Estefano Matías **Muñoz Moya**

M.Sc. Mechanical Engineer · Researcher assistant · Part-Time Teacher · University of Santiago de Chile

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Presentation

Master in Engineering Sciences, specializing in Mechanical Engineering. Researchers in biomechanics and biomaterials focused on experimental and numerical work, employing numerical methods, solid mechanics, finite element method, and continuum mechanics. I am a responsible person, proactive, with great learning capacity, empathetic with others, tolerant to failure, and work under pressure.

Education

University of Santiago de Chile (USACH) — *Santiago, Chile*

Mechanical Engineering | Master Degree — *2018 - 2020*

- M.Sc. Mechanical Engineering.

University of Santiago de Chile (USACH) — *Santiago, Chile*

Mechanical Engineering | Degree — *2013 - 2020*

- Mechanical Engineering
- Bachelor Engineering Science.

Work Experience

University of Santiago de Chile (USACH), Department of Mechanical Engineering (DIMEC) — *Santiago, Chile*

Part-time Teacher: *Engineering Drawing* | Theory. — *Apr. 2021 - **PRESENT***

Part-time Teacher: *Strength of Materials* | Laboratory. — *Apr. 2021 - **PRESENT***

Part-time Teacher: *Introduction to Mechanical Engineering* | Theory. — *Apr. 2021 - **PRESENT***

Part-time Teacher: *Computational Mechanical Design* | Theory. — *Oct. 2020 - Mar. 2021*

Part-time Teacher: *Engineering Drawing* | Laboratory. — *Oct. 2020 - Mar. 2021*

Centre for Climate Change Research and Innovation (CiCC) | Santo Tomás University (UST) — *Santiago, Chile*

Research Assistant | Project PIA-ANID ANILLO ACT 172037 | Ph. D. Nelson A. Lagos — *Oct. 2018 - **PRESENT***

- Researcher assistant in the project: *Interacting structure and function of ecological, mechanical and mineralogical properties of marine calcifiers: Shell carbonates as sources of bio-inspiration (Carbo-Nat-Lab).*
- Experimental and numerical computational research work on the shell skeleton structure from the Chilean coast.
- Mechanical studies on chillean mollusk shells, *Perumytilus purpuratus*, subjet to climate change scenarios.

Biomechanical and Biomaterials Laboratory (BioMatLab) | University of Santiago de Chile (USACH) — *Santiago, Chile*

Research Assistant | Project FONDECYT 1170608F | Ph. D. Claudio M. García-Herrera | Ph. D. Diego J. Celentano — *Oct. 2018 - **PRESENT***

- Researcher assistant in the project: *Biomechanical Behaviour of Arteries from Chronic Hypoxic Animals: Experiments, Modelling, Numerical Simulation and Validation.*
- Mechanical studies in arteries in collaboration with the veterinary medical center of the University of Chile.
- Biomechanical characterization of arteries to observe adverse effects, such as hypoxia suffered by Chilean mining workers.
- Perform ROT (Ring Opening Test) on arteries to assess residual stresses.

University of Santiago de Chile (USACH), Department of Mechanical Engineering (DIMEC) — *Santiago, Chile*

Teaching assistance: *Introduction to Mechanical Engineering*. — *Mar. 2020 - Sep. 2020*

Teaching assistance: *Strength of Materials*. — *Mar. 2019 - Aug. 2019*

Teaching assistance: *Applied Mathematics*. — *Aug. 2018 - Aug. 2019*

Teaching assistance: *Thermal Systems (Thermodynamics II)*. — *Jul. 2017 - Jan. 2019*

- Teaching assistance and development of educational guides/tests and resources.

BBVA Bank — *Santiago, Chile*

Professional Practice in the field of tribological maintenance. — *Jan. 2017 - Feb. 2017*

- Maintenance of buildings and power generators of the bank.

Publications | Accepted / Under Review / In Progress

Under Review | Materials Science and Engineering: C — *First Author* | 2021

- **Estefano Muñoz-Moya**, Claudio M. García-Herrera, Nelson A. Lagos, Aldo Abarca-Ortega, Antonio G. Checa. Biomechanical behavior of the *Perumytilus purpuratus* shell: symmetry, homogeneity, and remodeling of the mechanical properties. **Materials Science and Engineering: C**. 2021.

Under Review | PLoS ONE — *Second Author* | 2021

- Aldo Abarca-Ortega, **Estefano Muñoz-Moya**, Matías Pacheco-Alarcón, Claudio M. García-Herrera, Diego J. Celentano, Nelson A. Lagos, Marco A. Lardies. Biomechanical characterization of scallop shells exposed to ocean acidification and warming. **PLoS ONE**. 2021.

In Progress — *First Author* | 2021

- **Estefano Muñoz-Moya**, Matías Pacheco-Alarcón, Claudio M. García-Herrera, Aldo Abarca-Ortega, Nelson A. Lagos, Antonio G. Checa. Numerical simulation of *Perumytilus purpuratus* shell strength under predation attacks using finite element analysis. 2021.

Conferences

11° World Biomaterials Congress (WBC 2020), International Union of Societies for Biomaterials Science and Engineering — *Europe, Virtual*

International | Poster Presentation | Certificate Link | Poster Link — *Dec. 2020*

- MECHANICAL BEHAVIOR SYMMETRY OF MUSSEL SHELLS AND NUMERICAL METHOD FOR BIOMATERIAL ORTHOTROPY DIRECTIONS.

2° Congreso de Estudiantes de Postgrado USACH (USACH 2020), Universidad de Santiago de Chile. — *USACH, Virtual*

Chile | Speaker Presentation | Certificate Link — *Nov. 2020*

- *PERUMYTILUS PURPURATUS*: SIMETRÍA DE VALVAS Y CARACTERIZACIÓN DE DIRECCIÓN ORTÓTROPA.

Congreso Chileno de Biomecánica y Biomateriales (CBIO 2020), Universidad de Santiago de Chile. — *USACH, Virtual*

Chile | Speaker Presentation | Organizer | Certificate Link — *Oct. 2020*

- *PERUMYTILUS PURPURATUS*: SIMETRÍA DE VALVAS Y CARACTERIZACIÓN DE DIRECCIÓN ORTÓTROPA.

19° Congreso Internacional de Metalurgia y Materiales (CONAMET-SAM 2019), Universidad Austral de Chile. — *UACH, Valdivia, Chile*

International | Speaker Presentation | Certificate Link — *Nov. 2019*

- ANÁLISIS DE LA RESPUESTA BIOMECÁNICA DE *PERUMYTILUS PURPURATUS* ANTE ESCENARIOS DE CAMBIO CLIMÁTICO.

1° Congreso de Estudiantes de Postgrado USACH (USACH 2019), Universidad de Santiago de Chile. — *USACH. Santiago, Chile*

Chile | Speaker Presentation | Certificate Link — *Aug. 2019*

- MODELOS CONSTITUTIVOS DE CRECIMIENTO APLICADOS A LA CONCHA DEL *PERUMYTILUS PUPURATUS*.

25° Congress of the European Society of Biomechanics (ESB 2019), Vienna University of Technology. — *TU Wien, Vienna, Austria*

International | 2 Speaker Presentations | Certificate Link — *Jul. 2019*

- BIOMECHANICAL BEHAVIOUR ON SHELL CHARACTERISTICS (*PERUMYTILUS PURPURATUS*) ALONG THE CHILEAN COAST.
- NUMERICAL ANALYSIS OF THE BIOMECHANICAL RESPONSE OF OYSTER SHELLS SUBJECTED TO CLIMATE CHANGE SCENARIOS.

Courses

English as a Medium of Instruction (EMI) – Content and Language Integrated Learning (CLIL) — *Dalhousie University, Virtual*

Pedagogic training program | Student — *Apr. 2021 - **PRESENT***

- Dictated by the Department of International and Inter-University Relations (DRII-USACH), and the Academic Vice-Rectory (VRA-USACH) of the University of Santiago de Chile, with experts from Dalhousie University (Dal).

Structure, form, and function of calcifying organisms — *CIMARQ UNAB, Valparaíso, Chile*

Postgraduate course | Student | Certificate Link — *Nov. 2018*

- Dictated by the academics Ph. D. Antonio Checa (University of Granada, Spain) and Ph. D. Fabio Labra (Santo Tomás University, Chile).

Memberships

European Society of Biomechanics (ESB) — *Europe*

Student Member | Certificate Link — *Jul. 2020 - **PRESENT***

- Membership ID: 3263

STEM Preeschoolar USACH-DIMEC (Science, Technology, Engineering, and Mathematics) — *Santiago, Chile*

Member | Certificate Link — *Oct. 2019 - **PRESENT***

- Scientific popularization for preschool children with a gender perspective.

Science Popularization

Science Festival - Festival de la Ciencia (FECI of PAR Explora Región Metropolitana Sur Poniente, ANID), Universidad de Chile — *UCHILE, Virtual*

Expert scientific collaborator | Certificate Link — *Nov. 2020*

- Science experiments for children.

Science Festival - 10° Feria Científica USACH, Universidad de Santiago de Chile — *USACH, Santiago, Chile*

Expert scientific collaborator | Certificate Link — *Oct. 2019*

- Exhibition of biomechanical tests for children.

Exhibition - *Molluscas, espiral del cambio* of the CarboNatLab project - Cii*CC*, Museo de Historia Natural de Valparaíso (MHNV) — *MHNV, Valparaíso, Chile*

Expert scientific collaborator | Certificate Link — *Oct. 2019*

- Exhibition of the consequences of climate change in the oceans.

Exhibition - *XII Fiesta de la ciencia y la tecnología (PAR Explora Región Metropolitana Sur Oriente, ANID ex CONICYT)*, Universidad de Chile — *PARQUEMET, Santiago, Chile*

Expert scientific collaborator | Certificate Link — *Oct. 2018*

- Exhibition of the mechanical properties of the mollusk shells subject to climate change scenarios.

About me

Full name: Estefano Matías Muñoz Moya

Basic Information

- Chilean RUT: 19.001.917-9 | Passport: F27796026
- Address: Paseo Pie Andino 2798, G44, Santiago, Chile
- Birth: 23th of September of 1994 | Age: 26 years old
- Birth place: Santiago, RM, Republic of Chile
- email: estefano.munoz@usach.cl
- Lenguages: Native Spanish | Advanced English

Programming lenguages and Software usage

- Programming lenguages: : Fortran | Python | Matlab/Octave | C/C++ |
- Software usage: In-House Softwares | AutoCAD | Solidworks | Ansys | Inventor | Mathcad | Fusion360 | SAM | Latex | Arduino | Ubuntu | EDEM | GiD | InVesalius | Office (Word, PowerPoint, Excel, Project) |

References

Ph. D. Claudio M. García-Herrera | ResearchGate Link, Director of the Mechanical Engineering Department, Associated Professor, and Researcher - University of Santiago de Chile (USACH).
email: claudio.garcia@usach.cl

Ph. D. Nelson A. Lagos | ResearchGate Link, Director of the Centre for Climate Change Research and Innovation (Cii*CC*), Associated Professor, and Researcher - Santo Tomás University (UST).
email: nlagoss@santotomas.cl

Ph. D. Diego J. Celentano | ResearchGate Link, Associated Professor and Researcher of Mechanical and Metallurgical Engineering Department, Pontifical Catholic University of Chile (PUC Chile).
email: dcelentano@ing.puc.cl