Elizabeth Buitrago, PhD – Resume

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Education

PhD Microsystems and Microelectronics, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, June 2014.

MSc Process Engineering, Eidgenössische Technische Hochschule Zürich (ETHZ), Switzerland, September 2010.

BSc Chemical Engineering, University of California San Diego (UCSD), USA, June 2005.

Experience

R&D Project leader BiMOS Chips: November 2016 – Present

ABB Switzerland – Lenzburg (Switzerland)

- Development and benchmarking of novel buffer technologies compatible with ultra-thin > 200 mm wafers.
- Process flow assessment and tool set evaluation (laser anneal) for thin wafer backside processing of IGBTs.
- Shorted anode process integration enabling $T_{vj(op)}$ = 150 °C capability of 6.5kV, 900A IGBT HiPak Module.
- Project management and process integration of next generation low voltage Trench IGBTs in house and in foundry.
- Process and device TCAD simulations, device design, electrical characterization and testing of IGBTs. Support of engineering teams within ABB (production, product engineering).

Postdoctoral Research Scientist & Nanofabrication Lead: July 2014 – October 2016

Paul Scherrer Institute (PSI) & ASML, X-Ray Interference Lithography Group (XIL-II) – Villigen (Switzerland)

- PSI's lead coordinator of international industrial collaboration with ASML and multiple resist vendors worldwide.
- Process optimization and characterization of state-of the-art chemically amplified (CAR) and inorganic resist and materials for extreme ultraviolet (EUV) lithography at the Swiss Light Synchrotron Source (SLS).
- 10 nm half-pitch resolution achieved with CAR via ASML collaboration.
- Nanofabrication lead in the development of highly efficient diffraction gratings (masks) with novel materials for interference lithography (IL) at the Lab of Micro and Nanotechnology (LMN) in PSI.

Research Engineer (PhD Thesis): Oct. 2010 – June 2014

EPFL, Nanoelectronic Devices Laboratory (Nanolab) – Lausanne (Switzerland): Prof. A. M. Ionescu

- 3D vertically stacked silicon nanowire (SiNW) field effect transistor (FET) realized as a proof-of-concept device for its future implementation into low cost biosensors.
- Led multi-institution collaboration within two European projects resulting in successful microfluidic platform development, electrical characterization and surface functionalization for ultra-low concentration protein sensing.
- Research on high performance SiNW/Fin based FETs for biosensing (junctionless and enhancement mode).
- Careful design and fabrication of CMOS compatible process flow for robust 3D heterogeneous systems integration.
- 3D TCAD-Sentaurus process and device simulations, teaching and supervision of master students.

Process Engineer (Wet Process): Sept. 2007- Oct.2008

Micron Technology (300 mm Wafer Fab) – Manassas, VA (USA)

- Direct and sustain process improvements using statistical process control (SPC).
- Strategically identify and analyze process failures. Audit process recipes, configure hardware and implementation of process enhancements.
- Identifying, understanding, and resolving defect issues, assisting area technicians troubleshooting problems, improving preventative maintenance procedures, and optimizing overall tool performance.

Primary Process Engineer (Metal Deposition): Jan. 2006 – Jan. 2007

AMI Semiconductor (On Semiconductor) – Pocatello, ID (USA)

- Worked directly with production and engineering teams to review existing procedures and identify and implement cost, quality and productivity improvements.
- Statistical analysis, design of experiments (DOE), SPC and process capability studies. Responsibilities included sustaining, data analysis, continuous improvement of current procedures, cost savings, new process introduction.

Skills, Honors & Activities

- Bilingual (Spanish, English), basic French and German (A2).
- Triton Engineering Council Representative AICHE (2003 – 2005). IEEE member (2010 - present).
- Donald F. Othmer Sophomore Academic Excellence Award (AICHE).