

Ahmed BOUKAR, Captain Engineer of the Mauritanian Army,

With a PhD degree in mechanical engineering

✉ : Institut Supérieur des Métiers de la Mine IS2M (Zouerate-Mauritanie)

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ABOUT ME

A captain engineer of the Mauritanian Army, with a PhD degree in mechanical engineering from IMT Mines Alès (France) in “Modeling fracture of composite materials” with over 8 years of experience in academic teaching and R&D projects, good organizational skills, ability to adapt easily to new challenges, innovative by nature, unique by design and fueled by passion.

Education

2018-2022 PhD in Mechanical Engineering, Centre des Matériaux Mines-d’Ales (C2MA) : IMT Mines-d’Ales, Alès-France.

Specialty: Mechanics and Civil Engineering: ED I2S University of Montpellier

2013-2016 Mechanical Engineering: Ecole supérieure Polytechnique de Nouakchott - Mauritania.

2011-2013 Preparatory class MPSI - Ecole Supérieure Polytechnique de Nouakchott

2010-2011 Mathematical Baccalaureate degree – Lycée Dioukhamadya – Nouakchott-Mauritania

Military service

2020- Present Captain engineer

Juin - 2016 Lieutenant engineer

Professional Experience & Teaching

2025 – Present Deputy Director: Institut Supérieur des Métiers de la Mine (IS2M) Zouerate - Mauritania

2022 – Present Deputy Head of mechanical department: Ecole supérieure Polytechnique (ESP) de Nouakchott - Mauritania

Head of mechanical laboratories department: Groupe Polytechnique de Nouakchott - Mauritania

- Supervised and coordinated research and testing activities within the mechanical laboratory.
- Developed new testing methods for material and mechanical component analysis.
- Collaborated with R&D departments to test and validate prototypes.

Teaching Activities: Delivered lectures and workshops on CAD/CAM with Catia and the theory of mechanisms for first- and second-year engineering students, while mentoring engineers in their final year projects

2018 - 2022 PhD student Centre des Matériaux Mines-d’Ales (C2MA) IMT Mines-d’Alès, Alès- France.

« Experimental study and predictive modeling of the impact behavior of laminated composites »

- TP calculation of the toughness of polymers 2nd year ECOMAP department IMT Mines Alès
- TP Multiphysics simulation on Comsol 1st year ECOMAP department IMT Mines Alès

2016 - 2018 Research Engineer, Teaching Assistant at ESP, Nouakchott - Mauritania.

- Teaching Assistant:
 1. Assisted in teaching Physique and Mechanics in 1st and 2nd years mechanical engineering
 2. Conducted review sessions and provided feedback on assignments and exams
 3. Supervised laboratory sessions and assisted students with experiments and projects

Publications

1. A. Boukar, S. Corn, P. Slangen, P. Ienny. *Finite element modelling of low velocity impact test applied to biaxial glass fiber reinforced laminate composites*. International Journal of Impact Engineering, 2022, <https://doi.org/10.1016/j.ijimpeng.2022.104218>

2. A. Boukar, P. Ienny, S. Corn, P. Slangen. *Critical imaging parameters in time resolved digital image correlation (TRDIC): effect of optical blur during drop test on composite structures*. Optical Measurement Systems for Industrial Inspection XII 11782, 117820B <https://doi.org/10.1117/12.2593708>

Communication

1. A. Boukar, S. Corn, P. Slangen, P. Ienny. *Modélisation multi-échelles du comportement mécanique de composite à renfort de fibre de verre biaxial (NCF)*. JST Homogénéisation et calcul multi-échelles 14 Octobre 2019, Champs-sur-Marne.
2. P Slangen, A. Boukar, S Corn, P Ienny. *Optical rules in high-speed imaging for digital image correlation applied to drop weight impact testing*. Photomechanics-IDICS Conference. 2020.
3. A. Boukar, S. Corn, P. Slangen, P. Ienny. *Modélisation numérique de l'endommagement de composites stratifiés soumis à un impact Charpy sur chant*. JNC22-conférence virtuelle 28-30 Juin 2021

Skills

Language

English: Fluent

Frensh: Excellent

Arabic: Native speaker

- ❖ **Windows:** Microsoft Office (Excel avec VB, Access avec SQL...), MS Project
- ❖ **Programming Language** Fortran, Python, C/C++, MATLAB, R, Maple, Arduino.
- ❖ **Finite Element Methods:** ABAQUS, Ansys, COMSOL
- ❖ **CAD/CAM :** CATIA, SOLIDWORKS, AutoCAD
- ❖ **Laboratory Management:** Oversight of mechanical laboratories, including equipment maintenance, safety compliance, and process optimization.
- ❖ **Mechanical Testing and Analysis:** Expertise in stress, fatigue, and failure analysis, as well as tensile, compression, and impact testing.
- ❖ **CAD/CAM (Catia):** Proficient in computer-aided design and manufacturing with Catia for creating detailed mechanical drawings, simulations, and models.
- ❖ **Theory of Mechanisms:** In-depth understanding of kinematics, dynamics, and the design of mechanical systems and mechanisms.
- ❖ **Finite Element Analysis (FEA):** Skilled in using FEA software for stress analysis, thermal analysis, and optimization of mechanical components, with extensive expertise in Abaqus.
- ❖ **Material Science:** Knowledgeable in the properties of metals, polymers, composites, and ceramics, and their application in engineering.
- ❖ **Product Design and Development:** Experience in designing and prototyping mechanical products, including concept generation, detailed design, and validation.
- ❖ **Project Management:** Ability to lead projects from concept to completion, managing timelines, budgets, and cross-functional teams.
- ❖ **Manufacturing Processes:** Familiarity with machining, welding, casting, and additive manufacturing techniques.
- ❖ **Vibration Analysis:** Competence in analyzing and mitigating vibrations in mechanical systems to prevent resonance and failure.
- ❖ **Automation and Robotics:** Knowledge of automated systems and robotics, including the integration of sensors and actuators in mechanical designs.
- ❖ **Sustainability in Engineering:** Application of sustainable design principles, including life cycle analysis and eco-friendly material selection.
- ❖ **Simulation and Modeling:** Use of software tools for simulating mechanical systems and predicting their performance under various conditions.