemical deburring/polishing system. Documented process for vendor use. Thousands of precision medical instruments processed with no defects. Process in use to this day.
- Created precision laser welding process for surgical hand-held ophthalmic ultrasound instruments. Welds both cosmetic and functional (water-tight). Process developed at supplier, including tooling and methodology. Hundreds manufactured.
- Developed numerous titanium electro-coloring processes for lightweight medical irrigation/aspiration instruments.
- Instituted economical micro hardness testing processes for QC of components. Specified hardness process & requirements.
- Designed and implemented quality control system electro-mechanical evaluation of piezoelectric medical instruments – acceptance level on first-time assemblies went from 40% to over 98%. Implemented life testing of autoclaved instruments.

Henry Cogswell College, Everett, WA - Academia **1/91 to 3/05**

Proven ability to clearly communicate technical subjects; wrote and taught EIT/FE, PE, and design courses. Subjects include: Materials Science; Fluid Mechanics; Thermodynamics and Heat Transfer; Engineering Economics; Chemistry; Mechanics of Materials; Electric Circuits; Statics; Computers; Ethics; Mathematics; Dynamics; Vibrations; Machine Design; Power and Refrigeration Cycles; Hydraulic Machines; Fuels and Combustion; HVAC; Project Engineering, New Product Introduction.