COLIN FLETCHER, P.E.

402 Fryar Creek Drive | Cary, NC 27519 | (919) 961-2913 | fletchermse@gmail.com

EXPERIENCE

Metallurgical Consultant, September 2022 – Present
Longleaf Materials Research – Cary, NC

- Consultant for metallurgy and materials & processes (M&P) engineering.
- Areas of expertise include selection and definition of materials, coatings, and processes, particularly for aerospace applications, process development and troubleshooting, mechanical and corrosion testing of materials, and development and characterization of alloys.

Sr. Metallurgist, January 2021 – September 2022
Xerox R&D / 3D Printing – Cary, NC

- Establish metallurgical laboratory and associated capabilities from the ground up. Manage laboratory safety and equipment maintenance within the materials laboratory.
- Identify and develop plans to resolve current and potential metallurgical challenges within the liquid metal jetting additive manufacturing space.
- Develop heat treatment processes to obtain optimal microstructures and desired balance of mechanical properties for additively manufactured metal parts.
- Perform metallurgical analyses with tools such as microhardness, hardness, optical microscopy (metallography), and SEM.
- Utilize machine learning models to analyze critical processing parameters and improve properties of 3D printed alloys.
- Guide material and surface treatment selection for 3D printing machine components to ensure performance in high-temperature environments.
- Interface with customers to address technical needs and material performance requirements.

Engineer, Materials & Processes, October 2017 – December 2020
Honda Aircraft Company – Greensboro, NC

- Review engineering drawings for composite and metallic structure to ensure appropriate material selection and application of special processes for all aircraft systems.
- Develop specifications for processes such as welding, metal forming, and heat treatment. Revise and maintain specifications as needed for cost reduction or production efficiency.
- Develop and execute test programs to implement improvements to aircraft design and production processes. Examples include composite repair, high-current electrical bonding for carbon composite structure, composite fuel tank sealing methods, and high visibility maskant for FOD reduction.
- Design specimens, fixtures, and tooling for laboratory projects.
- Create training materials for material allowable development and selection/application of materials and chemical processes, and use the same to provide training to other M&P engineers.
- Manage calibrations, maintenance, and supplies for the materials and processes laboratory.
- Responsible for certification of composite-metallic hybrid structures per 14 CFR Part 23.

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Engineer III – Metallic Materials & Processes, November 2008 – October 2017
Bell Helicopter Textron – Fort Worth, TX

- Review engineering drawings and guide design for appropriate material selection (e.g. alloy, plate, forging, casting, extrusion, etc.), heat treatment, corrosion protection/compatibility of parts and hardware, and producibility.
- Technical resource for forging, corrosion protection, cold working of holes, materials testing, heat treatment, cold spray repair, thermal spray, castings, welding (BPS, AWS D17.1), additive manufacturing, and general metallurgy (aluminum, magnesium, steel, titanium).
- Develop test plans and execute test programs to characterize behavior of alloys and processes for use on aircraft, including allowable generation. Programs involve design of specimens & fixtures, processing (e.g. heat treatment, coatings), and testing (e.g. corrosion, tensile, fatigue, crack growth, fracture toughness).
- Improve production efficiency, cost, and lead time through optimization of Bell Process Specification and materials and processes design requirements.
- Experience working with a variety of aluminum, magnesium, steel, titanium, and exotic alloys.
- Provide guidance to suppliers and in-house production to resolve manufacturing issues.
- Audit suppliers to Bell Process Specifications (BPS) for metal and surface processing, heat treatment, materials testing, and quality system (Bell/AS9100/ISO9001), and subsequently review and support root cause and corrective action resulting from these vendor audits.
- Voting member representing Bell on Nadcap Materials Testing Laboratories (MTL) committee. Responsibilities include audit checklist development and review, and supplier RCCA review and approval.
- Lead engineer for research & development projects in variety of areas such as aluminum-lithium alloys, metal matrix composites, corrosion resistant steels, anti-fretting coatings, gear steels, additive manufacturing, welding, and cold spray repair.
- Bell Helicopter ODA EFUM in training; completed FAA Engineering Designee Initial Training.

Associate Engineer, April 2007 – October 2008
Caterpillar – Building Construction Products Division, Clayton, NC

- Analyze manufacturing and field failures to determine root cause.
- Evaluate weld quality of initial production parts and failed parts through visual and metallographic examinations.
- Perform metallurgical and metallographical analysis of components.
- Maintain website for Metallurgical Laboratory.

CERTIFICATIONS

- Professional Engineer (NC #049973)
- AWS Certified Welding Inspector (#16120371), D17.1 Endorsement
- FCC Amateur Radio License, General Class (KG5ASD)

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EDUCATION

North Carolina State University, 2021 – Present (Current Part-Time Student)
Ph.D., Mechanical Engineering
Relevant Coursework:

- Spacecraft Environment and Interactions
- Finite Element Analysis I & II
- Materials Informatics
- Engineering Design Optimization

North Carolina State University, May 2011
Master of Materials Science & Engineering

North Carolina State University, May 2006
B.S., Materials Science and Engineering

ADDITIONAL SKILLS / HONORS

- Eagle Scout, BSA
- CATIA V5/V6
- Solidworks
- Python
- ANSYS

PATENTS

- Precipitation Hardening Steel with Improved Toughness and Method.
  - US Patent Pending (14/038,229)
  - EP2853608, CA2862600 granted September 2017