Brad D. Cantos

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SUMMARY: Innovative problem solver with diverse industrial experience in both semiconductor-related R & D and manufacturing. Hands on engineer with a proven track record in process design and integration and leadership:

- Technical Management
- Manufacturing Management
- Production Engineering
- Outsourcing

WORK EXPERIENCE:

Consultant *(2007 to present) [http://holage.com]*

- Modeled operations cost for a photovoltaic device startup company
- Worked with large defense contractor to investigate high power high-speed switch for inertial fusion reactor
  - Identified outsourcing partners for two essential components
  - Established bench testing protocol for switch evaluation

Novalux, Inc., Sunnyvale, California, 2000 - 2007

Director, Wafer and Die Operations, 2002 – 2007

Key Accomplishments:

- Selected and managed foundry for outsourcing laser devices.
- Oversaw process transfer to Asia.
- Streamlined process, reducing cycle time by 30% and improving yield by over 50%.
- Managed >$6M capital equipment budget; evaluated and selected equipment; brought equipment online in production with minimal delay.
- Managed stable operations organization through major downsizing while retaining staff.
- Co-inventor on one issued patent and two pending patent applications.

Major Responsibilities:

- Implemented two-shift operation from wafer fabrication to final chip subassembly and test.
- Managed wafer process development for front side and back side modules including thin-films, photolithography, wet etch, dry etch, and wafer thinning and polish.
- Managed building facilities and EH&S functions and interfaced with local and state regulatory authorities to ensure compliance.

Manager, Process Engineering Department, 2000 - 2002

Key Accomplishments:

- Developed photolithography processes for thick resist over topography, achieving 95% yield.
- Designed device architecture to enable flip-chip bonding. Developed eutectic die bond process using Au-Sn for flip-chip bonding.
- Managed effort to document entire process compatible with ISO.
- Originated, designed, implemented and maintained enterprise-wide MES database in FileMaker.

Major Responsibilities:

- Developed and qualified process modules for wet and dry etch, photolithography, thinning and polishing; directed wafer module development for thin film deposition, PECVD, PVD.
- Implemented SPC procedures for manufacturing.

Pacific Consultants LLC, Mountain View, California, 1999 - 2000

Consultant, 1999 – 2000

Key Accomplishments:

- Successfully procured all parts required for launch of Land Warrior prototype.
- Selected by co-workers to receive Key Employee award.
- Consulted on GaAs device process development.

PixTech, Inc., Santa Clara, California, 1998 - 1999

Senior Member of Technical Staff, 1998 – 1999

Key Accomplishments:

- Successfully decommissioned factory and moved operation to Idaho after merger.
- Individual contributor to team that built the first 15-inch full color field-emitter display.

Power Spectra, Inc., Sunnyvale, California, 1993 - 1998

Manufacturing Manager, 1996 - 1998

Key Accomplishments:

- Transferred ultra-low doped and optoelectronic liquid-phase epitaxy (LPE) technology from Ioffe Institute (St. Petersburg, Russia) to internal fab.
- Developed all front-side and back-side wafer processing steps. Productized device and manufactured production quantities.
- Managed production outsourcing for new product line; interfaced with PCB vendor to assure on-time delivery supporting NPI.
- Managed engineers and technicians in development of high-speed bulk GaAs optoelectronic switches

Fabrication Manager, September 1995 – 1996

- Developed relational database enabling correlations between device performance and developmental processing parameters.
- Developed reliable ohmic contact to semiconductor switch device.

Senior Member of Technical Staff, 1993 – February 1995

- Developed photolithography and metallization processes for GaAs devices with130 μm topography.
- Specified, sourced and qualified capital equipment.

Watkins-Johnson Company, Palo Alto, California, 1980 - 1993

Head, Pilot Line, 1991 – 1993

- Developed and established a Pilot Line for GaAs device fabrication.
- Upgraded existing 2-inch wafer fabrication line to 3-inch wafers and successfully integrated line to manufacturing.

Member of Technical Staff, 1985 – 1991

- Conceived, developed and integrated into manufacturing a series of processes for printing sub-micrometer gate lines for discrete MESFETs and monolithic integrated circuits. Awarded U. S. Patent No. 4,935,377.
- Transferred complete process technology from partner in DARPA MIMIC program to internal foundry. Trained with partner and successfully developed equivalent processes for 0.5μm MESFET process.

Engineer, 1982 – 1985

- Developed metal lift-off processes using image-reversal of positive photoresists before they were available commercially. Implemented these processes into manufacturing achieving a process yield greater than 99.5% and die-sort yield improvement by 70%.

Technician, 1980 - 1982

EDUCATION:

B. A. Biology, State University of New York at Buffalo.

AWARDS:

He Bong Kim Award for the Outstanding Paper presented at 1991 U. S. Conference on GaAs Manufacturing Technology.

Watkins-Johnson Key Creative Employee Award in 1986, 1987 & 1990.

INTERESTS:

Holography & Photography. Extensive hands-on experience with laser and optical equipment.

PATENTS:

"Apparatus, System, and Method for Junction Isolation of Arrays of Surface Emitting Lasers," U. S. Patent No. 7,315,560.

"Method of Fabricating a FET Having a Gate with Sub-Micrometer Length," U. S. Patent No. 4,935,377.

SELECTED PUBLICATIONS:

"Visible laser and laser array sources for projection displays," M. Jansen, B. Cantos, G. Carey, R. Dato, G. Giaretta, S. Hallstein, W. Hitchens, D. Lee, A. Mooradian, R. Nabiev, and G. Niven, A. Shchegrov, A. Umbrasas, J. Watson, Proceedings SPIE, Vol. 6135, 2006.

"High Power GaInAs VCSEL Arrays," J. Watson, R. Nabiev, A. Mooradian, M. Jansen, G. Carey, S. Hallstein, B. Cantos, W. Hitchens, F. Fang, R. Dato, G. Green, K. Scholz, Proceedings, ICALEO 2005.

"Development of compact blue-green lasers for projection display based on Novalux extended-cavity surface-emitting laser technology," A. V. Shchegrov, J. P. Watson, D. Lee, A. Umbrasas, S. Hallstein, G. P. Carey, W. R. Hitchens, K. Scholz, B. D. Cantos, G. Niven, M. Jansen, J-M. Pelaprat, A. Mooradian, Proceedings SPIE, Vol. 5737, pp.113-119, 2005.

"High brightness 980 nm pump lasers based on the Novalux Extended Cavity Surface-Emitting Laser (NECSEL) concept," (Invited Paper), J. G. McInerney, A. Mooradian, A. Lewis, A. V. Shchegrov, E. M. Strzelecka, D. Lee, J. P. Watson, K. W. Kennedy, G. P. Carey, H. Zhou, B. D. Cantos, W. R. Hitchens, V. Doan, Novalux, Inc. (USA); K. L. Lear, Colorado State Univ. (USA), Proceedings SPIE, Vol. 4947, 2002

"Making a High-Yield, 0.33 μm, MBE-based GaAs MMIC Production Process," R. D. Remba, W. R. Hitchens, M. J. Cleary, C. J. Dalmacio, D. J. Jelicich, M. E. Kretchmar, B. T. Pugh, W. V. Yeung, W. A. Strifler, B. D. Cantos, Proceedings U. S. Conference on GaAs Manufacturing Technology, 1994.

"Highly Selective Citric Buffer Etch-Stop Process for the Manufacture of Very Uniform GaAs/AlGaAs FETs," B. C. Schmukler, P. E. Brunemeier, W. R. Hitchens, B. D. Cantos, W. A. Strifler, D. H. Rosenblatt, R. D. Remba, I.E.E.E. GaAs IC Symposium, p. 325-330, 1993.

"Detection and Elimination of Undesired Sulfur Doping in Isolated Areas of GaAs MMICs," D. H. Rosenblatt, B. D. Cantos, T. T. Kennel, C. H. Olson, R. D. Remba, W. Polhamus & V. K. F. Chia, Proceedings U. S. Conference on GaAs Manufacturing Technology, pp. 68 – 71, 1991.

"An Edge-defined Technique for Fabricating Submicron Metal-Semiconductor Field Effect Transistor Gates," W. A. Strifler & B. D. Cantos, J. Vac. Sci. Technol. B, vol. 8, pp. 1297-1299, 1990.

"'MIMIC-ing' A Process: How to Be a Second Source," B. D. Cantos, T. T. Kennel, C. H. Olson, B. T. Pugh, R. D. Remba, & D. H. Rosenblatt, Proceedings U. S. Conference on GaAs Manufacturing Technology, pp. 38 – 42, 1990.

"A Reliable Method for 0.25 Micron Gate MESFET Fabrication Using Optical Photolithography," B. D. Cantos, R. D. Remba, J. of Electrochemical Soc., vol. 135, pp. 1311-1312, 1988.

"An Improved technique for 1/4 Micrometer Gate Length GaAs MESFET Fabrication by Optical Lithography," B. D. Cantos, R. D. Remba, SPIE Proceedings, vol. 773, pp. 61-67, 1987.