Aadesh Chahal

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Technical Skills

Materials Testing: Tensile/Compression (Instron UTM, ASTM E8), Hardness (Rockwell/Vickers, ASTM E18), Fatigue testing, Metallography, SEM, FTIR, NDE techniques
Manufacturing & Design: Abaqus FEA, Moldflow, FDM 3D Printing, SolidWorks
Software: Python (Pandas, NumPy, Matplotlib), C/C++, MATLAB, MS Office, Excel VBA

Education

University of British Columbia Vancouver, BC
Bachelor of Applied Science in Materials Engineering *Sep. 2022 – Apr/Dec. 2027*

- Relevant Course Work: Semiconductor Nano-fabrication & Materials , Modelling of Materials Processes, Hydrometallurgy/Lab, AI & Machine Learning in Manufacturing | **Available for Co-op starting May 2026**

Experience

Materials Engineering Intern May 2024 – Dec. 2024
Suncor Energy *FIFO/Fort Hills Mine, AB*

- Administered a $200K budget to apply a HVOF thermal spray coating to Komatsu 980E haul truck dump bodies to decrease exhaust heat corrosion and maintenance time.
- Increased lifespan of slurry piping assets using GE APM; Calculated erosion rates from NDE readings and thickness monitoring.
- Created rebuild scopes of work for CAT D8 bulldozers, decreasing frequency of third party work by 50%.
- Developed a filter system for recycled water pipes, projected to reduce on-set of MIC by 10%

Lot Attendant May 2021 – Aug. 2023
Southgate Volkswagen *Edmonton, AB*

- Developed safe driving skills while delivering and collecting vehicles around Alberta to and from customers and shops, while maintaining a 100% safety rating.
- Managed digital scheduling tools for coordinating vehicle movements between the lot, service area, shops, and customers, up to 20 times a day, optimizing workflow efficiency.
- Monitored and organized vehicle inventory, ensuring efficient use of lot space and easy accessibility for customers and staff.

Technical Projects

Airless RC Car Tire | *Project Management, EVT, DVT, PVT, FDM 3D Printing* Sep. 2025 – Dec. 2025

- Designed, manufactured and tested 3D-printed airless tires, successfully reducing manufacturing costs by 85% ($3/set vs. $20/set) while maintaining recreational performance standards.
- Executed a comprehensive Engineering Validation Test (EVT) plan, including high-speed acceleration (grip), rolling resistance (efficiency), and 1 km circuit durability testing.
- Conducted comparative material characterization of TPU, PLA, PETG, and ABS, identifying TPU 95A as the sole viable polymer for high-impact applications based on its 88.5 J/m^2 Z-toughness and superior material properties.

Options Analytics Engine | *Python (NumPy, SciPy, Plotly), Monte Carlo, Black–Scholes* Aug. 2025

- Engineered an Options Analytics Platform using Python & Streamlit, deploying a live quantitative dashboard for real-time BSM pricing and Greek sensitivity analysis.
- Optimized Monte Carlo simulations using NumPy vectorization, reducing execution time for 100,000 price paths by 20x compared to iterative methods.
- Developed interactive 3D volatility surfaces using Plotly, enabling intuitive visualization of option premiums across varying strikes and maturities.

Ice Hockey Stick Material Selection | *Abaqus FEA, Ansys, Ashby Charts, SolidWorks* Jan. 2024 – Mar. 2024

- Led a team of 4 to design a CFRP ice hockey stick balancing durability, flex, and weight to meet NHL/IIHF performance standards.
- Optimized material selection using Ashby charts and FEA to maintain structural integrity under bending and torsional loads, while staying below 400 grams.
- Assessed manufacturing routes and selected resin transfer molding as the most cost-effective scalable process, lowering projected production costs by 15% while achieving target surface finish for grip and handling.