

**Mohamed CHAIRI**

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**Mechanical and Material  
Engineering Research  
Engineer**



#### ACADEMIC TRAINING

**2019 - Today**

Doctoral researcher: Ph.D. Student "Mechanics – Material Engineering"  
**Department of Physics, Faculty of Sciences, Abdelmalek Essaadi University,  
Tetouan**

**2015 - 2017**

Master's Degree – Mechanical Manufacturing Technologies  
**Department of Physics, Faculty of Sciences, Abdelmalek Essaadi University,  
Tetouan**

**2011 - 2015**

Bachelor's Degree – Physical Matter Science – Mechanics.  
**Department of Physics, Faculty of Sciences, Abdelmalek Essaadi University,  
Tetouan**

#### RESEARCH TRAINING

**15/11/2023 -**

**Today**

**Research Fellowship** «Research topic: Surface characterization of materials subject to corrosion from biofuels».

Project: "DRIVERS (bando BRiC 2021)"

Another research topics:

Project: "DAS PHANTOMESHIFFE"

- Electromagnetic wave-shielding capabilities of a composite structure in military naval fields using different coatings such graphite, copper, and nickel-based coatings.
- Impact of thermal treatment on the mechanical properties of basalt fiber reinforced polymers.
- Fatigue properties laminate composites structures for shipbuilding.

Other:

- Electrochemical corrosion tests of steel material train rails applications.

**Technology and Research on Energy, Environment and Safety Materials,  
Department of Engineering, University of Messina, Messina, Italy.**

**04/10/2021 -**

**30/07/2022**

**Research Mobility** « Research topic: Manufacturing and numerical / experimental testing of composite materials for transport applications»

- Numerical and experimental testing of composite structures for ballistic applications in naval fields. Investigation two kinds of panels: dyneema and ceramic (Al<sub>2</sub>O<sub>3</sub> and SiC)/kevlar, in accordance with STANAG 4569 liv I and II standard.
- Experimental testing (i.e. flexural, static indentation and drop test) of composite structures made by Intermarine by substituting glass fibers with basalt ones.
- Study of innovative technologies of joining for dissimilar materials in marine applications: i.e. friction stir welding, explosion welding, clinching, self-piercing riveting and orbital riveting.

Projects: "SI-MARE", "DAS PHANTOMESHIFFE"

**Department of Engineering, University of Messina, Messina, Italy.**

## PROFESSIONAL EXPERIENCES

- 10/2017 – 03/2018**      **Trainee Methods & Process Engineer**
- Risk analysis of series modifications according to the IATF16949 standard.
  - Piloting of the Layout/Flow/Process implementation part of the Ford V408 Project.
  - Piloting the industrialization and preparation of pre-production parts for the E6D RSA project.
- Eurostyle Systems Tangier, Morocco.**
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- 02/2017 – 06/2017**      **Internship in the Lean Manufacturing department**
- Project:** « Company's productive performance improvement through the implementation of Lean Manufacturing sites ».
- Reydel Automotive, Tetouan, Morocco.**
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- 09/2016 – 10/2016**      **Internship in the Maintenance department**
- Project:** « Improvement the availability of the injection machines based on the maintenance indicators (FMD), then established an action plan ».
- Reydel Automotive, Tetouan, Morocco.**
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- 08/2014 – 09/2014**      **Internship**
- Dairy Cooperative of Tetouan "COLINORD", Morocco.**

## PROFESIONAL CERTIFICATIONS

- 29/11/2023**      Certificate of Participation "**IMAGE ANALYSIS IN MATERIAL SCIENCES**", Animated by Thermo Fisher Scientific and Moroccan Association of Electron Microscopy Users.
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- 23/04/2022**      Certificate of participation «**Second International Conference on Non-Destructive Evaluation of Composite Structures (NDECES'2022)**», Tetouan, Morocco
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- 19/06/2020**      Certificate: **Nano Symposium 2020 – Nano & Energy: Trends, Challenges and Solutions** – Nano SpringerNature research.

13/05/2020	<p>Certificate of participation in the E-conference: <b>“Technology transfer: the royal road for the valorization of the researcher, of his research results and for the creation of richness”</b>.</p> <p>Animated by Dr. KOSSIR Abdelaâli from PhoresNet&amp; Mohammed VI Polytechnic University.</p>
16/01/2020	<p>Certificate of attendance in <b>“LSCD winter Workshop”</b> organized by The System, Control and Decision Laboratory,</p> <p>ENSI Tangier and Abdelmalek Essaadi University.</p>
17/06/2019 – 22/06/2019	<p>Certification of <b>“Atomic Force Microscopy training”</b>, 1st International Workshop on Material Analysis and Characterization Techniques organized by the institute of Research in Electron Microscopy and Materials of the University of Cadiz, Spain and The Laboratory of Chemical Engineering and Resource Development of Faculty of Science and Techniques of Tangier, Morocco.</p>
01/2018	<p>Certification of <b>“FMEA &amp; Revers FMEA”</b> by SIFOP Technologies. <b>Eurostyle Systems Tangier, Morocco.</b></p>

## COMMUNICATIONS & PUBLICATIONS

### Oral Communications

“Evaluating the Flexural Performance of Basalt Composite Sandwich Structures for Marine Applications” in **9<sup>th</sup> ECCOMAS Thematic Conference on the Mechanical Response of Composites, COMPOSITES 2023, 12-15 September 2023, Trapani, Sicily, 2023.**

“Preliminary study of lightweight fiber-ceramic composite structures for the ballistic protection on military vessels” in the **16<sup>th</sup> CIRP conference on Intelligent Computation in Manufacturing Engineering – CIRP ICME’22 virtual Conference, 13-15 July 2022, Italy**

### Conference Papers

“Static indentation properties of basalt fiber reinforced composites for naval applications” by C. Borsellino, M. Chairi, J. El Bahaoui, F. Favaloro, G. Di Bella. In Italian Manufacturing Association Conference: **XVI AITEM, p 350. Materials Research Forum LLC, 2023.** <https://doi.org/10.21741/9781644902714-42>.

“Preliminary study of lightweight fiber-ceramic composite structures for the ballistic protection on military vessels” by M. Chairi, J. El Bahaoui, T. Alderucci, F. Favaloro, C. Borsellino, G. Di Bella, **Procedia CIRP 118 (2023): 810-815.** <https://doi.org/10.1016/j.procir.2023.06.139>.

“Preliminary studies on concept of marine container inspired steel/wood module for housing, emergency or tourism: from design to manufacturing” by G. Di Bella, G. Di Dio, G. Viola, M. Chairi. – **Convegno Internazionale, 2030 D.C. Proiezioni Future Per Una Progettazione Sostenibile – Messina, 17-19 novembre 2022; ISBN 978-88-492-4558-5.**

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## Book Chapters

“Chapter 2: Effect of Fiber Orientation and Matrix Type of Machining Behavior and Structural Integrity of Glass and Basalt Fiber Reinforced Polymer Composites”, Jalal El Bahaoui, Mohamed Chairi, Guido Di Bella, Chiara Borsellino and Federica Favaloro. Book title: Machining Polymer Matrix Composites: Tools, Techniques, and Sustainability. Edited by Francisco Mata and Issam Hanafi. **IGI Global 2024**.

“Chapter 3: Accurate Estimation of Mechanical Properties in PMCs milling; Factors, Limitations, and Solutions”, Guido Di Bella, Jalal El Bahaoui and Mohamed Chairi. Book title: Machining Polymer Matrix Composites: Tools, Techniques, and Sustainability. Edited by Francisco Mata and Issam Hanafi. **IGI Global 2024**.

“Composite materials: A Review of Polymer and Metal Matrix Composites, their Mechanical characterization and Mechanical Properties”, Mohamed Chairi, Jalal El Bahaoui, Francisco Mata Cabrera, Issam Hanafi, Guido Di Bella – Open Access Book “Next Generation Fiber-Reinforced Composites – New Insights” edited by Dr. Longbiao Li – **IntechOpen 2023**. DOI: [10.5772/intechopen.106624](https://doi.org/10.5772/intechopen.106624)

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## Research Articles

“Finite Element Analysis of Ceramic-Composite Structures for Ballistic Applications: Effect of Ceramic Thickness and Cell Structure”. By Mohamed Chairi, Jalal El Bahaoui, Issam Hanafi, Federica Favaloro, Chiara Borsellino, Guido Di Bella - Advanced Engineering Materials. **Wiley 2023**.

<https://doi.org/10.1002/adem.202301089>

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## SKILLS

### Technical Skills

Mechanical Manufacturing (Machining, casting, forming, assembling) , Mechanical Characterization (Experimental testing and evaluating materials under different static and cyclic loadings), Mechanical modelling and Simulation (Abaqus, LS-Dyna); Manufacturing Process of Composite & Plastic Materials.

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### Managerial Skills

Lean Manufacturing, Project Management, Industrial Maintenance Management

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### Languages

Arabic: Mother tongue, English: Intermediate B2, French: Intermediate B2, Italian: Beginning A2, Spanish: Beginning A1

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