

STATEMENT OF PURPOSE
APPLICANT: BOLA PIUS ODUNARO
(Ph.D. In Mechanical Engineering)

Materials failure and structures are inevitable as they all contain invisible defects. Three questions I always ask myself during my undergraduate study, why do materials bend? Why do they break? How do structures fail?. These questions prompt me to study a broad range of examples where failures, fractures, and rejections have occurred in the engineering and Manufacturing sectors. As a result of my study, I developed an interest in understanding the mechanics of the various materials' failure modes like Fracture, fatigue, and corrosion and appropriate design principles that will be employed to prevent in-service failures. I believe that continuous research and a deeper exploration of materials can contribute to minimizing damaging nature. Furthermore, I am convinced that understanding the mechanics of failure of materials and the prevention will enable material improvements, leading to positive advantages that have massive relevance to contemporary society. This is why I decided to pursue a Ph.D. degree in Mechanical Engineering, focusing on solid mechanics of materials and material failure study.

I obtained a diploma, higher degree (HND), and a Bsc in mechanical engineering, consistently placing in the top 1% of my class and graduating with distinctions. In particular, My bachelor's degree at the University of Ibadan exposed me to the intricacies of research. It gave me my first taste of the significance of practical engineering in modern society, beyond my course work, which I aced with a final CGPA of 6.7/7.0. I also had opportunities to engage in relevant research. My final year thesis was on Development and Performance Evaluation of a Mini-Potentiostat for Corrosion Experimentations in 5 wt.% NaCl solution using mild steel as a working electrode (WE), Ag/AgCl as a reference electrode (RE), and Platinum wire as the counter electrode (CEI). I am currently a research assistant, researching "Modelling Fracture Characteristics, and Fatigue Cracks Propagation of Selected Structural Components" under Dr. Olufemi Ajide at the University of Ibadan.

I choose Clarkson University because of its excellent holistic education, which will help me to broaden my academic horizons and expand my bank of knowledge. I find research in solid mechanics which includes corrosion of materials, mechanical behavior of materials, and fracture mechanics in the department perfectly aligned with my career interests. The excellent research facilities in Mechanical Engineering at Clarkson University and faculty guidance offer me an invaluable opportunity. I am confident that I have the necessary drive, intellectual competence, and requisite skills to succeed in this program to study Ph.D. in Mechanical Engineering.

My long-term goal is to become a top-notch researcher by performing breakthrough research in mechanics of the various materials' failure modes like Fracture, fatigue, and corrosion, and appropriate design principles that will be employed to prevent in-service failures. It will, therefore, be an excellent opportunity for me to be nurtured in such a reputable research environment as the world-class laboratories at Clarkson University.