# JAMES MILNER

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## PROFILE AND OBJECTIVE

A highly focused and responsible postgrad student with strong communication, leadership and organisation skills – established and tested through university, research experience and the Territorial Army. Able to apply scientific knowledge of polymer science and engineering principles to develop ideas and solve problems. Looking to utilise my skills and knowledge in challenging roles within the mechanical engineering field.

## EDUCATION AND QUALIFICATIONS

**University of Bradford** **2017 – 2021**

- **MSc Chemical and Process Engineering** **Expected: Distinction**
- **BEng (Hons) Mechanical Engineering** **Achieved: 1st Class**

***MSc Dissertation – Fibre Length Distribution and Dispersion along the Injection Moulding Process***

- An experimental study evaluating the influence of the geometries and process conditions within the injection moulding process on fibre length distributions and fibre dispersion of long glass fibre reinforced polymer composites.
- Various glass fibre measurement methods and fibre breakage studies were evaluated to establish where along the injection moulding process fibre breakage predominantly occurs and which process parameters have the greatest influence on fibre length distribution along the screw.
- A manual fibre length measurement was developed in-house and bench marked against existing commercially available automated software programs.
- Development of an empirical model linking screw geometry and process control was utilised within Autodesk Moldflow injection moulding simulation software.

***BEng Final Year Project – Manufacture and Analysis of Short Glass Fibre Reinforced Polymers***

- Compared predicted and experimental fibre orientation, warpage and moulding data of a short glass fibre polymer injected into various bow tie plate moulds.
- Predicted analysis results were recorded and compared to determine a flat plate injection moulding tool most suitable for the processing of short glass-fibre reinforced polymers.
- A mould was commissioned to match the most advantageous tool design with regards to fibre orientation and warpage and used to compare predicted data with experimental data.

## TECHNICAL AND LABORATORY SKILLS

- Practical experience of selecting and applying tolerances to functionally important dimensions in order to create a working Geneva mechanism.
- Experienced in CAD assembly to create a working virtual prototype and other CAD packages for the use of mould designs & evaluating nozzle & screw designs; as well as CAE (Autodesk Simulation).
- Practiced in NX7.5 to produce CNC programmes for the manufacture of Geneva mechanism parts.
- Proficient in various polymer processing techniques including injection moulding and extrusion.
- Created an SOP for the safe handling of a Battenfeld BA750/315 CDK injection moulding machine.
- PPE competent and aware of the safe handling and disposal of materials into different waste streams.
- Experienced user of an XTH-225 micro-CT machine including maintenance and calibration and confident in setting up the instrument to ensure reliable and optimum results and any subsequent post processing of data within Volume Graphics software.
- Utilised LabView to detect and isolate fibre bundles through an image stack taken from a 3D reconstruction of a sample.

## RELEVANT WORK EXPERIENCE

**Research Intern, KU Leuven Technologie campus, Belgium** **Nov 2019**

- Conducted innovative screw pull out tests on two different Arburg injection moulding machines to investigate the effect of various process parameters on fibre length distribution and dispersion within the injection moulding process.
- Exposed to CAE extrusion simulation software, Compuplast.
- Delivered an informative lecture to students in the framework of the course of injection moulding including the research being performed.

**Research Assistant, HBM - nCode** **July – Sept 2018**

- Tasked to simulate fatigue behaviour of injection moulded components through designing and manufacture of moulds for end-gated plaques.
- Sectioning and optical metrology verifying ability of moulding simulation to predict fibre orientation.
- Evaluation of injection mouldings by fatigue testing on an Instron 5568 tensile test machine.
- Experience using nCode, a CAE fatigue and durability analysis software.

## SUMMARY OF OTHER EMPLOYMENT EXPERIENCE

- Bartender at The Pub, Leeds — April – June 2019
- Crew Member at Domino's, Bradford — May – Sept 2018
- Baker and Sales Assistant at Sunflower Bakery, Leeds — Sept 2015 – Jan 2017
- Volunteer at Community Services, West Yorkshire — March – May 2017

All above were undertaken during my studies – developed various skills in a working environment including working under pressure, communication, teamwork, customer service and planning and organising.

## POSITIONS OF RESPONSIBILITY

- **Officer Cadet, Leeds University Officers Training Corps –** in command of leading platoons or sections on numerous military exercises. Responsible for effectively using the platoon's resources and employing, organising and directing the platoon during operations to achieve a successful outcome.
- **Post-Graduate Student Representative within the Faculty of Engineering –** represented the postgraduate community in monitoring and upholding student experience by interacting with students, staff, and the Student's Union.
- **Voluntary Charity Work and Community Service –** organised and planned a club charity event of hiking all 3 National Peaks within 24 hours. Took an active part in the Bradford Crocus Cancer Appeal.
- **University of Bradford STEM Ambassador** – encouraging and motivating school students in West Yorkshire to consider engineering as a career.

## LEISURE INTERESTS

- Keeping up to date with developments in the polymer and automotive industry. Associate Member of IMechE.
- Other interests include sports (football at semi-professional level; water polo and tennis), history, politics and travelling.
- Charity work – raising money for various charities and communities within West Yorkshire.

## REFEREES

Prof Tim Gough, Head of Mechanical Eng., University of Bradford; Email: T.Gough@bradford.ac.uk
Dr Peter Olley; Lecturer in Mechanical/Energy Systems Engineering; Email: P.Olley@bradford.ac.uk