Nicole McGraw
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Education: Bachelor of Science, Chemical and Biological Engineering, University of Colorado at Boulder with minors in Applied Mathematics (Statistics) and Biochemistry, May 2013

Technical Skills:
- JMP, JSL, R, Stata, Matlab, MathCad, Minitab, Mathematica, and VBA programming
- Working knowledge of DOE, statistical process controls, lean manufacturing, SMED, 6 sigma, and statistical modeling
- Aspen Plus, Aspen Hysys, Superpro, and WinSPC
- Strong knowledge of chemical composition, structure, and properties of substances and of the chemical processes and transformation they undergo
- Strong knowledge and prediction of the physical principles, laws, and their interrelationships.
- Datacon Evo, MRSI M3, FiconTec BL, AL, and TL, High Performance Liquid Chromatography, Flowcam
- Knowledge of cGMP, GLP, and ISO regulated clean room laboratory
- Microsoft SharePoint, Word, Excel, PowerPoint, Access

Relevant Engineering Experience:

Process Engineer
Nuburu, Centennial, Colorado (July 2019 – Present)
- Optimized and improved automated alignment processes for optical and semiconductor components
- Developed data collection scripts and database interface to observe manufacturing trends and product performances
- Developed metrology methods necessary to accurately and repetitively measure product capabilities
- Worked along with other engineers to help design next generation optical
- Performed statistical characterization of processes to identify variation within equipment, materials, and method
- Reduced process variability through performing DOE**'s** and analyzing results
- Demonstrate experience of process automation and process optimization
- Led and managed the cleanroom floor while providing training and supervision to technicians

Process Development Engineer
Samtec Microelectronics, Colorado Springs, Colorado (December 2014 to December 2018)
- Improved yield from ~85% to ~98% through in-depth analysis and statistical modeling
- Noticed major design flaws in the product material (fiber optical block) and successfully worked with the design and quality teams to solve them.
- Helped to design and manufacture next generation, high speed fiber optical engines.
- Assumed engineering ownership of die and component bonding assembly processes, provided operational procedures to production personnel, and carried out troubleshooting support as needed
- Led research and development efforts for the creation of manual, semi-automated, and automated thermocompression and thermosonic, stacked die, flip chip, and epoxy attach bonding.
- Led cross-functional teams in the creation of Failure Mode & Effects Analysis (FMEA) for continuous process improvement. Updated these when internal or external quality problems exposed additional failure modes or insufficient detection
- Created, conducted, and analyzed design of experiments (DOE) and Error of Measurement (EOM) studies using Monte Carlo simulations for development and production activities
- Generated new work instructions for processes as well as reviewed existing work instructions for up-to-date accuracy.
- Created and implemented a statistical process control (SPC) program to maintain a high quality of products
- Provided thorough data analysis and statistical modeling capabilities
- Provided support for issues related to engineering and quality systems such as the Inspection Tracking System and Scrap Entry

- Supported customer quality engineers in investigating and implementing corrective actions for quality concerns
- Held supervisory responsibilities over technicians and operators and verified production associates are able to use the tools and instructions presented to them
- Involved in hands – on cleanroom work, research, and development

Process Engineering Technician
Diamond Wire Material Technologies, Colorado Springs, Colorado (June 2014 to October 2014)
- Led the flood in "quality over quantity" and set an example for professionalism and work ethic
- Proposed new methods related to Design for Manufacturing (DFM) and Design for Quality (DFQ)
- Provided a constant presence on the floor and continuously evaluated condition of tools.
- Regularly tested the pH and TDS of tools and reverse osmosis water systems and recorded values in WinSPC
- Performed troubleshooting process related issues, coordinated with operators, line maintenance, chemistry group, and equipment group
- Provided effective communication to escalate issues through chain of command
- Provided feedback of operational issues to production management
- Maintained records of all data collected

Biomass Systems Integration Engineering Intern
National Renewable Energy Laboratory, Golden, Colorado (June 2013 to September 2013)
- Worked with multiple biomass to alcohol (B2A) models and performed material and energy balances and economic analysis on domestic and international biofuel companies to predict prices of biofuels or biomaterials
- Performed data mining and created large data bases
- Discovered inflation modeling was previously done incorrectly and analyzed the system to fix this error.
- Required the creation of multiple data bases in order to thoroughly analyze for complete result
- Complied with applicable laboratory policies including environment, safety and health (ES&H) requirements and laboratory computer security procedures
- Implemented knowledge of material standards, testing and project design

Research Assistant, Center for Pharmaceutical Biotechnology
Department of Chemical and Biological Engineering, CU Boulder, (January 2013 – May 2013)
- Performed a series of experiments to analyze potential causes of contamination
- Was able to successfully detect correlations of factors to concentration level of silicone oil in solution
- Worked with prefilled syringes of the protein 3M with a silicone oil coating
- Conducted thorough analysis of data by using statistical methods
- Prepared buffers, samples to be analyzed, and organized and maintained a clean working environment
- Underwent hazardous materials and waste management training
- Performed calibration of laboratory equipment
- Practiced good lab procedures
- Ensured quality control of pharmaceutical products
- Followed standard operating procedures
- Performed bench chemistry analysis
- Successfully submitted research into the Journal of Pharmaceutical Sciences

Laboratory Technician (September 2011 – August 2012)
Integrated Teaching and Learning Laboratory Tech Staff, CU Boulder
The Integrate Teaching and Learning Laboratory (ITLL) gives a place for students to design and work on their university projects.
- Provided laboratory support to the mechanical and aerospace engineering student
- Aided students in the use of 3D printers, laser cutters, and poster printing
- Operated and maintained a learning laboratory
- Provided orientation training to new students

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Laboratory Technician Assistant (December 2008-July 2009)
Evans Army Community Hospital, Ft. Carson, Colorado
I performed statistical analysis on data sets of blood gas test to calibrate laboratory equipment.

Patents:

McGraw, Nicole. 2019 Conductive Vias and Methods for the Same. Application Number: 62/908,496, filed September 30, 2019.

Publications:

Gerhardt, A., McGraw, N. R., Schwartz, D. K., Bee, J. S., Carpenter, J. F. and Randolph, T. W. (2014), Protein Aggregation and Particle Formation in Prefilled Glass Syringes. J. Pharm. Sci.. doi: 10.1002/jps.23973