

Cecilia Bustos
Full Professor
Universidad del Bío-Bío
cbustos@ubiobio.cl

1. EDUCATION (degree, year awarded, institution, primary focus/major)

- 2000 -2003 Ph.D., en sciences du bois, Département des sciences du bois et de la forêt, Université Laval, Canada.
- 1998- 2000 M.Sc. en sciences du bois, Département des sciences du bois et de la forêt, Université Laval, Canada. 1998 .
- 1991- 1994 Ingeniería Civil en Industrias Forestales, Universidad del Bío-Bío, Concepción Chile. 1995.
- 1985- 1988 Ingeniería de Ejecución en Maderas, Universidad del Bío-Bío, Concepción, Chile. 1988.

Dr. Cecilia Bustos is Full Professor at Universidad del Bío-Bío where she developed undergraduate and graduate courses in wood technology, wood mechanical properties, wood engineering products, wood composites and nanotechnology. She also performs research in the same areas, dealing mainly with wood engineering products, thermo-hygro-mechanical densification, wood quality and wood coatings.

2. EMPLOYMENT EXPERIENCE

- 1.- Director of both program of wood science (Civil Engineering in Forest Industries and Wood Engineering) from 204 to 2017
- 3.- Director of graduate programs in the Depto. Ing. en Maderas, Universidad del Bío-Bío (MSc. and Ph.D in Wood science and technology) from 2013 to 2017
- 4.- Director of the Ph.D program in Sustainable Materials and Processes Engineering from 2018 to 2019.

3. STUDENTS MENTORED (past four years)

- 1) Paula Salgado. (start in 2020). Ph.D in Architecture and Urbanism. Architecture Faculty. Universidad del Bío-Bío. Director (In process).
- 2) Gustavo Rodriguez. (start in 2019). Ph.D in Materials Engineering and Sustainable Processes. Engineering Faculty. Universidad del Bío-Bío. Director (In process).
- 3) Claudia Marcela Pacheco. 2019. Development of a nanocomposite additive from blueberry pruning waste for water-based coatings for wood. Ph.D in Wood Science and Technology. Engineering Faculty. Universidad del Bío-Bío. Director.
- 4) Guillermo González Cardozo. 2017. Particleboard made from residual wood particles and inorganic binders, as an interior wall of timber frame systems. MSc. of Construction in Wood. Architecture Faculty. Universidad del Bío-Bío. Director
- 5) Noemí Cruz Hernández. 2017. Evaluation of the chemical characteristics of Pinus radiata Wood and its effect on the THM densification process. MSc. in Wood Science and Technology. Engineering Faculty. Universidad del Bío-Bío. Director.

4. PRIMARY RESEARCH AREA WITH UP TO FOUR CURRENT RESEARCH PROJECTS

Design of a new architecture of active, living and adaptive materials, based on principles of biomimicry and the revaluation of industrial waste from the Chilean wood manufacturing sector. Project Fondecyt N° 1221361. Investigator. March 2022 to March 2024. (\$161.646.000) (US\$ 202.000).

Strengthening of associative research and development of new isotropic and anisotropic materials based on broad-spectrum dynamic mechanical conditions. Fondecup Project, Code: EQM 180111. Investigator. March 2018 to March 2024. (\$174.133.181) (U\$ 218.000)

Technological dissemination for the labeling of wood, application to companies in the Bío-Bío region. Corfo. Productive Development Committee. Corfo. Comité Desarrollo productivo. Code : I+D 17-06. Janvier 2017 to December 2017. (\$15.200.000) (U\$ 19.000)

Development of a new adhesive system with low formaldehyde emissions, high mechanical performance and durability for the manufacture of MDF boards. Fondo de Fomento al Desarrollo Científico y Tecnológico (Fondef - IDEA Conicyt). Code : Ca15I10461. Investigator. Janvier 2016 to Janvier 2018. \$150.000.000. (U\$ 187.500)

Densification and nanocharacterization of fast growing woods for high value engineered products (Fondef - IDEA Conicyt). Code: CA13I10310. Principal investigator. March 2013 to March 2016. \$120.000.000. (U\$150.000)

Exploitation of World Class Knowledge and Innovation in Biomaterials and Energy Efficiency for a Sustainable Habitat. Proyecto UBB1205. Performance Agreement for Innovation in Higher Education Institutions. Executive director. September 2013 to September 2016. \$2.569.500.000. (U\$ 321.190)

5. PROFESSIONAL ACTIVITIES AND ACHIEVEMENTS (Memberships, Editorial boards, professional society leadership roles, awards, honors)

Dr. Cecilia Bustos is member of the “Centro de Biomateriales y Nanotecnología” (Biomaterials and Nanotechnology Center) at Universidad del Bío-Bío and member of the “Centre de recherche sur les matériaux renouvelables”, Université Laval, Québec, Canada. She is Member of the editorial board of the journal *Maderas: Ciencia y Tecnología, Universidad del Bío Bío*, Concepción, Chile. Since October 2017, she is also editorial member of the scientific journal of Wood Material Science and Engineering of Taylor and Francis Group. She is member of the Society of Wood Science and Technology and was the Chair of SWST Education Committee, 2010-2013. She was Board Member as a Director of Society of Wood Science and Technology, 2011-2013. She has received a Municipal Applied Research Award from Ilustre Municipalidad de Concepción, Chile in October 2017.

6. PUBLICATIONS (3-5 most important contributions (publications, seminars, graduates, etc.)

- 1) Pacheco, C. M., **Bustos, C.**, Claudia Oviedo, A. Fernández-Pérez, Mharyn Elso, Guillermo Reyes, Orlando J. Rojas. 2021. Nanocomposite additive of SiO₂/TiO₂/nanocellulose on waterborne coating formulations for mechanical and aesthetic properties stability on wood. *Materials Today Communications*, December 2021. 29, [102990]. <https://doi.org/10.1016/j.mtcomm.102990>
- 2) Pacheco, C. M., **Bustos, C.**, Reyes, G. (2020). Cellulose nanocrystals from blueberry pruning residues isolated by ionic liquids and TEMPO-oxidation combined with mechanical disintegration. *Journal of Dispersion Science and Technology*. 41(11):1731-1741.
- 3) Pacheco, C. M., **Bustos, C.**, Reyes, G., Aguayo, M. G., and Rojas, O. (2018). Characterization of residues from Chilean blueberry bushes: A potential source of cellulose, *BioRes*. 13(4), 7345-7359.
- 4) N. Cruz, **C. Bustos**, M.G. Aguayo, A. Cloutier, R. Castillo. 2018. Impact of the chemical composition of *Pinus radiata* wood on its physical and mechanical properties following thermo-hygro-mechanical densification. *BioRes*. 13(2):2268-2282.